

FINAL REPORT ON UNCONVENTIONAL GAS IN EUROPE

In the framework of the multiple framework service contract for legal assistance
TREN/R1/350-2008 lot 1

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0 Introduction

0.1 Purpose of the study and method

0.1.1 Purpose

1. The European Commission (the "Commission") selected the Brussels-based law firm Philippe & Partners to carry out the study "EC TENDER TREN/R1/350-2008 lot 1 on Unconventional Gas in Europe" (the "Study"). The main purpose of the Study is to analyse how the relevant applicable European legal framework, including environmental law, is applied to the licensing/authorisation and operational permitting for prospection, exploration and production/exploitation of shale gas based on a sample of four Member States, i.e. Poland, France, Germany¹ and Sweden.² It is, however, not purpose of the study to assess whether Member State legislation based on EU legislation has been properly transposed.

This study focuses on shale gas exploration, because shale gas is the type of unconventional gas most discussed and contentious currently. Also, compared to tight gas and coal bed methane, relatively less experience exists in Europe for shale formations as new source of natural gas. The focus on exploration is due to the stage of projects in Europe. No commercial scale shale gas exploitation has taken place yet and it is only expected in a few years time. Nevertheless, this study also takes into account a possible future production phase and especially analyses legal issues especially related to the transfer from exploration to production stage.

2. As regards areas of law to be studied, the focus is the "core" licensing and permitting process. Given the importance of environmental law in the area of shale gas exploration and production, it is included as an integral part of the study. However, within the scope of this study it is not possible to perform a thorough assessment of the appropriateness of the EU environmental legislation. Nevertheless, the present report describes and analyses EU environmental legislation which was assumed to be of most relevance for shale gas projects,³ especially as regards its interface with the "core" licensing and permitting processes. Thereby it contributes to further efforts to assess the appropriateness of the EU legal framework especially with a view to a future production phase and the challenge to ensure a high level of protection

¹ In Germany, we focus our analysis on North Rhine Westphalia because our case study (based on the input of the Mining Section of the Ministry of Economic Affairs and Energy of the State of North Rhine Westphalia) is based in North Rhine Westphalia. Our interviewed company, namely ExxonMobil, has some activities in this Land, but the bulk of its activities is located in another Land, namely Lower Saxony. With respect to the input of ExxonMobil, we thus chose to also include their knowledge/experience, as reported from an interview, of the Lower Saxony legislation in this report.

² These four Member States were selected because it is assumed that, in these Member States, it should be easier than in others (e.g. the Netherlands or the United Kingdom) to get access to information. France, Poland and Germany are the Member States with the highest number of licences granted for exploring/prospecting shale gas. Sweden is the Member State which saw the first shale gas exploration in the EU. Additionally, a court case took place, which ensures publicly available information. Moreover, these four Member States differ as regards their legislative/administrative backgrounds.

³ The EU legislation to be included in this report was selected in consultation with relevant European Commission Directorate-Generals including for Environment.

for the environment and public health while enabling shale gas production in Europe, which would be beneficial from a security of supply point of view.

3. The present study does not address issues such as access rights to the gas infrastructure/network or other competition issues.

0.1.2 Method

4. Firstly, this analysis is based on a survey of relevant national laws and regulations. For performing this survey, we prepared a legal questionnaire to the attention of national correspondents in the four Member States.

Secondly, this analysis is based on structured interviews with companies and public authorities, namely with the following companies/authorities:

Member State	Companies	Authorities
Poland	Talisman Energy Polska Sp. z o.o.	*Ministry of Environment - Promotion and negotiation section of the Department of Geology and Geological Concession - Department of Environmental Instruments *State Mining Authority *General Directorate for Environmental Protection *Chief Inspectorate for Environmental Protection * National Water Management Authority (These authorities hereinafter will be indicated as "competent Polish authorities")
France	Total Gas Shale Europe	Ministry of Environment, Energy and Sustainable Development
Germany	ExxonMobil Germany	Mining Section of the Ministry of Economic Affairs and Energy of the State of North Rhine Westphalia, Germany
Sweden	Gripen Gas AB	The Swedish Mining Inspectorate

As regards the authorities, these are the public bodies responsible for the "core" licensing and permitting process. Given that only one company per scrutinised Member State was interviewed, these interviews cannot provide representative results. Their purpose is to connect the undertaken legal analysis with views from stakeholders/practitioners affected by the respective regulations. As with the limit of the study to four Member States, it should be kept in mind that the objective of the study is not to provide an ultimate authoritative assessment of the applicable legal framework but to analyse how the current legal framework is applied in practice and to point to possible areas for further review.

For the purpose of carrying out these structured interviews, we prepared a legal questionnaire to the attention of the above-mentioned companies/authorities.

Some of the above companies/authorities have provided written answers to this questionnaire. We sometimes completed these answers by means of oral interviews. Others chose to answer to this questionnaire orally only, by way of an interview. The results of these interviews are incorporated in the body of this report directly.

0.2 Main features of shale gas activities

5. Before providing you with the analysis of the legal framework applicable to shale gas activities, it is useful to briefly explain the main (technical) features of shale gas activities (as understood by non technical persons).

6. Shale gas is a natural gas produced from shale. It belongs to unconventional sources of natural gas, beside other unconventional sources including coalbed methane, tight sandstones, and methane hydrates. Shale gas is extracted from rock formations that act as both the source and the reservoir for the natural gas itself.⁴

Shale gas may be viewed as a generally "diffuse" source of gas, i.e. stretching throughout a large territorial area, by contrast to conventional gas which is available in a more concentrated fashion. Numerous wells need to be drilled and analysed in order to sufficiently determine the potential of the shale formation.

7. Shale has low matrix permeability, so gas production in commercial quantities requires fractures to provide permeability. The extraction process involves stimulating the reservoir to create additional permeability in order for the shale gas to be extracted.

Hydraulic fracturing involves the high-pressure injection of fluids usually mixed with chemical products, into a shale rock formation. Horizontal drilling involves drilling a vertical well to the desired depth and then drilling laterally through the targeted shale formation.

Hydraulic fracturing and horizontal drilling are two techniques well known in the industry. What can be considered as new with shale gas activities with respect to these techniques is the combination of technologies used and especially the larger scale use one must make of these for exploiting shale gas.

8. Overall, shale gas exploration and development counts five main stages:

- Identification of the gas resource;
During this stage the interested company performs initial geophysical and geochemical surveys in some regions. Seismic and drilling location permits are secured.
- Early evaluation drilling;

⁴ SAKMAR S., The Future of Unconventional Gas: Legal, Policy and Environmental Challenges to the Development of North American Shale Gas, 29th USAEE/IAEE North American Conference, Calgary, Canada, 14-16 October 2010.

KUHN M. and UMBACH F., Strategic Perspectives of Unconventional Gas: A Game Changer with Implications for the EU's Energy Security, A EUCERS Strategy Paper, Vol. 01, May 2011, EUCERS, London.

The extent of gas bearing formation(s) is measured through seismic surveys. Geological features are investigated, such as faults or discontinuities that may impact the potential reservoir. Initial vertical drilling starts to evaluate shale gas resource properties. Commonly core samples are collected.

- Pilot project drilling;
Initial horizontal well(s) are drilled to determine reservoir properties and completion techniques (includes some level of multi-stage fracturing). The drilling of vertical wells continues in additional regions of shale gas potential. The concerned company executes initial production tests.
- Pilot production testing;
Multiple horizontal wells from a single pad are drilled, as part of a full size pilot project. Completion techniques are being optimised, including drilling and multi-stage hydraulic fracturing and micro seismic surveys. Furthermore, pilot production testing starts. The company initiates the planning and acquiring of pipeline right of way for field development.
- Commercial development.
At this stage, the concerned company takes the commercial decision to proceed.

9. In the course of the above-mentioned process some specific issues arise that may deserve special attention.

10. A key component to hydraulic fracturing is the high-pressure injection of hydraulic fracturing fluid. This hydraulic fracturing fluid increases the permeability of the fracture by holding open the fractures. This fluid is a mixture of about 90% water, 9,5% sand (or other components like ceramics) and 0,5% other chemicals (acids, chlorides, salts, isopropanol, etc.). The use of fracturing raises a number of concerns as regards possible environmental impacts. However, assessing specific environmental impacts is outside the scope of this study, which is dedicated to a legal analysis.

11. As mentioned above, each shale play is unique. As a consequence, the exploration, prospection and production of shale gas are non-standardised processes. The unique characteristics of each shale play mean that it can take a number of years for a producer to find the best way to exploit an area, resulting in only small volumes of gas being drilled at the start of the project. Next to this, it may take years for exploitation activities to cover the entirety of the authorised area. In other words, some projects may start on a small scale basis but, in case of positive results, may become large scale. Moreover, the unique characteristics of each shale area also lead to a different proportion of fracturing fluid additives. This proportion is usually kept proprietary/secret.

12. Another main issue relates to legal rights applicable to land-use. In the EU, the state generally retains sub-soil exploitation rights. However, the surface remains property of the landowner. This may result in the owner not willing to permit a company on to its land if he is not being compensated by a financial incentive. In general, this permission requires an application to be made to local courts to grant it, which can be long and costly for the said companies. This problem appears to be more present in the field of shale gas

exploration/prospection, since shale needs very large areas to be licensed. Traditionally, the areas to be licensed under the hydrocarbons legislation are rather small.⁵

0.3 Overall structure of the present report

13. The present report is structured as follows:

- General regulatory environment ([section 1](#));
- Core procedures (i.e. authorisations and/or permitting procedures) ([section 2](#));
- Authorisation and permit characteristics ([section 3](#));
- Transit to production and post-authorisation and/or post-permits aspects ([section 4](#));
- Environmental and health protection aspects ([section 5](#));
- Legislation with respect to chemicals ([section 6](#));
- Civil law aspects other than property law ([section 7](#));
- Other permitting procedures ([section 8](#)).

You will find our conclusions in [section 9](#) of this report.

0.4 Remark regarding terminology

14. "Licences" need to be distinguished from "permits". "Licences" authorise a certain entity with the exclusive right of exploration and/or exploitation of hydrocarbons in a specific geographical area for a defined time. Additionally, "permits" are usually needed for the actual operations. In this report we make a basic distinction between on the one hand, "core-permits" under national mining law and, on the other hand, other "permits" for exploration and/or exploitation under other pieces of legislation, such as the environmental law, planning law, etc. In this report, main licences are also referred to as "authorisation". The other permits are also referred to as "permissions".

Moreover, exploitation licences/authorisations are also referred to as "concessions".

Under French law, the licence for exploration is called "permis exclusif de recherche" (also referred to as "permis d'exploration"). For the sake of consistency between the terminologies used in this report, we chose to name the permis exclusif de recherche as "exploration authorisation". For the same reason, we use the term "exploitation authorisation" for the "concession d'exploitation" under French law.

Furthermore, "exploitation" is also referred to as "production" in this report.

⁵ Please note that according to some interviewed authorities, some licensed areas for conventional hydrocarbons can also be quite large.

1 General regulatory environment

15. In this section we provide an overview of the general legal and regulatory situation as regards shale gas in the scrutinised Member States.

16. In this section we also identify the position of the government, other authorities and the public regarding shale gas activities. This section also will identify any existing legislative initiatives specifically triggered by and/or targeted to shale gas production and/or exploration, if any.

17. The study aims at analysing how the relevant applicable European legal framework is applied to the licensing and operational permitting for prospection, exploration and production of shale gas in the four selected Member States ("MS"). Therefore, this section identifies the different types of national legislation and regulation governing the above mentioned activities.

1.1 Existing and/or future shale gas projects

18. In all four scrutinised Member States authorisations and/or permits have been granted with the view of exploring for shale gas. In none of the four Member States exploitation activities are ongoing so far.

In Poland, shale gas deposits are located in the zone stretching from the north-west to the south-east of the Member State. Most areas of potential interest have already been covered with prospection/exploration authorisations. As of 1 September 2011 101 shale gas prospection/exploration authorisations were granted, many of them also covering other hydrocarbons than shale gas.⁶ Talisman Energy Polska Sp. z o.o. ("Talisman") reported it has three concessions in the Northern part of the Baltic Basin. 26 applications for an exploration authorisation are ongoing as of 1 September 2011. Most of the projects currently are at the phase of seismic surveys.

Only some projects already have entered the drilling phase.

19. In Germany, shale gas exploration projects exist within the states of North Rhine Westphalia,⁷ Lower Saxony, Saxony-Anhalt, Thuringia and Baden-Wuerttemberg. In North Rhine Westphalia, one commercial project of ExxonMobil Production Deutschland GmbH ("ExxonMobil" or "EPMG") aiming at the exploration of shale gas received an authorisation. Nine requests for granting an exploration authorisation are pending. In Lower Saxony nine exploration authorisations were granted to EPMG. Two exploration authorisations are granted in Baden-Wuerttemberg (Three Leg Resources) and Thuringia (BNK Petroleum) respectively. Saxony-Anhalt issued one exploration authorisation to BNK Petroleum. In Lower Saxony ExxonMobil has drilled five shale gas exploration wells plus an additional one in North Rhine Westphalia, which results are currently being examined by ExxonMobil's experts. ExxonMobil has committed itself not to conduct any further shale gas fracturing activities until it receives a

⁶ For an overview of the involved companies, please refer to question 1 of the legal questionnaire to national correspondents.

⁷ 20 authorisations for hydrocarbons without mine gas have been granted as well as one permit ("Betriebsplanzulassung") for shale gas.

“go-ahead” from an installed independent expert group, expected for 2012. In the other Länder test drillings are currently at a planning stage.

20. In France, three “permis d’exploration” (or “exploration authorisations” for the purpose of this report) were granted in March 2010. Schuepbach Energy LLC, in association with GDF Suez, was granted the Villeneuve-de-Berg exploration authorisation and the Nant exploration authorisation. Total Gas Shale Europe (“TGSE”) and Total Exploration and Production France (“TEPF”) were granted, jointly and severally,⁸ the Montélimar exploration authorisation.⁹ Devon Energie Montélimar SAS contemplated obtaining such an authorisation for the same site but withdrew eventually.¹⁰ In France, drilling is suspended since February 2011 for all projects. It was decided that the Conseil Général de l’Industrie, de l’Energie et des Technologies (“CGIET”) and the Conseil Général de l’Environnement et du Développement Durable (“CGEDD”) would investigate the economical, social and environmental impact of shale gas activities. In the meantime, Act n° 2011-835 was enacted on the prohibition of exploration and exploitation of liquid hydrocarbon mines by means of hydraulic fracturing and on the cancellation of exploration permits granted for projects using this technique (the “Prohibition Act”).¹¹ Recently, all three exploration authorisations in the field of shale gas have been abrogated, as a consequence of this Prohibition Act.

21. In Sweden, only minor shale gas projects are ongoing.¹² They all have been initiated recently. In the course of 2010 and 2011 Gripen Gas AB (“Gripen Gas”) has received twelve exploration authorisations for exploring the Östergötland and Kalmar counties covering a surface of 420 km².¹³ Energigas i Östergötland received four exploration authorisations for the Östergötland area. Also Tekniska verken i Linköping AB have received an exploration authorisation for the Östergötland County. Shell Exploration and Production AB (“Shell AB”) has one exploration authorisation for the Skåne County. Two other exploration authorisations for Shell AB are expired. All of the projects are at a survey stage. An exploitation concession for a small scale operation in the area of Tornby K n°1 has been granted in 2008. However, according to the Mining Inspectorate, this has not been followed by any activity.

1.2 Position of public, government and/or other authorities

⁸ In this report, when we cannot identify precisely whether a statement relates to TGSE and/or to TEPF, we simply mention “Total” referring to the group without further precision. For the ease of reading, we also sometimes use “Total” as referring to both TGSE and TEPF.

⁹ By Ministerial Decree of 10 March 2010 (J.O. 31 March 2010). TGSE and TEPF requested an extension of the Montélimar authorisation on 5 November 2010. This request is still under instruction at the time of drafting the present report. However, with the abrogation of the Montélimar authorisation announced by the Ministry of Environment on 3 October 2011, this request may be viewed as barred.

¹⁰ In addition, several exploration authorisations for shale oil (entailing hydraulic fracturing techniques) were granted to some companies in the Paris Basin.

¹¹ J.O. 162, 14 July 2011.

¹² The licensed areas are generally smaller than in the other scrutinised Member States. Gripen Gas points out that shale gas reservoirs in Sweden are very old and shallow (100-150 m). Instead of hydraulic fracturing, a kind of surgical drilling is required using micro-drilling equipment. The rocks already are quite naturally fractured. Therefore, no chemicals for fracturing need to be added to the water that is pumped into the rocks.

¹³ The area covered by the authorisation is mainly farm land. It does not cover any nature preserve areas.

22. The Polish government has a positive attitude towards shale gas activities. The Government in general as well as the competent Minister for Environment welcome the development of shale gas exploration, and, in the future, shale gas production. An important reason for this positive attitude lies in the geostrategic and political importance a successful exploitation of shale gas could have for the Member State. It could make Poland less dependent from other countries for its supply of energy. This positive attitude is reflected in specific training organised for employees working for competent authorities¹⁴ in order to understand the specifics of shale gas prospection/exploration. Furthermore, the Polish Geological Institute pursues constant analysis of the Polish shale gas potential. Talisman confirms that the concerned municipalities as well as the regional government put forward a positive attitude in all three authorised areas.

23. Shale gas in Sweden, France and Germany appears to be more contentious.

24. In Germany and France, studies on the environmental impact of shale gas exploration/prospection are or were conducted. Furthermore, in both countries, legislative actions have been or are being taken specifically aimed at shale gas exploration/production. In Sweden, a review of the applicable legislation is under consideration.

The North Rhine Westphalian government has recently introduced a bill to the German Bundesrat. According to the Ministry of Economic Affairs and Energy of North Rhine Westphalia, this bill particularly aims at expanding the scope of application of the environmental impact assessment ("E.I.A."), making it compulsory for approval of every framework operation plan which includes i.a. hydraulic fracturing. The bill has not been adopted yet and its future relies on finding a majority both in the Bundesrat and the Bundestag. The bill has as its purpose to make environmental requirements under exploration authorisations stricter. Currently, the regulation governing environmental impact assessments for mining projects of 13 July 1990 only applies to exploitation projects.¹⁵ Furthermore, this bill will give municipalities the right to participate more actively in the authorisation procedure. Currently, the Federal Institute for Geosciences and Natural Resources is examining the potential resource of shale gas. The results of this survey are expected to be published in 2013, at the earliest.

According to the Ministry of Economic Affairs and Energy of North Rhine Westphalia further consideration will be given to deal with environmental concerns and to increase public participation in the authorisation procedures.

Furthermore, according to the same authority, a study on the impact of shale gas activities will be performed in North Rhine Westphalia, sponsored by the Land of North Rhine Westphalia.¹⁶ A tender regarding this recently has been published. Results are expected in 2012. This study concerns exclusively North Rhine Westphalia. The study will e.g. focus on the impact of shale gas activities on water. The study is expected to provide for more predictability in the criteria for delivering a permit, as well as for the interaction between the implicated ministries. ExxonMobil, being the only authorised company so far in North Rhine Westphalia, has taken note of the fact that the Land sees the need to perform a study first. Until then, a moratorium is applicable in Germany, meaning that shale gas activities are suspended in North Rhine Westphalia until a decision on the topic can be taken.

¹⁴ I.e. Ministry of Environment and the Polish State Mining Authority.

¹⁵ Currently, E.I.A. is only required under German law for projects where the quantity of extracted minerals is more than 500k m³/day.

¹⁶ I.a. the effect of exploratory drilling on water resources (especially ground water) will be analysed.

25. The French Directorate General of Energy and Climat (“DGEC”) – who is responsible for instructing and preparing, on behalf of the Ministry of Environment, Energy and Sustainable Development, the exploration authorisation, treated the above-mentioned three applications for exploration authorisation (n° 20) as any other application for an exploration authorisation for conventional gas, in application of the French Mining Code.

However, things might change following the debate that arose, in France, around shale gas activities and more specifically around the above-mentioned three authorisations. This debate resulted in the adoption of the Act n° 2011-835 on the prohibition of exploration and exploitation of liquid hydrocarbons mines by means of hydraulic fracturing and on the cancellation of exploration permits granted for projects using this technique was adopted (the “Prohibition Act”).¹⁷

The Prohibition Act:

- (i) Forbids all exploration and exploitation of hydrocarbons for which hydraulic fracturing of rocks is required (article 1);
- (ii) Creates a National Commission¹⁸ whose task is to assess environmental risks related to hydraulic fracturing¹⁹ and alternative techniques, who is due to issue a public advice on the topic²⁰ (article 2);
- (iii) Requires all owners of exploration permits to specify to the granting authority, i.e. to the DGEC, the used or considered techniques for exploring hydrocarbons. Should such techniques entail hydraulic fracturing the granted permits will be abrogated (article 3).

One of the main reproaches that were formulated against the above-mentioned three authorisations was the fact that the public had not been consulted during the procedure for granting such authorisations. The absence of public consultation during the exploration authorisation phase is however due to the absence of such requirement under the French Mining Code as it currently stands,²¹ as we will see it below. Another main reproach that was formulated against the three authorisations is the fact that exploration authorisations supposedly “automatically” lead to the granting of “Concession d’Exploitation” (“exploitation authorisations” for the purpose of the present report). This is not entirely true. As we will see it below, the exploration authorisation gives a kind of exclusivity due to the fact that candidates for exploration are put in competition with other potential candidates (tender procedure) only once (i.e. at the exploration authorisation phase only). Then, should explorations give positive results, the company benefits from a kind of exclusive right for proceeding further. However,

¹⁷ Journal Officiel 162, 14 July 2011.

¹⁸ A Commission nationale d’orientation, de suivi et d’évaluation des techniques d’exploration et d’exploitation des hydrocarbures liquides et gazeux.

¹⁹ The Prohibition Act does not define what « hydraulic fracturing » is exactly, which may be viewed as a weakness.

²⁰ Not released yet at the date of drafting the present report.

²¹ Prior to 1984, the Mining Code did foresee a public consultation requirement at the exploration authorisation phase. This requirement was removed from it due to the fact that most exploration authorisations in France did not lead to positive results so, back then, it was felt as unnecessary to consult the public when, in the end, very few activities would give positive results.

exploitation is subject to both an exploitation authorisation granted by the DGEC and an Authorisation de Travaux d'Exploitation ("exploitation permit" or "AOTM" for the purpose of this report) granted by the territorially responsible Prefect. So, exploration authorisations do not automatically lead to exploitation, contrary to what some might contend.

Things are expected to change in France from a legal viewpoint with respect to hydrocarbon activities. One of the main concerns of the French administration is to include more public participation during the exploration authorisation phase. Public participation inclusion is being contemplated in the framework of the restructuring of the French Mining Code, which is, at the date of drafting the present report, under preparation.²² This might be of particular relevance for shale gas exploration authorisations, taking the above context into account.

26. In Sweden, the grant of exploration authorisations to Shell AB has caused major public pressure to give municipalities the right to veto exploration authorisations issued in their jurisdiction. According to Gripen Gas, there is a general tendency to move away from fossil fuels, due to their impact on environment. Gripen Gas has experienced that there is a general acceptance towards their exploration authorisations in Östergötland. However, in Öland there has been more significant protest. In response to this public pressure, the political opposition stated it would favour such a regime, whereby municipalities should be granted the right to veto exploration authorisations and should have a bigger say in the authorisation procedures. The Government has recently decided to evaluate the Minerals' Act.²³ This Act governs the prospection, exploration and production of hydrocarbons (including shale gas). The Swedish government will quite soon decide to investigate the communication and transparency mechanisms the Minerals' Act foresees towards the concerned municipalities and landowners. However, there is no direct link with explorations for shale gas. The question of aptitude of the mentioned mechanisms have aroused from discussions concerning fossil fuels and uranium in general.

1.3 Legislation and regulation overview

27. In all scrutinised Member States the grant of authorisations and permits is for the time being governed by the general legislation in the field of prospection, exploration and production of hydrocarbons.

For instance, in Germany, the exploitation of geographical areas for the purpose of prospecting, exploring for and producing hydrocarbons (oil and gas) is governed by the Federal Mining Act of 1982, as amended. It sets the framework for petroleum development with the individual federal states prescribing local regulations. In practice, the states are responsible for overseeing oil and gas licensing and operations.²⁴

²² Projet de loi pour instituer notamment "de nouvelles procédures de consultation" du public avant la délivrance des permis de recherche, i.e. draft law setting up, among other things, new public consultation procedures before the delivery of an exploration autorisation.

²³ Minerallagen, 1991:45.

²⁴ Nonetheless, the mining authority in the state of Lower Saxony oversees oil and gas fields not only in Lower Saxony but in Bremen, Hamburg and Schleswig-Holstein as well as all offshore areas.

28. As a general rule, no separate legislation, regulation or provisions exist with a view of granting authorisations/permits for conducting shale gas activities specifically. Things are slowly changing with this respect. In Poland, regulations under the new Geological and Mining Law of 9 June 2011 (“NGML”) touching e.g. upon issues related to shale gas are being drafted. In France, the Prohibition Act may be viewed as a law regulating shale gas specifically –although it prohibits shale gas activities (and is not limited to them). In Germany, the bill recently introduced by the North Rhine Westphalian government to the Bundesrat also shows that shale gas activities specifically triggered new pieces of and/or changes to legislation.

29. Without exception, the mining legislation fulfils a central role in governing the authorisation and permitting procedures for the prospection, exploration and production of hydrocarbons, including shale gas. The principle under which an authorisation and/or permit is required for undertaking shale gas activities finds its legal basis in the mining legislation of the four scrutinised Member States.²⁵ This basic act is then implemented by ordinances and decrees. In Germany, the Federal Mining Act is decided on federal/national level. However, implementation and supervision of it fall under the competence of the Länder.

30. In the field of granting authorisations/permits for hydrocarbons exploration/production, other legislation than the one limited to specifically governing mining activities plays an important role in some of the scrutinised Member States. In Poland e.g., the Freedom of Economic Activity Act²⁶ also sets forth requirements to be met in the authorisation applications.²⁷ In Sweden, the authorisation required under the Minerals’ Act is limited to an authorisation to prospect/produce shale gas only. Every entity that conducts “environmentally hazardous activities” needs moreover to adhere to the procedure described in the Environmental Code.²⁸ Therefore, any exploration authorisation holder needs to make a notification under the Environmental Code before it can start exploration works (i.e. drilling activities). Any concession holder in Sweden needs to obtain a permit under the Environmental Code before it can start production works.

31. Legislation governing land property, workers’ safety and security, liability, pressure equipment and the use of chemicals is applicable, to some extent, to shale gas activities. Furthermore, due to its important environmental impact, environmental legislation plays an important role in governing shale gas activities.²⁹ In Sweden and France, these different aspects

²⁵ Germany: Bundesberggesetz of 13 August 1980 (Federal Mining Act – « BBergG »);
France: Code Minier, as modified by Ordinance 2011-91 of 20 January 2011 (“Mining Code or New Mining Code”);
Sweden: Minerallagen of 1 July 1992 (“Minerals’ Act”);
Poland: Prawo Geologiczne i Górnicze of 4 February 1991, J.o.L. 2005, n° 228, item 1947 (Geological and Mining Law Act – “GML”). This Act will be replaced by the Geological and Mining Law Act of 9 June 2011, to enter into force on 1 January 2012 – not yet published (“NGML”).

²⁶ Also called Freedom of Business Activity Act, J.o.L. 2010, n° 220, item 1147 (Act of 2 July 2004).

²⁷ In order to obtain a concession, a company needs to be duly registered in Poland in compliance with the Freedom of Economic Activity Act. Furthermore, the provisions in the Freedom of Economic Activity Act that concern the procedure for the granting of concessions apply in areas that are not regulated by the GML.

²⁸ Environmental Code, 1998:808 (entry into force on 01/01/1999) and its Ordinance concerning Environmentally Hazardous Activities and the Protection of Public Health (1998:899).

²⁹ As will be seen below, in all scrutinised Member States legislation related to water, environmental impact assessment, public access to environmental information, emissions in the air, environmental

are to a great extent governed by the Environmental Code, whereas in Germany and Poland several laws apply. The majority of the environmental legislation is the result of transposition of EU Directives.

1.4 Assessment

32. All four Member States have or had shale gas projects on their territory. The number of projects and the stage they are in differ. In Sweden, for example, the areas licensed for shale gas prospection activities are rather small in comparison to other Member States. Poland has granted the highest number of authorisations of all scrutinised Member States. In all of the scrutinised Member States, exploration projects for shale gas are in an initial phase. Only in Poland, and to a more limited extent, Germany, drilling activities have already begun or are about to begin. In France, on the contrary, the ban on hydraulic fracturing has put on hold all shale gas activities. According to the Swedish Mining Inspectorate, Sweden is the only Member State where an exploitation concession has been granted (for a small scale operation). However, this has not lead to the actual launch of exploitation activities.

33. In most of the scrutinised Member States mining legislation plays a pivotal role in governing the procedures and principles of granting authorisations and/or permits for prospection, exploration and production of hydrocarbons. However, in Sweden the main permitting procedure with a view of obtaining the permit for conducting environmentally hazardous activities required to launch production operations, is governed by the Environmental Code ("EC"). The same is valid for the declaration required to start exploration operations. This relates to the fact that all activities being considered as environmentally hazardous (type A and type B activities) require a permit under the EC. Also in Poland, other regulations govern important parts of the authorisation/permitting procedures.

34. Shale gas activities entail numerous different aspects in the field of use of land, land property, liability, use and transport of chemical substances, environment, etc. This has an impact on the legislative framework governing the process of shale gas exploration and/or production as a whole. Besides the mining legislation governing the core authorisation and/or permitting procedures, legislation in the field of environment plays an important role. Overall, the legislative framework governing shale gas activities consists of different legislations covering the different aspects related to shale gas exploration, prospection and production, except maybe in Sweden where (almost) all environmental issues are addressed in one single piece of legislation and one single procedure, as we will see it below.

liability, protection of wild life, noise pollution, waste, pressure equipment, soil and use of chemical substances governs shale gas activities (to a differing extent).

2 Licensing and core-permitting procedures

2.1 Introduction

35. This section aims at analysing the practicability and appropriateness of the existing authorisation/licensing and core-permitting procedures in the field of hydrocarbons. In none of the scrutinised Member State, specific procedures for obtaining authorisations/permits in the field of shale gas exist: general law is applicable.

36. In order to determine the level of appropriateness and practicability of these procedures, the following will be analysed:

- The number and role of the competent authorities in the authorisation and core-permitting procedures; and
- The core procedures properly speaking (e.g. duration, documents to submit, criteria for granting the authorisation and/or permit, appeal possibilities, public participation); and
- The authorisations and/or permits properly speaking (e.g. duration, content, conditions, stages of prospection/production it covers, sanctions in case of non-compliance).

2.2 Competent authorities for granting authorisations/core-permits

37. None of the scrutinised Member States has an authority that specifically deals with granting authorisations/permits in the field of shale gas. The authorities responsible in the field of hydrocarbons are also responsible for granting authorisations and/or permits for exploring, prospecting and/or producing shale gas.

Authorities having competence in the field of granting authorisations and/or permits for exploring, prospecting and/or producing hydrocarbons:

- (i) Germany: State Economic Ministry on a Länder/regional level³⁰ and state mining authorities on a departmental level;
- (ii) France: Ministry of Environment, Energy and Sustainable Development with the support of the General Directorate Energy Climate (grant of authorisations); and the Prefect(s) of the concerned department(s) (grant of permits);
- (iii) Sweden: Swedish Mining Inspectorate (in some cases: the Government) for grant of authorisations; Country Administrative Board and concerned municipalities (environmental notification) and Land and Environmental court (grant of environmental permits);
- (iv) Poland: Ministry of Environment, with the support of the Department for Geology and Geological Concessions (grant of authorisations); and the State Mining Authority (approval of the operational plant).

³⁰ Except Hesse and Thuringia: State Environmental Ministry. Some Länder work together by sharing just one competent authority governing mining activities in two or more Länder.

38. Sweden, France and Poland have a single authority that is competent for granting authorisations for the prospection, exploration and/or production of hydrocarbons. In Poland, the responsible minister has the competence for granting hydrocarbon authorisations for exploration/prospection and production.³¹ In France, exploration authorisations are granted by ministerial decree by the Ministry of Environment, Energy and Sustainable Development. Production authorisations are granted by means of Decree after advice of the Conseil d'Etat. In France, the Directorate General who is responsible for instructing and preparing these authorisations is the DGEC.³²

39. In Sweden, an independent agency, the Swedish Mining Inspectorate, is competent for granting authorisations both in the field of exploration/prospection and production. The Mining Inspectorate reports that it handles the right to use the land for exploration activities as well as the access to the land needed for exploitation operations. It is a special body within the Geological Survey of Sweden.

Apart from the Chief Mine Inspector, the Inspectorate disposes of two engineers, one legal advisor and five other employees. The Inspectorate deals with all kinds of substances as regulated in the Minerals' Act. It does not dispose of a special section dealing with shale gas applications. However, one of the engineers has a good geological, technical and historical knowledge concerning shale gas. No specific expertise is being developed regarding shale gas, since the Inspectorate has not detected such a need. The Swedish Mining Inspectorate can also refer the decision to grant an exploitation authorisation to the Government. This can be done when the matter is of particular importance from a public interest point of view. Furthermore, the Government also decides when the County Administrative Board ("CAB") and the Mining Inspectorate have differing opinions on an E.I.A. as provided by the applicant with a view of obtaining an exploitation concession.

In granting authorisations, the Mining Inspectorate has indicated that it closely collaborates with the CAB and, if need be, the municipalities. This collaboration concerns the access to land, whereby the Mining Inspectorate is informed by the CAB and/or municipalities on other land use aspects of the concerned area that may be of interest for future activities (e.g. nature preservation, reindeer hooding, rail road issues). Also in the framework of the environmental impact assessment the CAB and/or the municipalities need to provide a binding opinion before the mining inspectorate can proceed with the exploitation authorisation procedure.

According to the Mining Inspectorate, environmental issues arising in the framework of future exploration activities are governed by the CAB or the municipalities, whereas the environmental permit required for starting exploitation activities is tried by the Land and Environmental Court. As the municipalities have an important role to play in the authorisation procedures, it seems that it is important, in Sweden, from an operator's viewpoint, to communicate well with them on the planned activities.

40. In Germany, the legislative powers regarding hydrocarbon activities are "concurrent" between the Federal Government, the Länder (States). The Länder may only pass laws in this area if the Federal Government has not already done so. In the field of hydrocarbons, the Federal State has taken over the power to adopt legislation by adopting the "Bundesberggesetz". The Länder have the power to implement such federal law.

³¹ Minister of Environment.

³² The General Directorate Energy Climate (Directorat Général Energie Climat or "DGEC") of the Ministry of Environment, Energy and Sustainable Development.

Moreover, following the recent constitutional reform, the Länder can adopt specific regulation differing from the legislation of the Federal State for the areas laid down in Article 72 (3) of the Federal Constitution. In the fields of hydrocarbons, this applies to nature preservation, land use, water management and a few other areas (see No. 2 to 5 of Article 72 (3) of the Constitution).

The Länder through their administrative bodies are primarily responsible for enforcing most laws, both federal and state, including the Bundesberggesetz. Federal government has only limited authority to review enforcement of federal laws by the Länder.

The licensing system in Germany is organised on a state rather than on a federal level. Based on this, the responsible agency granting licences/authorisations differ from state to state. Some Länder work together by sharing one competent authority that governs mining activities in more than one Land.

In most Länder, the State Economics Ministry is competent on a regional level³³ and state mining authorities exist on a departmental level.³⁴ In North Rhine Westphalia, for instance, the Ministry of Economic Affairs and Energy is the competent supervising authority in the field of energy and mining regulations. The authorising authority is the lower mining authority ("Bezirksregierung Arnsberg").³⁵ The bulk of Germany's gas and oil production is from the states of Lower Saxony and Schleswig-Holstein where the State Authority for Mining, Energy and Geology, Clausthal, is responsible for granting licences.³⁶

In North Rhine Westphalia, the specific competence regarding hydrocarbons is located in the Energy and Mining Department of the Ministry of Economic Affairs and Energy. The mining section of this department deals with all activities concerning mining, including shale gas activities. The mining section of the Ministry of Economic Affairs and energy is composed of one engineer specialised in mining activities, a geologist and lawyer as well as administrative staff (two persons). For the technical aspects, there is a team of mining civil servants (located in Dortmund) and a group of eleven civil servants, dealing with shale gas and coalbed methane.

Affected local and regional authorities participate in the core authorisation and permitting procedures. The geological survey also takes part in the authorisation procedures.

The competence of the North Rhine Westphalian Ministry of Economic Affairs and Energy covers environmental aspects (such as regulation governing emissions). However, some of these aspects also are covered by the North Rhine Westphalian Ministry of Environment (especially in the field of water regulation). The mining civil servants, who are ultimately responsible for delivery of the authorisations, will not award an authorisation without consent of the water civil servants (under the authority of the Ministry of Environment). According to the Mining Section of the Ministry of Energy of North Rhine Westphalia, any problems arising between the mining civil servant and the water civil servant will be solved on the level of the two ministries. Nevertheless, the Ministry of Environment can always intervene on its own initiative, when environment issues appear to be affected. Furthermore, the mining authorities always have to inform the Ministry of Environment, if they expect potentially significant environmental impacts.

The competent Ministry of Economic Affairs and Energy as well as the mining authority request statements by the regional and local authorities. These statements are taken into account when dealing with authorisation and permit applications during the authorisation and core-permitting procedures.

³³ However, in Hesse and Thuringia, the State Environmental Ministry is competent.

³⁴ A detailed overview of all competent authorities on departmental level can be found in section 2.3, question 10 c) of the legal questionnaire to national correspondents for Germany.

³⁵ <http://www.bezreg-arnsberg.nrw.de>. (located in Dortmund).

³⁶ <http://www.lbeg.niedersachsen.de>.

The authorisation for any exploration/exploitation activity also takes into account the advice of various other authorities, such as the zoning authorities, the authorities responsible for protection of the landscape and the water authorities.

41. In Poland, as we have mentioned it, the Minister of Environment is competent for granting authorisations allowing the exploration/exploitation of shale gas. The Department for Geology and Geological concessions within the Ministry of Environment (“DGGC”) has a crucial role in conducting the procedure and presents the authorisation drafts to the Minister for Environment for approval. The monitoring of the use of authorisations also falls under the competence of the DGGC. Furthermore, the DGGC also has competence in e.g. the field the general authorisation policy.

The DGGC furthermore evaluates whether an environmental decision is required. The possible impact of the activity to be authorised on Natura 2000 sites is examined in cooperation with the Regional Directorate for Environmental Protection.

The supervision of geological and mining operations as well as approval of the plan of operations of the mining plant lies in the hands of the State Mining Authority (or “SMA”) and Regional Mining Authorities.³⁷ Within the Mining Department, seven people deal with shale gas activities. Furthermore, the concerned local authorities need to give their opinion if the authorisation relates to on shore exploration/exploitation activities. Apart from this local consent, the grant of an exploitation concession requires the consent or opinion of the Minister responsible for economy and the Mining Authority.

Within the DGGC, giving work to forty people, two divisions deal with shale gas. The Energy Resources Division is among others responsible for administrative issues related to shale gas including conducting the authorisation procedure. The Promotion and Negotiation Section is among others responsible for non-administrative issues related to shale gas including EU affairs. Within the State Mining Authority there is a team of borehole mining and drilling.

Knowledge on shale gas activities appears to be of utmost importance for the Polish administration. Trainings, conferences, seminars and cooperation with countries disposing of extensive experience in the field of shale gas (Canada, the US) are organised to this end. Environment also appears to be of utmost importance for the Polish administration. Expertise is sought from scientific organisations, such as the Polish Geological Survey, e.g. on the hydraulic fracturing process.

42. In France and Sweden, the authorities competent for granting permits differ from those authorities competent for granting authorisations with a view of exploring/prospecting and producing of shale gas. In France, the Prefects of the concerned department grants the declaration to start exploration works³⁸ (or “exploration permit” or “DOTM”) as well as the permit to start production works (or “exploitation permit” or “AOTM”).³⁹ When several Prefects are territorially competent, one coordinating Prefect is in charge of coordinating the procedure among them. In Sweden, the notification that is required for conducting environmentally

³⁷ They also approve the traffic plan for the plant performing geological works. Until 14 September, they have issued fourteen decisions approving the plans of traffic in the framework of shale gas exploration projects. Regional Mining Directorates having issued traffic plans for shale gas exploration projects are to be found in Poznan, Warsaw and Lublin.

³⁸ I.e. Déclaration d’Ouverture de Travaux Miniers (« DOTM »).

³⁹ I.e. Autorisation d’Ouverture de Travaux Miniers (« AOTM »).

hazardous activities during exploration (i.e. a type C activity, such as exploratory drilling) needs to be submitted to concerned municipality⁴⁰ (local level) or the CAB (regional level). As a general rule of thumb, the CAB looks upon compliance with the national environmental rules, whereas the municipalities verify compliance on a local level. The application for the permit that is required for conducting environmentally hazardous activities during production/exploitation (i.e. a type A or B activity) needs to be submitted to the Land and Environmental Court. The Swedish Environmental Protection Agency can be involved in the E.I.A., if the matter is of significant importance to the Member State. However, shale gas projects in Sweden are small scale. Therefore, up to now, such an involvement has apparently not occurred yet.

43. It appears that in all Member States the local level is, to a differing extent, consulted before an authorisation/permit is granted. Furthermore, due to the major environmental impact of shale gas activities, environmental bodies are involved in all Member States in their quality as advising bodies and/or as bodies having to give consent in order to proceed with certain activities. In France, several concerned regional and local bodies provide the DGEC with advice on authorisations applications.⁴¹

2.3 Authorisation and permitting procedures in the Member States

44. The analysis of the procedures to be followed to start shale gas exploration/prospection and production activities reveals that two groups of Member States need to be distinguished. In Poland and Sweden exploration and production activities each require a single authorisation under the mining legislation, i.e. a one-step authorisation procedure: when a authorisation is granted, no additional core-permit under the mining law is needed.⁴²

Authorisations and permits required for exploring, prospecting and/or producing hydrocarbons:

- (i) Germany: Mining legislation requires exploration/prospection authorisation and exploitation concession (legal title) as well as approval of operating schedule (exploration) or mining planning permission (production)⁴³ (realisation of legal title);
- (ii) France: Mining legislation requires exploration/prospection authorisation and exploitation concession (legal title) and approval of exploration/prospection and exploitation permits (realisation of legal title);
- (iii) Sweden: Mining legislation requires exploration/prospection authorisations and exploitation concession as well as plan of operations to be drawn up by operator (not to be considered as

⁴⁰ If the activity has a significant impact on the environment and is not tried under the Environmental Code.

⁴¹ Such bodies are e.g.:

- The General Council of Industry, Energy and Technology ("CGIET"): advices on draft allotment decision in case of more than one applicant (area than can be divided into different zones);
- The Regional Division of Industry, Research and Environment/Technology ("DRIRE") and Regional Directorate of Environment, Development and Housing ("DREAL"): verification of admissibility of application for exploration authorisation and consultation of local administrative services.
- Departmental Council of Environment and Risks on Health and Technology ("CODERST"): advises Prefect on AOTM before he issues a decree ("arrêté").

Furthermore, the Bureau for exploration-production of hydrocarbons can assist the entity willing to apply for an exploration permit with a view of composing his application file.

⁴² This does not mean that no permit is required under other legislation, more specifically in the field of the environment (e.g. notification/permit for environmentally hazardous activities under the EC in Sweden).

⁴³ Different types of operation schedules exist.

a separate permit as is the case in Germany and France). A notification/permit for environmentally hazardous activities is required under the Environmental Code;

(iv) Poland: Mining legislation requires exploration/prospection authorisations (with mining usufruct for exploration/prospection) and exploitation concession (with mining usufruct for exploitation/production) as well as plan of operations of mining plant (not to be considered as a separate permit as is the case in Germany and France).

45. In Poland, an exploration or production concession (“koncesja”) is required to prospect, explore or to produce hydrocarbons. This concession is an administrative decision prepared and drafted by the DGGC and issued by the Ministry of Environment. Additionally, in order to be able to prospect, explore or produce hydrocarbons, the entity willing to explore/prospect or produce has to conclude an exploration or production mining usufruct agreement with the State Treasury. Under such an agreement the entity obtains the right to undertake exploration/production activities in the soil owned by the State Treasury.⁴⁴ From a strictly legal point of view, the procedure to obtain a mining usufruct agreement and the core authorisation procedure are separate. However, in practice they consist of one procedure.

Commencement of mining activity requires the approval of a mining plant operations plan as well as a plan for performance of geological works (implementing the drilling technique) by the regional mining authorities. A drilling permit is required in order to be able to start vertical drilling activities.⁴⁵ In the framework of this permit, companies submit an updated geological report to the Mining Authority, with specific drilling information. Furthermore, issues related to use of public roads and safety considerations are discussed with the concerned local and regional authorities.

Any permit required under environmental legislation has to be granted before approval of the mining plant operation plan. These environmental permits are elements of the application for approval of the mining plant operations plan.

46. In Sweden, the Minerals’ Act lays down that an exploration authorisation is required in order to prospect or explore for hydrocarbons. An exploitation concession is required for production of hydrocarbons.

However, any exploration activity (such as drilling) may require notifications in accordance with the Environmental Code as an “environmentally hazardous activity”. Drilling activities for the purpose of exploring for hydrocarbons are considered to be a type C activity in accordance with the Ordinance concerning Environmentally Hazardous Activities and the Protection of Public Health. Such type of activity requires a notification with the concerned municipality or the County Administrative Board as well as consultation of the concerned land owners. Drilling activities for the purpose of producing hydrocarbons are considered to be an activity, for which a permit under the Environmental Code is required. This permit is granted by the Land and the Environmental court. Furthermore, drilling activities always require the drawing up of a plan of operations by the operator willing to drill. It contains a description of the planned exploration work, an assessment of the extent to which the work can affect public and private interests and the location of the planned works. Those persons affected by the plan must give their consent. If these persons do not object within three weeks, the operations can start.⁴⁶ If no consent can be

⁴⁴ Due to their location deep under the surface of the earth, shale gas deposits are considered to be property of the State.

⁴⁵ We assume the drilling permit is part of the overall operations plan of the mining plant.

⁴⁶ Landowners have to receive notice of the works two weeks before they start.

reached, the authorisation holder will refer the plan to the Swedish Mining Inspectorate for decision.

47. Under the German and French mining legislation, there is a kind of two-step authorisation procedure. Both mining legislations clearly distinguish between the mining authorisations as a necessary legal title and their realisation by means of operational activities for which an independent permission is required. Launch of exploration or production operations requires a separate permit under the mining legislation.⁴⁷

48. In Germany and France, an entity willing to conduct hydrocarbon exploration activities needs to obtain an exploration authorisation.⁴⁸ If the entity wants to start hydrocarbons production, it requires a production authorisation ("concession").⁴⁹ In Germany, these authorisations do not cover the execution of any measures. They only entitle the operator to exercise the exclusive right to prospect or exploit for hydrocarbons in a given area. Activities, such as exploratory drilling, require a permit, i.e. the approval of an operation plan ("Berg Betriebsplanzulassung"). Hydraulic fracturing requires the approval of a specific Betriebsplan.

2.4 Authorisation procedures properly speaking

2.4.1 General principles laid down in the Hydrocarbons Directive

49. At the EU level, the legal basis for prospecting, exploring and extracting hydrocarbons is Directive 94/22/EC on the conditions for granting and using authorisations for the prospection, exploration and production of hydrocarbons (the "Hydrocarbons Directive").⁵⁰ It lays down the general principles on which the national regimes should be based. The decision whether to open up or not the national reserves to exploitation remains a national matter.

50. On the basis of the Hydrocarbons Directive national legislations on the matter have been adopted and/or modified. The Directive focuses on the procedures for granting and using authorisations. The concept of authorisations is defined in Article 1, § 3 as:

"Any law, regulation, administrative or contractual provision instrument issued thereunder by which the competent authorities of a Member state entitle an entity to exercise, on its behalf and at its own risk, the exclusive right to prospect or explore for or produce hydrocarbons in a geographical area."

51. Article 3, §2 of the Hydrocarbons Directive specifies that the procedure to obtain an authorisation has to be initiated:

⁴⁷ The permitting procedures in France and Germany will be elaborated in section 2.5.

⁴⁸ Germany: « Erlaubnis »

France: « Permis exclusif de recherches »

⁴⁹ In Germany a mining enterprise may also apply for a mining property (« Bergwerkseigentum »). Such a mining property is basically similar to a production licence, but with further reaching rights.

⁵⁰ Directive 94/22/EC of the European Parliament and the Council of 30 May 1994 on the conditions for granting and using authorisations for the prospection, exploration and production of hydrocarbons, OJ L 164, 30.06.1994.

- Either at the initiative of the competent authorities by means of a notice inviting applications, to be published in the Official Journal of the European Union;
- Or by means of a notice inviting applications to be published in the Official Journal of the European Union following submission of an application by an entity. Other interested parties then have at least 90 days to submit an application.

Article 3, §3 foresees the possibility to initiate a procedure without initiating a procedure by means of notice inviting applications, if the area for which authorisation is requested:⁵¹

- Is available on a permanent basis; or
- Has been subject to a procedure by means of notice inviting applications which has not resulted in the grant of an authorisation; or
- Has been relinquished by an entity and is not automatically available on a permanent basis.

52. These general principles laid down in the Hydrocarbons Directive will be taken into account whilst analysing the core authorisation procedures in the scrutinised Member States.

53. In none of the scrutinised Member States, separate authorising and/or permitting procedures exist with a view of granting authorisations/permits in order to prospect for/explore or produce shale gas. Furthermore, none of the identified authorising and permitting procedure contains specific provisions on shale gas.⁵² The general authorisation and permitting procedures for hydrocarbons apply fully to exploration/prospection and production activities in the field of shale gas.

2.4.2 Connection with the Hydrocarbons Directive

54. Two groups of authorisation procedures can be distinguished. In accordance with Article 3 of the Hydrocarbons Directive, the Polish and French mining legislation provides for tender procedures. In Sweden and Germany, there is no such tender procedure.

Authorisations procedures in the light of the Hydrocarbons Directive

- (i) Poland: tender procedure (Article 3, §2 (a)), quasi-tender procedure (Article 3, §2 (b)) and non-tender procedure (Article 3, §3);
- (ii) France: quasi-tender procedure (Article 3, §2 (b));
- (iii) Germany and Sweden: non-tender procedures without formal licensing rounds.

55. In Poland, the NGML foresees a tender procedure in accordance with Article 3, §2 (a) of the Hydrocarbons Directive. Such a procedure is initiated by the DGGC, once an environmental conditions decision following an E.I.A. is obtained. It is the DGGC who has to obtain this positive E.I.A., and not the applicant. Furthermore, applicants can initiate a quasi-tender procedure in accordance with Article 3, §2 (b) of the Hydrocarbons Directive. Finally, in application of Article 3, §3 of the Hydrocarbons directive, a koncesja can be granted through a non-tender procedure.

⁵¹ Areas subject to this authorisation procedure have to be indicated in a notice to be published in the Official Journal of the European Union.

⁵² The French Prohibition Act can be seen as a specific piece of legislation. However, it does not deal with authorisation and permitting of projects as such but regulates rather specific aspects (see n° 25).

The tender procedure may not be followed, if no more than one company is candidate for obtaining an authorisation.

56. In France, the procedure as laid down by the mining legislation⁵³ is an application of the quasi-tender procedure mentioned under Article 3, §2 (b) of the Hydrocarbons Directive. The applicant initiates a tender procedure by submitting a first application to the competent Minister. After the concerned Prefect has made sure the application file is complete, the competent minister publishes the notice inviting other applications in the Official Journal of the EU and the Official Journal of the French Republic. Competing applications also are submitted to the competent Minister. The quasi-tender procedures for obtaining an exploration/prospection permit on the one hand and a concession on the other hand are similar. However, the tender notice with the view of granting a concession is subject to a public inquiry.

57. In Germany and Sweden, the Federal Mining Act and the Minerals' Act provide for non-tender procedures. In both countries, applications for exploration authorisations and exploitation concessions are made directly to the competent authorities by means of an application submitted by the concerned entity. There are no formal licensing rounds in Germany. Individuals, corporate bodies or commercial partnerships can apply for licences at any time. Within these applications the field proposed for exploration or envisaged for production must be specified, a work program has to be proposed and evidence of financial resources must be provided. In addition, the application for an exploitation concession has to include information about the reservoir and a technical evaluation that demonstrates that the field can be developed.

2.4.3 Eligibility of areas

58. In all of the scrutinised Member States, as a matter of principle those areas where there is a reason to believe that an authorisation could lead to successful exploration/production results are eligible for being covered by an authorisation.⁵⁴ This has to be indicated in the authorisation application under the form of notes/analyses indicating the likelihood of a successful prospection/exploration/production.⁵⁵ The mining legislation foresees no specific legal criteria determining which area can be covered by an authorisation. However, this does not exclude that certain areas cannot be explored and/or used for hydrocarbons production under other legislation (such as property legislation⁵⁶ and environmental legislation).

59. In Poland, prospection/exploration activity may not infringe the designation of the land, as specified in the local spatial development plan. If such a plan does not exist, exploration/prospection activities are only permitted, provided they do not infringe the way of

⁵³ I.e. Decree 2066-648 of 2 June 2006 mining titles and underground storage titles ("decree 2006-648").

⁵⁴ However, France lays down criteria for determining the perimeter of the areas that may be subject to authorisation. This happens on the basis of meridian grids and geographical parallels (article 7 of Decree 2006-648 and article 8 of the Decree of 28 July 21995 fixing the modalities for mining title applications and their annexes – Decree of 28 July 1995).

⁵⁵ E.g. in France, the application for an exploitation concession needs to contain a work programme with production perspectives. In Sweden, the application for an exploration authorisation needs to contain all circumstances that would suggest an exploration leading to the discovery of the concerned hydrocarbons.

⁵⁶ In Sweden, for instance, exploration activities cannot be conducted within 100 metres of a building without the landowner's permission.

using the property as specified by the municipality in the spatial development plan. Furthermore, in Poland the surface for which the exploration authorisation is granted may not exceed 1.200 km². The authorisation holder always needs to have approval from the concerned land owners as a *conditio sine qua non* before any authorisation can be granted. This approval takes place under the form of a civil agreement with the concerned landowners.

60. In all scrutinised Member States, a distinction is made between ground ownership and the ownership of mineral deposits below the surface. The latter belong to the State:

In France: Article L 122-1 of the New Mining Code lays down that any holder of an exploration authorisation is entitled to conduct all necessary prospection activities (regardless of consent by the ground owner). Article 552 of the Civil Code, laying down that ownership of the ground involves what is above and below ground, is not applicable to mineral deposits that may be contained there. These are distinct from the ground ownership and owned by the State.

In Sweden: According to section 1 of the Minerals' Act, exploration and exploitation of gaseous hydrocarbons can be done, no matter what is the ownership of the covered land.

In Germany: Mineral resources are considered to be *Bergfrei* (free from land-property) by virtue of the article 3, §3 of the Federal Mining Act.

In Poland: According to the NGML, all mineral resources are owned by the State Treasury, except for those minerals that constitute parts of land surface properties (not applicable to shale gas).

61. However, as mentioned above, a company willing to develop exploration/prospection activities in Poland, also needs to obtain a mining usufruct right, i.e. an agreement with the State Treasury. Such an agreement is required for mineral deposits which do not constitute a component of the land real estate, but are the property of the State Treasury. This mining usufruct is a written agreement with the State. It contains the right to prospect and explore for hydrocarbons, and later exploitation. It furthermore specifies the amount to be paid for the mining usufruct rights. Whereas the mining usufruct is an agreement providing the mining company with the right to undertake prospection, exploration and/or production activities in soil owned by the State, the *konsjesa* is an administrative decision. The mining usufruct does not constitute a legal title of property of the concerned area. It merely gives the right to use the mineral resources located underneath the area. Such an agreement does not exist in France, Germany and Sweden.

62. In Sweden, the Swedish Mining Inspectorate does not have to assess the location with a view of granting an exploration concession. The High Court has confirmed this, when overruling appeal against a decision of the Swedish Mining Inspectorate to grant exploration authorisations. The High Court stated that the Mining Inspectorate only needs to consider the ability of the applicant to perform exploration activities.⁵⁷ The location only is assessed by the Inspectorate (in concertation with the CAB) in the framework of the procedure to obtain an exploitation concession.

⁵⁷ Abilities of the applicant relate to its economical and financial resources as well as the capability for undertaking exploration activities.

63. In Sweden, as in Poland, legal proceedings for designation of land are held. However, this happens at the request and cost of the concession-holder and takes place after the grant of the concession and after the grant of the permit by the Land and Environmental Court.⁵⁸ This determines land within the concession area, which the concession-holder may use for exploitation of the mineral deposit. A decision is also taken regarding the land, within or outside the concession area, which the concession-holder may use for activities related to the exploitation. In this connection, the nature of the activity shall be stated. When an exploitation concession is terminated, the concession-holder shall, at that date, forfeit the right to land assigned to him. During this procedure the operator has to agree with the concerned landowners on the compensation to be provided by the operator. If no agreement is reached, the Swedish Mining Inspectorate intervenes and calls all landowners for a meeting with the operator with a view of establishing a compromise. If this does not lead to an agreement, the Swedish Mining Inspectorate decides and may demand the landowners to sell their land (kind of expropriation). However, the procedure for designation of land can never lead to a cancellation of the initially granted authorisation.

64. In all scrutinised Member States exploration/production activities in areas protected under the Natura 2000 network are subject to strict conditions. In all countries, the applicable legislation foresees an assessment procedure to verify whether mining activities can have an adverse effect on the protected areas. Overall, no exploration/prospection/production activities are allowed if they are harmful to the protected areas. If interventions in the area are unavoidable, compensatory measures need to be foreseen.

65. In Germany, the protection of Natura 2000 areas is an integral part of the permitting procedure. No separate permit is required. In Sweden, the Mining Inspectorate informs the applicant on the Natura 2000-character of the area in the framework of the procedure to obtain an exploration authorisation, on the basis of information coming from the CAB. During the exploitation concession procedure, it assesses together with the CAB compliance with Natura 2000-regulation (whilst trying the location). Exploration/prospection activities only require a notification. Depending on the kind of impact the activities may have on the Natura 2000-area, a separate permit can be granted by the CAB. This permit is required before any activity can start. In Poland and France, the assessment can be covered by the environmental impact screening or assessment. Both countries closely follow the procedure as laid down in Directives 92/43/EEC and 2009/147/EC.⁵⁹

2.4.4 Overall duration of the authorisation procedures

66. The overall duration of the authorisation procedures depends on various elements, such as the size of the area to be authorised, the accuracy of the documents in the application file, and the complexity of the questions raised during the authorisation procedure.

⁵⁸ Concession and environmental permit need to have gained legal force, before the procedure of designation of land can be held.

⁵⁹ Legal basis for Natura 2000:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation on natural habitats and of wild fauna and flora, as amended, OJ L 206, 22.07.1992;
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds, OJ L20, 26.01.2010.

67. We may assume that lack of experience and knowledge of shale gas exploration project could have an impact on the overall duration of the authorisation procedures. Moreover, the areas that are being made subject to shale gas exploration activities are in general larger than those made subject to other hydrocarbon exploration activities. In none of the scrutinised Member States specific time frames are foreseen for shale gas authorisation procedures. However, several of the interviewed authorities have indicated to us that, so far, they have not experienced any difference between the duration of procedures leading to the grant of shale gas exploration authorisations and those leading to the grant of authorisations for exploring other hydrocarbons.

68. In Poland and France the mining legislation prescribes fixed maximum durations for the tender procedure and/or the authorisation procedures. In Poland, the tender procedure may not last longer than nine months (starting from the date of publication of the tender notice). It may take at least six months from the announcement of the tender. The exact duration depends on what is mentioned in the tender specifications. The non-tender may last between one and three months (based on the general rules codified in the Administrative Procedure Code). In Poland consent/opinion required by the concerned municipalities (exploration) and the Minister of economy and the State Mining Authority (exploitation) takes place before the authorisation is granted. Under the NGML, they have about fourteen days to give their consent/opinion on an application. In France, the competent Minister has two years to decide on an exploration authorisation application. A decision on a concession application needs to be reached within three years.⁶⁰

69. In Sweden, the overall procedure for obtaining an exploration/prospection authorisation lasts between three to six months. So far, the Swedish Mining Inspectorate had to deal with one application for shale gas production. This procedure lasted two and a half years. Up to now, it appears to be the only example of an application for a production authorisation in the field of shale gas. The difference in time between the procedure leading to the grant of an exploration authorisation on the one hand and leading to the grant of a production authorisation on the other hand is significant. However, this difference is not due to the specific nature of shale gas activities. The E.I.A. required before obtaining an exploitation concession may take a considerable amount of time especially if the documents provided for in the framework of the E.I.A. are insufficient and the Mining Inspectorate then has to demand clarifications and/or additional documents.

70. In Germany, the mining legislation does not provide for a specific time period during which the authority has to decide upon the application.

2.4.5 Documentation needed for an authorisation application

71. In Poland and France, a difference needs to be made between the content of the tender notice on the one hand and the content of application file properly speaking. The content of the notice inviting applications appears to be similar to the content of the application file properly speaking. The notice focuses more on the conditions of the tender procedure (e.g. tender rules,

⁶⁰ For exploration authorisation applications, advices on the applications gathered by the Prefect have to be submitted to the Minister three months after the publication of the call for competition. For exploitation concession applications, this is 4 months after the end of the public inquiry or the end of the tender timeline (articles 17-32 of Decree 2006-648).

period during which offers can be submitted) and describes the characteristics of the application to be submitted. Overall, the notice determines the content of the applications to be submitted in the framework of the tender procedure.

72. If the procedure is initiated by the competent authority (Poland), the notice contains a description of the area of intended activity, the date of commencement of the project as well as the period for which the authorisation will be granted. It contains furthermore conditions for environmental protection, general safety, securing claims and the establishment of a mining usufruct.

73. All application files contain information on the identity of the applicant,⁶¹ the duration of the authorisation, the area subject to the authorisation,⁶² work programme,⁶³ geological documentation, documents justifying the technical and financial capabilities of the applicant and ways of preventing negative impact of the mining activity.⁶⁴ Furthermore, in Poland and France environmental impact notices (France)⁶⁵ and assessments (decision on environmental conditions following E.I.A. in Poland) are attached to the application. Talisman indicated that it could rely upon the very clear guidelines of the Polish Ministry of Environment for submitting the required documents. These guidelines specified which documents were needed, and what information they had to contain. They made the process for Talisman very clear, and not too much of a burden.

The publication by the competent authority of clear guidelines on which documents to submit and on the content of these documents may have a positive impact on the complexity and the duration of the procedure.

In Sweden, the applicant needs to specify whether the area he is willing to use for exploration/production of hydrocarbons contains any buildings/areas where the Government has decided that exploration works may not be undertaken. The same is valid for Poland, where the applicant has to indicate whether the application covers territories covered by special protection forms (nature and monument protection).

74. Differences in content between the applications for prospection/exploration activities and production activities relate to the working programmes, production perspectives and techniques and the possession by the applicant of a prior exploration authorisation.⁶⁶ In Poland,

⁶¹ E.g. name, registered office, number of the entrepreneur register.

⁶² In France the application file contains a map detailing the perimeter and geographical points serving for determining the perimeter.

⁶³ Containing e.g. description work to be undertaken and in case of a production licence of work already undertaken (and results).

⁶⁴ In Sweden, the application for an exploration licence contains a basic statement with the description of the activity (shale gas exploration), evidence for potential presence of shale gas and production potential (geological survey reports) and the basis of the analysis leading to the conclusion shale gas can be present. This statement is very short (one paragraph).

⁶⁵ In France the environmental impact notice contains geographical data, data on the economic life in the area, data on the state of pollution of the area, evaluation of different sources of pollution, and measures to avoid adverse effects caused by the activities.

⁶⁶ In Sweden, the applicant needs to indicate whether he has a right of priority based on a prior exploration authorisation.

the geological work production programme contains geological and hydrological production conditions. If necessary, this programme also covers conditions for injection of water.

2.4.6 Stages covered by the exploration authorisation

75. In none of the scrutinised Member States, the mining legislation defines in detail the stages that are covered by the exploration authorisation. However, generally speaking, all activities related to exploration/prospection for hydrocarbons are covered by the exploration authorisation.⁶⁷

76. In practice, the Polish exploration koncesja covers: (i) the survey stage (geophysical, geochemical, seismic, etc.); (ii) vertical drilling stage (drilling assessment); (iii) initial horizontal drilling and/or vertical drilling with limited hydraulic fracturing (pilot drilling); and (iv) multiple horizontal drilling/multistage hydraulic fracturing (pilot production testing). However, applications for exploration authorisation contain a geological work programme, determining the geological works to be carried out during a certain period at a given stage. These work programmes (and the mentioned stages in these) are not identical to every granted authorisation. Therefore, exploitation concessions may, apart from the commercial development and production also cover (ii) vertical drilling stage (drilling assessment); (iii) initial horizontal drilling and/or vertical drilling with limited hydraulic fracturing (pilot drilling); and (iv) multiple horizontal drilling/multistage hydraulic fracturing (pilot production testing).

77. In Sweden, the plan of operations required for any drilling activity may contain the above-mentioned stages. However, no such stages are explicitly identified in the authorisation or permitting procedures.

2.4.7 Criteria on the basis of which the authorisation is granted

78. In all scrutinised Member States, applicants need to dispose of the necessary technical and financial capacities to perform the exploration/prospection/production activity. Such capacities have to be demonstrated by means of documents attached to the application file.

79. Other criteria are the suggested technology for conducting works as well as the work programme that will be followed whilst performing the authorised activities. In Poland, the suggested amount of remuneration for the establishment of the mining usufruct is also taken into account. In France, the applicant needs to demonstrate compliance with e.g. the rules on workers' and public health and safety and environmental protection.

80. An operator willing to deploy activities in Sweden can apply for an exploration authorisation on "alum shale",⁶⁸ if it wants to explore for shale gas. This procedure differs from

⁶⁷ In Germany, the authorisation does not cover the survey stage (probably due to its limited impact on environment and surroundings).

⁶⁸ In Sweden, alum shale is considered to be a substance on its own. In the past, it was used as fuel and for construction. However, use of this shale can cause negative radiation. Therefore, currently no one wants to explore for alum shale. However, the procedure has remained and can also be called upon when applying for an authorisation to explore for gas.

the “normal” hydrocarbons procedures in that it is more simplified from the point of view of the applicant.

The applicant does not have to prove that he disposes of sufficient financial and economic resources. The applicant only has to demonstrate that he has not been found unsuitable in the past to perform exploring activities.

Furthermore, the Mining Inspectorate does not have to communicate directly with the land owners under this type of procedure. This happens indirectly by announcement in the press. However, the Mining Inspectorate indicates this procedure is purely theoretical with regards to shale gas activities. It is not aware of any operator having used this procedure in order to obtain an exploration authorisation nor willing to use this procedure in the future.

2.4.8 Involvement of the public in and transparency of the authorisation procedure properly speaking

81. Our analysis reveals that public participation in the authorisation procedure properly speaking is rather limited. In Germany and Sweden, the administrative procedure for the authorisation does not provide for any public participation. In Poland, the tender, quasi-tender and non-tender procedure do not provide for public participation as such (see n° 83 for further refinements).

82. In France, the authorisation procedure for obtaining a production concession foresees public participation. A public inquiry is required in accordance with the Environmental Code.⁶⁹ An independent commissioner-investigator conducts the inquiry, thereby possibly assisted by one or more experts. Fifteen days before the start of the inquiry, its modalities are announced through different channels. If the results of the inquiry lead to serious doubts on the legality of the granting decision, it can lead to suspension of that decision. Such public inquiry is not required in the procedure leading to the grant of an exploration authorisation. The fact that there is no public consultation does not mean that the public is not informed at all. Abstracts of the Ministerial Decrees granting the exploration authorisation are indeed published in the French Official Journal as well as in the local paper. Abstracts of these are moreover subject to visual display (“affichage”) by the concerned Prefects and the concerned mayors are informed of it based on their relationship with the Prefects.⁷⁰

The absence of requirement for public participation and/or information does not prevent companies from developing internal best practices with respect to the information of the public.

At Total, for example, the “HSEQ Charter”⁷¹ contains, among other things, some principles regarding public information and on the realisation of environment impact studies (even when not obliged to do so by law). In the past, Total has e.g. applied these principles to some carbon capture storage installations on the basis of this Charter. According to TGSE, it was the intention of TGSE and TEPF to apply this charter to shale gas activities in France.

As reported by ExxonMobil, In the context of the negative publicity that shale gas has received in Europe following the release of the Gasland documentary, ExxonMobil decided to offer a broad information and dialogue process for maximum public transparency and neutral functional foundation

⁶⁹ Article 132-3 of the new Mining Code iuncto article L 123-4 of the Environmental Code.

⁷⁰ On the basis of general administrative law.

⁷¹ Available on Total web site, see: www.total.com.

for ExxonMobil's activities. The process aims at the preparation of transparent criteria for a safe and environmentally compatible use of the technology in the ExxonMobil project areas. ExxonMobil indeed believes that questions of safety and environmental sustainability of drilling process and hydraulic fracturing technology are to be examined by recognised independent scientists in the sense of a fundamental and elementary environmental impact assessment (generic E.I.A.). The citizens of the exploration region as well as the so-called social actors (e.g. water suppliers, communities, agricultural associations etc.) are to be provided with comprehensive information and get actively involved at the same time. According to the company, ExxonMobil will inform the general public about every step of the procedure and all findings. ExxonMobil sees its responsibility in ensuring transparency on all safety and environmental aspects.⁷²

Also Talisman and Gripen Gas consider the contact with the local level of the utmost importance. Therefore, they held and still hold on their own initiative and on a regular basis meetings with local residents, local mayors and the local water authorities.

83. Most of the public participation occurs in the framework of environmental legislation (i.e. E.I.A.).⁷³

In Poland, in case of tender or quasi-tender procedure, public participation takes place during the procedure leading to the grant of a "decision on environmental conditions"⁷⁴ preceding the authorisation procedure. Such a decision is required for projects that may significantly affect the environment. Such a decision must be issued before the operator can obtain any authorisation for exploration or production. The decision is to be obtained by the DGGC. It is the Regional Directorate for Environmental Protection or the competent head of the municipality with approval of the former who takes this decision, to be attached to the authorisation application. In case of non-tender procedure, social organisations may take part, but such participation is excluded if public participation took place in the procedure for issuance of a decision on environmental conditions.

In Germany⁷⁵ and Sweden such public consultation also occurs in the framework of the E.I.A. Even in France, where the new Mining Code requires a public inquiry (i.e. in the context of the E.I.A. for situations when an E.I.A. is required), this inquiry is conducted following the Environmental Code.

84. Overall, the authorisation procedures contain transparency requirements such as the obligation to publish tender notices in case of tender procedure and the decision granting authorisations. Such publications mention e.g. the area, the substances and the duration of the granted authorisation. In France, an extract of the decree granting an exploitation concession is to be published in every concerned municipality. In Sweden, also the application for an

⁷² Further details can be found on the website of the process facilitators (www.dialog-erdgasundfrac.de).

⁷³ Article 6.2 of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment lays down the public participation requirement, OJ L 175, 05.07.1985. Below, the E.I.A.-process will be discussed in detail.

⁷⁴ I.e. the decision whether or not an E.I.A. will be performed following the mandatory screening procedure. "Decision on environmental conditions" or "environmental decision" is related to the E.I.A. procedure and its preliminary stage – the screening procedure – in such a way that irrespective of the results of the screening (i.e. whether the E.I.A. is eventually conducted or not) the environmental decision is to be always issued.

⁷⁵ In Germany, an E.I.A. only forms integral part of the framework operation plan for any project of which the aimed extraction extends 500k m³/day. Currently, legislation has been proposed which would make an E.I.A. compulsory for the approval of any framework operation plan which includes hydraulic fracturing.

exploration authorisation and exploitation concession needs to be notified in local newspapers of the concerned area and the Official Gazette. Apart from the transparency requirements foreseen in the mining legislation, general⁷⁶ and environmental legislation⁷⁷ lays down the obligation to publish certain documents and/or to make them accessible.

85. In North Rhine Westphalia, a need is seen for closer involvement of the municipalities already in the authorisation procedures. Public interest can intervene as to oppose the permit, only if it concerns an important part of the area that has been authorised. If, for instance, the concern invoked by the municipality relates to 5 km² in an authorised area of 100 km², the public interest invoked by the affected municipality will have no influence on the delivery of the authorisation. Municipalities have the possibility to intervene after the location of an area (in case the mineral resources suffer prejudice that needs to be protected by the public interest). It is, however, important to mention that the decision on the appreciation of the fact whether public interest is at stake lies with the mining authorities. As mentioned above, the Land of North Rhine Westphalia has introduced a bill before the Bundesrat that will give the municipalities more say in the core authorisation and permitting procedures. Apart from this, other initiatives from various ministries are in the pipeline with a view of extending the role of the public interest.

2.4.9 Binding character of decisions and right to appeal

86. In all Member States decisions granting an exploration authorisation or exploitation concession are in principle binding. In Sweden, however, the Swedish Mining Inspectorate may change the authorisation conditions. This can happen when operations by virtue of the authorisation results in considerable inconvenience not foreseen at the moment of the granting decision. Moreover, the French Prohibition Act, as it has resulted in the announced abrogation of three authorisations on 3 October 2011, may be viewed as a serious threat to a reasonable legal security that investors might expect from an authorisation granted legally by an administrative authority.

87. In Poland, the NGML contains mechanisms to increase the stability of the authorisation. Firstly, commencement of the activity covered by the authorisation is deemed an occurrence of irreversible legal consequences. As a result of it, the authority cannot declare nullity of the authorisation. Secondly, revision of the authorisation is only possible after the lapse of one year starting from commencement of the authorised activity.

88. Poland and Germany foresee internal objection procedures. In Poland, the operator can request a motion of reconsideration within fourteen days from the date of delivery of the decision. In Germany, everyone who is adversely affected by the decision may appeal against the decision before the competent authority.

In Sweden and Germany, a decision may be appealed within one month, after which it becomes final.

⁷⁶ In Sweden, the Freedom of the Press Act (1949:105) and the Public Access to Information and Secrecy Act (2009:404) lay down general transparency obligations.

⁷⁷ Legislation transposing directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, OJ L 41, 14.02.2003 (all four Member States have transposed this directive, and thus authorise access of the public to environmental information).

89. In France, the addressee of the decision and/or any person adversely affected by it has two months⁷⁸ to appeal the authorisation decision before the competent administrative tribunals. In France, two requests were filed against the Montélimar authorisation before the administrative tribunal of Paris. The main reason why the requests were filed is the fact that the authorisation was granted without any prior public consultation. However, as we see it in this report, as the law currently stands in France, prior public consultation is not required during the exploration authorisation phase. Since the Montélimar authorisation's announced abrogation of 3 October 2011, one may consider that these requests have become barred ("caduque").

90. In Sweden, the Mining Inspectorate notifies the municipalities and land owners through the above mentioned publication of the application in the Official Gazette and regional/local newspapers. If the municipalities do not provide for a reasonable response within a given period of time, the authorisation is awarded. Then, the affected parties dispose of a month to appeal.

Several municipalities in Sweden have introduced several appeals against exploration authorisations. Communities have appealed against their application for exploration authorisations in the Öland County. However, the Mining Inspectorate was of the opinion that there was no basis for appeal under the Minerals' Act. It has to be mentioned these appeals were aimed at the Mining Inspectorate, since this authority took the decision to grant the authorisation.

91. In all Member States, general administrative law governs the appeal procedures.

2.5 Permitting procedures in Germany and France

92. As mentioned in n° 47, operators having obtained an exploration and/or production authorisation in France and Germany cannot immediately start exploration/production activities under the mining/hydrocarbons legislation. In order to launch operations, an additional permit under the mining legislation is required.⁷⁹

93. In Germany, mining law requires operating permits issued by mining authorities for all exploration and production field operations such as seismic, drilling, production activities, both surface and subsurface, pipeline construction or gas processing activities. In all these permitting procedures, other authorities whose jurisdiction may be involved have a participation right in the permitting process as well as third parties, esp. landowners in the neighbourhood, if the operations might impact adjacent residential areas. The launch of prospection/exploration mining activities requires an operating schedule admission ("Berg Betriebsplanzulassung"), including the planned drilling activities.⁸⁰ For

⁷⁸ Running from the date of publication of the Ministerial Decree in the J.O.

⁷⁹ In Sweden, the operator willing to launch exploration/production activities requires a notification or permit with a view of conducting environmentally hazardous activities. However, this notification/permit is required under the Environmental Code and not the Minerals' Act.

⁸⁰ There are various types of operation schedules:

- The framework operating schedule: overview of the entire mining project (prospection, exploration and production) – only necessary for complex operations;
- Main operating schedule: comprehensive picture of all installations and activities for the next two years and prospective development within that period (its admission allows mining activities);

production activities, where an E.I.A. is required, a mining planning permission (“bergrechtliche Planfeststellung”) is needed. Such operation schedules are drawn up by the authorised company, after which the competent authority has to decide upon it.⁸¹ These schedules cover the whole operation of any mining activity. Furthermore, the specific operating schedule may cover specific activities, such as hydraulic fracturing and building of drilling facilities.

Similarly to the authorisation procedure, the authorised company needs to submit an application with a view of obtaining the operating schedule (exploration) or mining planning permission (production). The mining legislation does not provide for a list of documents. However, applications for such schedule need to contain maps and plans for an overview of the intended activity and documentation on the activity (i.a. expert opinions). Overall, in lack of stipulations governing the permitting procedure, the principle of a simple, functional and fast procedure applies. There is no fixed timeframe the permitting procedures need to follow. However, it can be assumed that the lack of experience in the field of shale gas activities may result in the procedure leading to the admission being longer than procedures in the field of conventional hydrocarbons.

In order to be able to receive the required admission, the authorised operator needs to take the necessary measures of precaution for the protection of i.a. personnel and equipment. Conditions regarding financial security and reliability and competence of the operator's personnel have to be fulfilled. Furthermore, precaution measures for the protection of the surface and after-use of the surface need to be taken.

As is the case for the authorisation procedures, this procedure generally does not provide for public participation. Only if an E.I.A. is required, a planning procedure takes place (“Planfeststellungsverfahren”). This procedure provides for public participation under the form of access to application documents and to the records of the competent authority as well as the possibility to raise objections in writing (followed by oral hearing in which those who have raised objections may take part). The mining planning permission granted in the framework of the planning procedures is to be communicated to those who have raised objections and has to be issued publicly.

The decisions granting an operating schedule admission or a mining planning permission have an equally binding character as the decisions granting authorisation. The objection and appeal procedures are similar and governed by general administrative legislation.

94. In France, launch of prospection/exploration mining activities requires a « Déclaration d'Ouverture de Travaux Miniers » (“DOTM”), whereas launch of production activities requires an « Autorisation d'Ouverture de Travaux Miniers » (“AOTM”).

The procedure to obtain a DOTM is relatively straightforward in comparison to the procedure to obtain an AOTM. The application file to be submitted to the concerned Prefect needs to contain: (i) financial guarantees; (ii) an exposé on the considered exploration methods; (iii) a document on health and security; (iii) a document indicating the impact on water resources; (iv) a danger analysis; and (v) an environmental impact statement. Furthermore, the consultation procedure only requires the public to be informed by means of visual display (“affichage”). This is done by

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- Specific operating schedule: concerns specific parts of the operation (such as drilling works for further exploration of a shale, impact of underground works on the ground surface). It is not part of the main operating schedule, but only applicable in connection with it.
 - Completion operating schedule: description of closing or completion of mining activities.

⁸¹ The mining authority and the Ministry of Economic Affairs and Energy and the Ministry of Environment of North Rhine Westphalia are the competent supervising authorities for assessing the impact of drilling/hydraulic fracturing. As we will see it below, a permit under the water law is required, if the drilling/hydraulic fracturing could affect ground water resources.

the mayors of the concerned municipalities who receive the declaration for information purposes only. The Prefect has two months to lay down, by arrêté, specific provisions in case the foreseen works can have a negative impact on safety, health, environment and private and public buildings. Before these provisions become final, the authorised operator has got fifteen days to make remarks.

The procedure to obtain an AOTM requires a more extended application file. Apart from the information required to obtain a DOTM e.g. a note on the conditions for closing mining activities and cost estimation of the permitted activities needs to be attached to the application.

Furthermore, the file is transmitted to several bodies for advice,⁸² among which the concerned (local) administrative services, the concerned mayors as well as the president of the local water commission.⁸³ The AOTM application is subject to a public inquiry in the framework of the required E.I.A.

As is the case with the DOTM, the Prefect can make known to the authorised company certain prescription relating to i.a. control of work and installations, impact on water and environment, conditions under which analyses and studies have to be made public. The authorised company has fifteen days to make remarks or to object. If the Prefect remains silent for more than 12 months, the AOTM application is considered to be rejected.

2.6 Assessment

95. In analysing the different procedures an operator needs to follow to launch exploration and production operations, we may classify the scrutinised Member States into different groups.

Common features

96. The procedures in all scrutinised Member States have common features.

97. All of them require separate procedures to be followed to obtain an exploration authorisation on the one hand and a production authorisation (or exploitation concession) on the other hand.

98. The procedures established under the general mining/hydrocarbons legislation apply fully to shale gas exploration and production. There are thus no separate procedures or provisions relating to exploration/production of shale gas specifically.

99. In all scrutinised Member States, as a matter of principle, those areas where there is a reason to believe an authorisation could lead to successful exploration/production can be made subject to an authorisation. Such reasons have to be based on studies, previous exploration results, geographical notices and other documents indicating the likelihood of successful exploration/production operations. However, this does not exclude that certain areas are not eligible for exploration/production activities under other legislations than the mining legislation. For example, it is our understanding that it would be difficult for a candidate operator to obtain an authorisation and/or permit for carrying out some extensive exploration and/or production activities in an area protected under the Natura 2000 network. Other national legislation

⁸² Please refer to footnote 41 for an overview.

⁸³ The president of the local water commission gives his view on envisaged injections into water bearing formations that are linked to drinking water reservoirs.

protecting landscapes/cultural heritage/monuments may prohibit activities in a given area. Furthermore, in Poland the operator willing to explore/produce needs to obtain a mining usufruct agreement with the State Treasury giving it the right to use the mineral resources (state property) underneath the area to be authorised. In Sweden, the operator needs to follow a procedure for designation of the land (after grant of the concession and the environmental permit), allowing him to start activities within a given area.

Number of procedures

100. On the level of number of procedures to be followed before shale gas activities (prospection, exploration and/or production) can be launched, two groups can be distinguished. In France and Germany, mining legislation requires not only an authorisation procedure to be followed, but also permitting procedures to follow to start shale gas activities.

Mining legislation in Poland and Sweden requires only an authorisation for starting shale gas activities. However, this does not preclude the fact that other permits under other pieces of legislation such as e.g. environment or permits for certain activities are required before starting activities.

In Poland, for instance, a mining plant operations plan as well as a plan for performance of geological works (implementing the drilling technique) need to be approved by the regional mining authorities. According to our national correspondent, such procedure, however, does not amount to a full scale permitting procedure, as it exists in Germany or France.

101. France and Germany clearly distinguish between the mining authorisations as a necessary legal title and their realisation by means of operational activities for which an independent permission is required. In France, operation of exploration activities requires a Déclaration d'Ouverture de Travaux Miniers, whereas the launch of production activities requires an Autorisation d'Ouverture de Travaux Miniers granted by the local Prefect. In Germany, exploration activities require an additional operating schedule admission, whereas production activities require a mining planning permission. These permits focus on the operation itself. In applying for them, the applicant needs to outline which work needs to be undertaken for realising the exploration or production, what installations will be used, etc. For each of the works, the impact on e.g. safety, health and environment needs to be specified. The permitting procedures in Germany are similar for exploration and production activities (except for the requirement of an E.I.A., depending on whether the project aims at extracting more or less than 500k m³). The procedure to obtain an AOTM (production permit) in France is more extensive than the one for obtaining a DOTM (exploration declaration) in terms of public participation, documents to be submitted, and advice required by several bodies. This is due to the bigger impact and the more definitive and long-lasting character of production activities in comparison with exploration activities.

102. In Sweden, an authorisation and an environmental notification/permit may not suffice to start certain activities. Exploratory drilling, for instance, requires the operator to draw up a separate work plan. This plan needs to be made subject to approval by the concerned landowners. However, such plan cannot be considered as a permit, as it is required in Germany and France under the mining legislation (or in Sweden under the environmental legislation). The Mining Inspectorate has the final say if no agreement on the plan is reached. However, refusal of the plan by the landowners can never lead to withdrawal of the authorisation. The same is valid for the designation of land procedure to be followed before exploitation activities can start.

Type of authorisation procedure

103. On the level of the type of authorisation procedure to be followed, two groups can be distinguished. In France and also potentially in Poland, the operators willing to start exploration/production of shale gas generally need to go through a tender procedure. In Germany and Sweden, operators willing to start exploration/production need to apply directly to the authority granting the authorisations and are not subject to a tender procedure.

104. In Poland and France, where the applicant(s) is (are) subject to a tender procedure, a difference needs to be made between the notice inviting applications and the actual application file. The first one contains information on the area to be authorised, the procedural tender rules, and characteristics of the application to be submitted. In Poland, having a tender procedure, a quasi-tender procedure and a non-tender procedure, differences occur according to the procedure that is followed.

105. The duration of the authorisation procedures depends on various factors. These factors can be the size of the area to be authorised, the accuracy of the documents in the application file and the knowledge/experience of the competent authority. It can be assumed that applications for obtaining authorisations in the field of shale gas last longer.⁸⁴ The areas subject to exploration/production are bigger than areas authorised for conventional hydrocarbons exploration/production activities.⁸⁵ Furthermore, experience is limited. Most Member States, authorisation procedures are subject to fixed maximum durations (one month up to three years between date of publication of tender notice and final decision). If required, a full scale E.I.A. takes a considerable amount of time.

106. The application files properly speaking focus on the specific project of the applicant submitting his applications. Besides general identification data and data concerning the concerned area, detailed descriptions of the geographical status of the areas, the work to be undertaken as well as potential impact on the environment and surroundings are attached to the application file. In general, differences between application files for obtaining an exploration authorisation and those for obtaining an exploitation concession relate to the nature of the activity to be authorised. For instance, production authorisation applications will contain e.g. the results of the exploration phase, expected production and production methods.

107. The mining/hydrocarbons legislation does not specify which stages fall under respectively the exploration authorisation and the exploitation concession. However, as a general rule of thumb, the activity that is considered to have an exploratory character falls under the exploration authorisation. Activities related to production are deemed to be covered by the exploitation concession. There is no rigid division between what falls under exploration and what falls under production. Applicants need to draw up a working plan/plan of operations. This plan may be submitted as part of the application file for obtaining an authorisation/permit

⁸⁴ Some interviewed authorities nonetheless point out that, so far, there was no significant difference of time between a licensing procedure for obtaining an exploration authorisation for shale gas and a licensing procedure for obtaining one for other conventional gases.

⁸⁵ Some interviewed authorities indicate that areas for exploration of other sources of hydrocarbons may be large as well.

or separately (Sweden). In Poland, the approved work programmes (identifying the different stages) are not identical for each granted authorisation.

The main criteria for judging whether an applicant is apt for conducting the activities it is applying for are their technical and financial capabilities. Furthermore, the feasibility of the proposed working programmes and techniques as well as compliance with the applicable regulation are taken into account. In Poland, the suggested amount for remuneration of the mining usufruct is also taken into account. In Sweden, a special and simplified "alum shale" procedure exists under which shale activities may be authorised. However, the use of this procedure is theoretical. No operator has or is expected to use this procedure for obtaining a shale gas exploration authorisation.

108. Since exploration for/production of shale gas has a major impact on the concerned area, the importance of public participation cannot be underestimated. Our analysis reveals that public participation is present in all procedures to be followed for launching production activities. However, in the majority of the Member States, this participation is not foreseen in the authorisation/permitting procedures properly speaking (as laid down under the mining/hydrocarbons legislation). In Poland, public participation takes place during the procedure to obtain a decision on environmental conditions. In Germany, France and Sweden, public participation also occurs under environmental legislation assessing the environmental impact of the exploration/production activities when such an environmental impact assessment is required by law. In Sweden, the public may not be consulted, if no E.I.A. is required or demanded with a view of authorising/permitting exploration activities. It is worth noticing that the Polish NGML foresees the possibility for social organisations to take part in the non-tender procedure.

109. However, lack of public consultation not necessarily equals lack of public information. In France, for instance, no public consultation is required in the authorisation and permitting procedures leading to the start of exploration activities. The public is informed by means of publication of abstracts in the French Official Journal and local papers of the Ministerial decrees granting the exploration authorisations. Such abstracts are furthermore subject to visual display by the concerned Prefects and mayors.

110. France is the only Member States whose mining legislation refers to a public inquiry to be conducted. The inquiry itself is foreseen and described by the Environmental Code (section on environmental impact assessment). This inquiry needs to take place during the tender procedure for obtaining an exploitation concession, during the production concession procedure properly speaking and during the procedure to obtain an AOTM (production). However, no inquiry is compulsory for obtaining an exploration authorisation or a DOTM (exploration/prospection).

111. Authorisation procedures contain general transparency requirements, such as obligation to publish tender notices and final decisions granting authorisations. In France and Sweden such transparency takes the form of a publication in the concerned local newspapers, a national newspaper and the official gazette. Furthermore, in Sweden, the application for an exploration authorisation/exploitation concession also needs to be made public. Furthermore, environmental legislation on access to environmental information and other legislation (e.g. Swedish freedom of press act) lay down transparency requirements.

112. In all Member States decisions granting authorisations are considered to be administrative decisions subject to general administrative law. Some Member States, as Germany and Poland foresee internal objection procedures. All decisions are binding and final after expiration of the period of time for going into appeal. The Polish NGML, however, contains mechanisms in order to increase the stability of a decision granting authorisation. The Ministry of Environment cannot declare nullity of the authorisation, since commencement of the activities entails an occurrence of irreversible legal consequences. Furthermore, authorisation revision is only possible one year after the start of the authorised activities.

113. The French Prohibition Act, as it has resulted in the announced abrogation of three authorisations on 3 October 2011, may be viewed as a serious threat to a reasonable legal security that investors might expect from an authorisation granted legally by an administrative authority. This law –that we consider being a political measure, has deprived from their legal force three shale gas exploration authorisation granted in accordance with the applicable mining legislation.

3 Authorisation and permit characteristics

3.1 Content of authorisations/permits

114. To a great extent, the content of the application for an authorisation and the content of the authorisation itself are similar. The authorisation contains e.g. data to identify its holder and demonstrate his financial/technical capabilities, data on the authorised area, description of the intended activity, duration, date of commencement of activity, plan for ending mining activity, working and geological programmes, outcome of environmental impact screenings or assessments, etc. Depending on the intended activity and the area in which it will be conducted each authorisation may specify other requirements concerning i.a. general safety and environmental protection. In Poland, the authorisation furthermore contains the amount of royalty to be paid. In Sweden, authorisations contain conditions necessary for the protection of public interests and private rights (e.g. obligations under the Environmental Code and the Minerals' Act).

115. The permits in Germany and France contain more detailed information on the exploration/production operations to be launched. In Germany, the main operating schedule describes in detail all installations and activities for the next two years. The specific operating schedule describes specific parts of the operation (such as drilling activities). The completion operation schedule describes in detail the activity of closing or completion of mining activities. In France, the permit furthermore contains an up-to-date document of security and health, evaluating the risks for the personnel besides notices on impact on environment and water resources.

3.2 Validity duration of authorisations and permits

116.

Duration of authorisations and permits

Exploration authorisations and permits

- (i) Germany: 5 years (renewable for a maximum period of three years); no specific of the schedule/planning – only the main operating schedule is limited to two years;
- (ii) France: five years (twice renewable for maximum duration of 10 years and reduction by half of authorised geographical area per renewal); duration of DOTM and AOTM limited to duration of authorisation;
- (iii) Poland: 3 - 50 years (unless demand for shorter period);
- (iv) Sweden: 3 years (renewable twice with maximum duration of 15 years)

Exploitation authorisations (permits cannot exceed duration of authorisation)

- (i) Germany: 50 years;
- (ii) France: 50 years;
- (iii) Poland: 3 - 50 years;
- (iv) Sweden: 25 years (renewable once with ten years).

117. In Sweden, France and Germany there is a significant difference between the duration of validity of the exploration authorisation on the one hand and the exploitation concession on the other hand. Exploration authorisations in France and Germany each are valid for five years (renewable two times, in Germany for a maximum period of three years), whereas exploitation concessions have a maximum validity duration of fifty years.⁸⁶ It is worth noticing that at each renewal of the exploration authorisation in France, the geographic area for which the authorisation was initially granted is reduced. Under the French Mining Code, the geographic area is reduced by:

- 50% at the first renewal;
- An additional 25% at the second renewal.

This rule –applicable to all gas exploration activities, including shale gas, might turn out to be problematic for shale gas activities. Indeed the availability of shale gas deposit is generally diffuse throughout a large territorial area, by contrast to conventional gas which is available in a more concentrated fashion (reservoir is easier to define).

In Sweden, the validity duration of an exploration authorisation is three years, whereas the exploitation concession is valid for 25 years. Poland appears to be the only Member State where both production authorisation and exploitation concession are granted for a period of no less

⁸⁶ More precisely, in Germany, the licence for production is, in general, granted for a period that is proposed by the applicant based on reservoir content, basic technical conditions and economic calculations. The term of fifty years may only be exceeded if it is considered to be indispensable on account of the investments normally required for carrying out the production activities. The licence is revoked if the production has not commenced within a term of three years after concession was granted or if the systematic production has been interrupted for more than three years. This will not apply as long as reasons of an efficient technical or economic planning make it necessary to delay the commencement or resumption of the production in the field or if interruption was caused by other reasons outside the responsibility of the licence holder.

than three years and no more than fifty years (unless the applicant demands a shorter period).⁸⁷
The validity periods in Sweden, France and Germany can be extended.⁸⁸

118. The duration of the French DOTM and AOTM is determined in the DOTM and AOTM. It cannot exceed the duration of the exploration authorisation or exploitation concession following which it is granted. In Germany, the mining legislation does not provide for a specific duration of the schedule/planning admissions. Only the main operating schedule generally shall be limited to two years.

119. In all Member States non-activity has a negative impact on the validity of the authorisation. In Sweden, the Mining Inspectorate indicates that non-activity will lead to a refusal to prolong the authorisation. Often activity is required to be undertaken within one year and operations cannot be suspended indefinitely. In Poland, the authorisation contains a deadline for commencing the prospecting/exploration. If the operator fails to take up or resume activity, the authorisation ultimately can be withdrawn. If the validity of the authorisation is questioned due to non-activity, this of course also has an adverse impact on the permits granted under it.

3.3 Sanctions in case of non-compliance

120. In all Member States the competent authority has various options to react in case of non-compliance. The mining legislation foresees different kinds of penalties for not complying with the conditions as laid down in the authorisation. Operators not complying with authorisation or permitting conditions can be fined or sentenced to imprisonment.⁸⁹

121. In France, infractions with a negative impact on environment can lead to imprisonment of five years and fines up to EUR 75.000 as well as confiscation of installations.

3.4 Assessment

122. Our analysis reveals that the content of authorisations/permits with a view on conducting shale gas activities does not differ significantly from authorisations/permits with a view on conducting activities in the field of conventional hydrocarbons.

⁸⁷ Already granted exploration authorisations in the field of shale gas have a duration of three to five years.

⁸⁸ In Sweden an exploration authorisation can be extended twice (with a maximum duration of 15 years). An exploitation concession can be extended once by ten years.
In France an exploration authorisation can be prolonged twice by five years (whereby the authorised surface is reduced by half with every extension).
In Germany the exploration licence can be prolonged by three years, if the works do not proceed sufficiently despite adequate efforts of the operator.

⁸⁹ In Germany, an authorisation can be refused if the operator applying for it infringes competition law.

123. Overall, the content of the authorisation/permit properly speaking is, to a great extent, similar to the content of the application files.⁹⁰ The permits in France and Germany focus more on the different aspects of actual operations to be launched in order to be able to explore for or to produce hydrocarbons.

124. In all scrutinised Member States but Poland, there is a significant difference between the duration of the exploration authorisation (and thus permit) and the exploitation concession (and thus permit). Whereas explorations activities are, due to their time-limited nature, authorised for a couple of years (up to five), production activities can be authorised for several decades (up to fifty years). In Germany, Sweden and France, the validity duration can be prolonged (in France the size of the authorised areas destined for exploration diminishes with every extension). Poland is the exception, where also exploration activities can be authorised up to fifty years.

125. In France, each prolongation of a licence leads to a reduction of the geographical area. If any shale gas activities are to be performed in France, such reduction might turn out to be problematic for shale gas activities. This is due to the fact that the availability of shale gas deposit is generally diffuse throughout a large territorial area (whereas conventional gas is more concentrated).

126. In all Member States, activity is required to be undertaken within a certain period of time. After expiration of this period, non-activity can lead to warnings by the competent authority, and, ultimately to the withdrawal of the authorisation/permit.

127. Non-compliance with authorisations/permits can lead to sanctions by the competent authorities. These sanctions can take the form of fines, sentences under the form of imprisonment for the operator's staff, confiscation of installations, suspension of the authorisation/permit and, ultimately, withdrawal of the authorisation/permit. In France, non-compliance leading to serious environmental damage is considered to be an aggravating circumstance having a considerable impact on the sanctions.

⁹⁰ E.g. identification data of the operator, proof of financial/technical capabilities of the operator, several impact notices, duration, covered area, geographical and work programmes are part of the authorisation content.

4 Transit to production and post-authorisation and/or post-permit aspects

4.1 Transit to production

128. As mentioned above, all Member States require a separate production authorisation (exploitation concession) with a view of starting production activities. In Poland, an additional production mining usufruct agreement is needed. Furthermore, in France and Germany, operators willing to produce shale gas need a permit with a view of launching operations under the mining legislation.⁹¹ In Sweden, under the Environmental Code the operator requires a permit for conducting environmentally hazardous activities. Furthermore, as mentioned in n° 63, the applicant in Sweden needs to follow a procedure of designation of land. The area covered by the concession falls within the area that was covered by a previous exploration authorisation. Factors such as results of that exploration phase, environmental aspects, the decision of the applicant where to produce are taken into account to determine the production area.

129. In all Member States, mechanisms are foreseen giving priority to owners of an exploration authorisation in obtaining a production authorisation. In France, it is only the exploration authorisation holder who can apply for a concession relating to areas falling within the areas covered by the exploration authorisation. In Germany, the holder of an exploration authorisation is informed by the competent authorities if a third party applies for production. The holder may then have priority for obtaining a production licence within three months.

130.

Some forms of unconventional gas exist in deposits very far underground ("deep gas"), beyond "conventional" drilling depths. Such forms of gas are typically 15k feet or deeper underground, which is quite a bit deeper than conventional gas deposits, which are traditionally only a few thousand feet deep at most.⁹²

When several companies compete for the same geographical area, an interesting idea could be for the administration to grant "geological layer" production authorisations. By "geological layer", we mean authorisation for some geological layers of the subsoil of the same site only, where operators willing to produce some type of hydrocarbons would have a production right over the upper parts and companies willing to produce other types of hydrocarbons would obtain some rights over the lower part of the same site. Such types of "three dimensional" authorisations would however raise legal issues. For instance, how could we practically identify the company liable in case of damage to the environment?

4.2 Royalties

⁹¹ France: Autorisation d'ouverture de travaux miniers

Germany: bergrechtliche Planfeststellung (mining planning permission)

⁹² Source: http://www.naturalgas.org/overview/unconvent_ng_resource.asp (accessed in October 2011).

131. In Poland, the priority for concluding the mining usufruct agreement over other parties lasts for five years starting from the decision approving the geological documentation. With a view of establishing this priority, the operator who explored a mineral resources deposit being object of the mining ownership needs to document this exploration for preparation of a deposit management programme. He furthermore needs to obtain a decision approving geological documentation of such a deposit. The period of five years starts from the date of delivery of the approval decision of geological documentation. Since no production authorisation can be granted without a production mining usufruct agreement, this priority also is applicable to production authorisation applications.

132. In all scrutinised Member States operators have to pay mining fees. In France, royalties are to be paid only during the production phase, whereas in Germany, Poland and Sweden application fees and royalties are due for exploration and production activities. During the exploration phase the application fee is calculated in function of the number of square kilometres of the covered area. Royalties for the production phase are generally calculated on the basis of the production output and market value of that production (on a yearly, half-yearly or quarterly basis). In Poland, additional levies need to be paid upon conclusion of the mining usufruct agreement (to be established in the agreement itself). In Poland and Germany, all of the royalties go to the State.⁹³ In Sweden and France, the owners of the surface obtain a part of the royalties.⁹⁴

133. In Poland, the authority granting the exploration and exploitation authorisations, the DGGC, also levies the royalties and exploitation fees for any activity regulated under the NGML. It also controls the accordance of the payment and manages any changes to the exploitation fees (following changes in production).

4.3 Control once the exploration/production is launched

134. Once an exploration or production authorisation is granted, the mining activities conducted under it are subject to supervision of the mining authorities.⁹⁵ Overall, these

⁹³ Germany: Royalties are obtained by the respective Länder.

Poland: Royalties go to the municipalities where the activity is pursued and the National Environment Protection and Water Management Fund. The remuneration for establishment of the mining usufruct agreement goes to the State Treasury.

⁹⁴ France: Royalties go to the State (an important part goes to the Caisse autonome nationale de sécurité sociale dans les mines) and to the surface owners in accordance with their proportional share of the area.

Sweden: 1,5 ‰ of the royalties shall be divided amongst the land owners in accordance with their proportional share of the area and 0,5 ‰ goes to the State (i.a. for research). The Swedish Mining Inspectorate decides on what a company will pay. However, it does not obtain the royalties. They go directly to the state and to the landowners.

⁹⁵ France: the Prefect under the supervision of the Minister of Environment, Energy and Sustainable Development;

Germany: the Länder mining authorities (Bergämter);

Sweden: the Swedish Mining Inspectorate;

Poland: geological administration authority (authority issuing authorisations, i.e. Minister of Environment exercises control over activity regulated in the NGML and in authorisation (presence of and compliance with geological work programme) and the mining supervision authorities (i.e. State Mining Authority exercises supervision and control over mining plant operations).

authorities may claim for information and production of documentation/samples with a view of exercising their controlling activities. They furthermore can enter, at any time, the premises of the sites where the exploration/production activities are ongoing (i.e. mines as well as all installations necessary for exploration/production). Control by the authorities also may relate e.g. to aspects of workers' health and safety, damage prevention and compliance with obligations of environmental protection.⁹⁶

4.4 Termination of exploration/production operations

135. Termination of any exploration/production activity needs to be notified to the competent authority in all Member States before the mining title expires.⁹⁷ This notification of the closing mining plant operation plan (in Germany: completion operating schedule)⁹⁸ is accompanied by an overview of the measures the operator foresees to safely end the mining activity.⁹⁹ Furthermore, measures are required in order to remedy all adverse effects¹⁰⁰ as a consequence of the exploration/production activity and to manage possibility of take-over of the exploitation by another operator or for other uses. Often, the initial authorisation or permit already contains provisions on how to deal with the scenario of closing down the exploration/production activities.

136. The operator willing to end exploration/production activities also needs to make known the timeline following which the measures must be executed. Any specific risks linked to the exploration/production activities clearly need to be mentioned in the closing declarations or in the closing operation plans. In France, the ending activity is put under surveillance of the concerned Prefect. This surveillance ends when the operator notifies that all required measures are executed.

137. In Poland, the operator needs to set up a mining plant closing fund during the production phase.¹⁰¹ The resources, gathered during the production phase, are put on a separate bank account.¹⁰² When the minerals are exploited from their deposit by means of wells, the equivalent of no less than 3% of the depreciation write-offs for fixed assets of the mining plant is to be allocated to the fund (every financial year). These resources only become available after approval of the plan for closing down the mining plant.

⁹⁶ This does not exclude that exploration/production activities are subject to further control mechanisms, such as sanitary and labour inspection.

In Poland, the state mining authority also performs tasks within the scope of architectural and construction administration and construction control.

⁹⁷ In Sweden, where an exploration authorisation expires without a production concession being granted, the holder of the exploration authorisation needs to submit a report to the Swedish Mining Inspectorate (describing the work undertaken and its results).

⁹⁸ Besides measures for ending all activities as well as remedying measures, this plan also comprises identification of the produced resources, calorific value of carbons and hydrocarbons, complications of mining operations, indication on use of resources, description of the deposit and any stock, description of preparation installations

⁹⁹ In France, the declaration is also submitted to the concerned mayors and administrative services for making known their observations. The declaration also contains a risk evaluation.

¹⁰⁰ These effects can relate to environment, workers' health and safety, water quality.

¹⁰¹ In all Member States, the holder of an exploration/production authorisation needs to have ensured he disposes of sufficient resources to end the authorised mining activities.

¹⁰² In the form of pecuniary means, treasury bills or bonds issued or guaranteed by the State Treasury.

4.5 Assessment

138. In none of the scrutinised Member States, the transition from exploration to production of shale gas is regulated specifically: laws for regular hydrocarbon activities apply fully. Furthermore, there are no separate or specific provisions governing exploration/production operations once they have been launched: the applicable regime is that under the general mining legislation.

139. In all scrutinised Member States, holders of an exploration authorisation have some kind of priority over other parties for obtaining a production authorisation. The term during which this priority exists varies from three months up to five years. In France, the holder of the exploration authorisation is the only eligible party for obtaining a production authorisation if the application is done during the validity of the exploration authorisation. In that case, the tender procedure will not be followed.

140. For all four Member States, minerals (and thus shale gas) production is a source of income. Different public entities benefit from the royalties operators have to pay in accordance with the (market value) of the produced amount of minerals. In Poland, these royalties go i.a. to environmental protection bodies. In Sweden and France, the concerned land owners receive part of the royalties, in function of the size of their land. Operators active in Poland furthermore need to pay a remuneration in order to obtain the mining usufruct agreement (one for exploration and one for production). In Germany, Poland and Sweden, an application fee has to be paid during the exploration phase based on the number of square kilometres of an authorised area.

141. All exploration and production activities are subject to supervision once exploration/production operations are launched. This supervision aims in the first place at verifying compliance with the authorisation conditions and the mining legislation. However, aspects in the field of environment, construction, workers' health and safety also may fall under this supervision. The supervising authorities can demand any documentation necessary to carry out their tasks. They furthermore can access the premises where the prospection/operation activities take place at any time. In Poland, the Ministry of Environment, granting the authorisations, specifically looks upon compliance with authorisation conditions and the geological work programme. The State Mining Authority supervises all mining operations in a broader sense.

Termination of exploration/production activities is considered to be a separate stage in the overall mining activity. In all Member States, a separate approval or declaration needs to be approved outlining the characteristics of the prospection/production activities, the main risks linked to closing down of these activities as well as measures needed for safely closing down and for remedying any adverse effects as a consequence of the mining activity. In all Member States, operators need to ensure they dispose of sufficient financial means to close down any exploration/production activity they have been authorised for. In Poland, a fund aimed at covering the costs for closing down exploration/production activities needs to be created during the production phase.

5 Environmental aspects

5.1 General

5.1.1 General environmental legislation

142. Requirements regarding environmental protection, including the necessity to perform an environmental impact assessment (or "E.I.A."), are, as a rule, laid down in general pieces of law aiming at environmental protection, such as the Environmental Code, laws on environmental liability or laws on environmental impact assessment. Some sector specific rules, i.e. rules specific to the gas sector, may moreover contain some requirements related to the environment, such as the Mineral Act in Sweden, the Ordinance on Environmental Assessment of Mining Activities in Germany or the Decree on mining works, on works of underground storage and on the mining and underground storage policy in France. Disclosure of information, including regarding environment, to the public may be compulsory under general public disclosure acts, such as e.g. in Sweden (Public Access to Information and Secrecy Act).

143. In Sweden, any "environmentally hazardous activity" is regulated under the Swedish Environmental Code. Depending on the type of activity (type A, B or C), a notification must be done (type C) or an application must be done with the view of obtaining a permit (types A and B). Exploration and prospection are type C activities; production is, in principle, a type B activity; whereas production in mountainous areas is a type A activity. For more details regarding these procedures (as well as whether or not an E.I.A. is needed) please refer to the table below.

144. It is worth noticing at this stage that the procedure concerning environmentally hazardous activities is a holistic procedure: all aspects related to the environment are examined in one single procedure, i.e. (i) water use; (ii) emission; (iii) protection of wildlife; (iv) noise; (v) disposal of waste; (vi) use of soil; and (vii) use of chemical substances. In most of the other scrutinised Member States, most of these aspects are assessed separately. Moreover, it is an integral part of the main permitting procedure on prospection/exploration and production of hydrocarbons on the basis of the Swedish Environmental Code and the Ordinance on Environmentally Hazardous Activities and the Protection of Public Health. The Land and Environmental Court governs this holistic procedure leading to the grant of an environmental permit. During this process, it always hears the CAB and the concerned communities and sometimes the Swedish Environmental Protection Agency (if the matter is of significant importance for the Member State). However, an intervention of the Agency appears to be unlikely, due to the small scale character of the shale gas exploration projects.

145. In Germany, the E.I.A. is an integral part of the planning approval (of the framework operation plan) for any project aiming at extracting over 500k m³ a day. As the law currently stands, there is no E.I.A. requirement during the exploration authorisation procedure. As we have seen it above, the Land of North Rhine Westphalia has filed a motion in the Bundesrat to revise the E.I.A. decree with a view of making an E.I.A. compulsory for any framework operation plan approval involving hydraulic fracturing. According to the Mining Section of the Ministry of Energy and Economic Affairs of North Rhine Westphalia, the current ceilings are considered to be too high.

It is worth noticing, as the industry practice currently stands, we do not know whether the 500k m³/day thresholds will be met, once production activities will have started in Germany. Companies in Germany are currently at the stage of exploring shale gas resources. Therefore, by definition, we do not know yet the quantities that companies will be able to produce on an industrial basis.

146. In Poland, the E.I.A. requirement falls within the scope of the Act on Access to Environmental Information and its Protection, which is a close transposition of Directive 85/337/EC.¹⁰³ According to the competent Polish authorities, exploration projects are usually seen as “annex II project”, which require the performance of an E.I.A., if they have a significant impact on the environment. In order to determine this, a screening is mandatory. Exploitation projects in most cases can be considered to be “annex I projects”, which may always have a significant impact on the environment. In this case the E.I.A. requirement must be performed before initiating the main authorisation procedure. Other activities, notably for carrying out drilling activities, will be considered as annex II projects, for which a screening is mandatory. Furthermore, this E.I.A. is carried out under the decision on environmental conditions. The DGGC needs to obtain this decision before grant of any authorisation by the Minister. This decision needs to be attached to the authorisation application. The Regional Directorate for Environmental Protection or the competent head of commune, town mayor or city president with approval of the Regional Directorate for Environmental Protection are competent for issuing such a decision.

147. In France, the E.I.A. requirement falls within the scope of the Act on Access to Environmental Information and its Protection, which is a close transposition of Directive 85/337/EC.

At the phase of the exploration authorisation, an “environmental impact notice” must be submitted to the administration. The environmental impact notice contains geographical data, data on the wildlife in the area, data on the state of pollution of the area, evaluation of different sources of pollution, measures to avoid adverse effects caused by the activities, etc. The notice is not as extensive as a regular E.I.A. Its purpose is to demonstrate that the candidate is aware of the (environmental) legal constraints surrounding the activity as well as of the environmental issues that will be at stake. If the notice is judged insufficient, the administration may request further analysis or information and the administration can refuse, on the basis of the notice, to grant authorisation for some activities that would seem incoherent from an environmental viewpoint, e.g. when the activities would require extensive drilling in a highly environmentally protected area. The role of the administration at this stage of the procedure with respect to the notice is thus a matter of anticipation of environmental issues beforehand. The implementation of environmental requirements (including the E.I.A.) is carried out, in practice, at the local level and at a later stage, i.e. when the E.I.A. is performed.

Regarding production, an E.I.A. is required for obtaining the concession and for obtaining the AOTM.

¹⁰³ Council Directive 85/337/EC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, OJ L 175, 7.5.1985.

148. As mentioned above, most of the public participation during the authorisation procedures occurs in the framework of the E.I.A.¹⁰⁴ In Poland, public participation takes place during the procedure leading to the grant of a decision on environmental conditions preceding the authorisation procedure properly speaking.¹⁰⁵ In Germany¹⁰⁶ and Sweden such public consultation also occurs in the framework of the E.I.A. In Sweden, public consultation is required before exploration activities can start, if the community demands for an E.I.A. and the activities may have a significant impact on the environment. Public consultation is not compulsory in the exploitation concession process, although it is usually carried out. Such consultation is always required in the framework of the procedure to obtain an environmental permit (in the framework of the E.I.A.).

Even in France, where the mining legislation requires a public inquiry, this inquiry is conducted following the Environmental Code.

149. Apart from the transparency requirements foreseen in the mining legislation, environmental legislation¹⁰⁷ lays down the obligation to publish certain documents and/or to make them accessible.

For more details, please refer to the table below:

¹⁰⁴ Article 6.2 of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment lays down the public participation requirement, OJ L 175, 05.07.1985.

¹⁰⁵ Such a decision is required for projects that may significantly affect the environment.

¹⁰⁶ In Germany, the authorisation procedure does not require an E.I.A. yet. Such E.I.A., however, forms integral part of the framework operation plan for any project of which the aimed exploration extends 500k m³/day. Currently, legislation has been proposed by North Rhine-Westphalia which would make an E.I.A. compulsory in the context of any framework operation plan approval which foresees hydraulic fracturing.

¹⁰⁷ Legislation transposing directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC, OJ L 41, 14.02.2003 (all four Member States have transposed this directive, and thus require access of the public to environmental information).

	Poland	France	Germany	Sweden
Information to submit to the authority approving the activity	The applicant needs to meet the information requirements laid down under Directive 85/337/EEC. ¹⁰⁸	The information varies depending on whether the E.I.A. is carried out under Article R 122-3 of the Environmental Code ¹⁰⁹ or under Article R 122-20 of the same Code. ¹¹⁰	The applicant's documents contain information on the possible impact of the project on the environment primarily.	It varies depending on the type of activity and the place: <ul style="list-style-type: none"> - Exploration and prospectation are type C activities¹¹¹ - Production is, in principle, a type B activity¹¹² - Production in mountainous areas is a type A activity.¹¹³

¹⁰⁸ I.e.: (i) Description of the project comprising information on the site, design and size of the project; (ii) a description of the measure envisaged in order to avoid, reduce, and, if possible, remedy significant adverse effects; (iii) the data required to identify and assess the main effects which the project is likely to have on the environment; (iv) an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice; and (v) a non-technical summary of the information listed above.

¹⁰⁹ I.e.: (i) an analysis of initial state of the site and its environment; (ii) an analysis of direct and indirect, temporarily or permanent, effects of the project on the environment cultural heritage, public health, hygiene and safety; (iii) the reasons why the project has been withheld (in French in the text: the "raisons pour lesquelles, notamment du point de vue des préoccupations d'environnement, parmi les partis envisagés qui font l'objet d'une description, le projet présenté a été retenu"; (v) the measures envisaged by the applicant to limit the consequences for health and environment as well as the costs for these measures; (v) an analysis of methods to be used (with description of possible difficulties and their solution); (vi) a non technical summary with the view of communication to the public.

¹¹⁰ I.e.: (i) a summary of purpose of plan, content and possible link with other plans; (ii) an analysis of initial state of the environment and future evolutions in it; (iii) an analysis on the effects on environment, health, safety, public heritage etc. and the impact on Natura 2000 sites; (iv) the reasons on the basis of which the plan is withheld (in French in the text: "l'exposé des motifs pour lesquels le projet a été retenu au regard des objectifs de protection de l'environnement établis au niveau international, communautaire ou national et les raisons qui justifient le choix opéré au regard des autres solutions envisagées"); (v) the measures envisaged by applicant to limit the consequences for health and environment as well as the costs for these measures; (vi) an analysis of methods to be used (with description of possible difficulties and their solution); and (vii) a non technical summary with the view of communication to the public.

¹¹¹ Type C activities require that the candidate notifies: (i) any information, drawings and technical descriptions that is necessary for an assessment of the nature and scope and the environmental impact of the activity or measure; (ii) if deemed necessary (we understand: by the CAB and/or concerned municipality); (iii) Environmental Impact Statement.

¹¹² Type B activities require that the candidate notifies: (i) any information, drawings and technical descriptions that is necessary for an assessment of the nature and scope and the environmental impact of the activity or measure; (ii) the location as well as a description of alternative locations; (iii) plan conditions; (iv) site plan (map), distance to nearby residents, different areas of special interest, such as national interest for nature conservation, cultural heritage, etc.; (v) the scope of the activity; (vi) the expected environmental impact of emissions to air water, noise, etc.

<p>The criteria for determining whether or not to perform an E.I.A.</p>	<p><u>Exploitation activities:</u></p> <p>“Annex II projects” (as defined under Directive 85/337/EEC) may require an E.I.A., i.e. projects in the field of the extractive industry (or “projects likely to have significant impact on the environment”). The decision is based on a “screening procedure”, on a case-by-case basis, on the basis of the criteria defined in Annex III of the Directive. The screening procedure results in an “environmental decision” which needs to be issued regardless of the outcome of the screening procedure.</p> <p><u>Production activities:</u></p> <p>Such activities will be, as a rule, considered as “annex I”</p>	<p>“Annex II projects” (as defined under Directive 85/337/EEC) require an E.I.A..</p> <p>Any “Autorisation d’Ouverture de Travaux Miniers” (or AOTM), i.e. the document submitted along the application for an exploration licence, requires an E.I.A.</p> <p>As a rule, projects having a total cost lower than 1.9 Mio EUR are not subject to E.I.A.</p>	<p>An integral part of the framework operation plan (in form of planning approval) for any project in which the aimed extraction exceeds 500k m³/day.</p> <p>The Land of North Rhine Westphalia has filed a motion in the Bundesrat to make the E.I.A.-obligation part of all procedures leading to the grant of a framework operation plan involving hydraulic fracturing.</p>	<p>Type C activities require an E.I.A. “if deemed necessary”.</p> <p>Type B activities require an E.I.A. for the permit application process.</p> <p>Type A activities always require an E.I.A.</p>
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¹¹³ Type A activities require that the candidate notifies: (i) any information, drawings and technical descriptions that are necessary for an assessment of the nature and scope of the activity or measure; (ii) an Environmental Impact Statement and information about any consultations that have taken place pursuant to Chapter 6, Sections 4 to 6 (for instance with the County Administrative Board, relevant municipalities and affected property owners); (iii) any information that is necessary for an assessment of compliance with the general rules of consideration laid down in Chapter 2 of the Environmental Code; (iv) proposals for any protective measures or other precautions that may be necessary in order to prevent or remedy the adverse effects of the activity; (v) proposals for control of the activity, and (vi) a security report in those cases where the Act on Measures to Prevent and Limit the Consequences of Major Chemical Accidents is applicable on the activity. In cases relating to water operations, applications must also contain the following: (i) information as to whether or not any properties are affected by the operations and, where applicable, the names and addresses of the owners of the properties and any holders of special rights thereto; and (ii) a statement of the compensation amounts offered by the applicant to each party to the case, unless it is appropriate to postpone the submission of such information on account of the scope of the operations.

	<p>projects, for which an E.I.A. must be performed. Projects of minor nature would be considered as "annex II projects", for which a screening procedure is mandatory.</p> <p>The E.I.A. requirement is to be fulfilled under the procedure leading to an "environment decision" and is required for activities falling within the scope of the Act on Access to Environmental Information and its Protection.</p>			
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<p>The interested parties the information must be made available to</p>	<p>The public affected or likely to be affected by or having an interest in the environmental decision-making procedure.</p>	<p>Any OATM requires a local consultation before delegates of the concerned territorial collectivities and associations of environmental protection.</p>	<p>Competent authorities (Land ministry of economic affairs or environment, mining authorities) must make the information available to the public. Anyone is allowed to consult the documents without having to demonstrate any particular individual/subjective interest/affliction.</p>	<ul style="list-style-type: none"> - During the authorisation procedure the CAB must be consulted by the Mining Inspectorate at an early stage with a view of obtaining its input on nature reserve, cultural heritage, rail road issues etc as well as regarding the E.I.A. during the procedure to obtain an exploitation authorisation. - Individuals who are likely to be affected must be consulted in good time and to an appropriate extent before the application submission. - In case of E.I.A., the candidate must consult the other government agencies, the municipalities, the citizens and the organisations that are likely to be affected.
<p>Prior public consultations</p>	<p>“One or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups”. The scope of the public to be consulted may not be limited in any way.</p>	<p>Any project “of regulatory state decision” (...) “having a significant and direct impact on the environment” must be subject to public participation for at least fifteen days before any “compulsory consultation of committees having persons directly affected as their members”.</p>	<p>The public must be consulted prior to any decision; it must have the opportunity to submit statements.</p>	<p>See previous answer.</p>

<p>Information available to the public (including how it is made available)</p>	<p>Anyone may submit a request for access to the environmental information. The competent authority decides whether or not to grant the information. In case of refusal, it must issue a decision.</p> <p>At the time of submitting the present interim report, we do not know on which ground such a refusal may be done.</p>	<ul style="list-style-type: none"> - The decision granting the title/AOTM; - The E.I.A. 	<p>The information made available to the public is:</p> <ul style="list-style-type: none"> - Description of the contemplated activity; - Description of the measures aiming at minimising possible environmental impact and restoration measures; - Non-technical summary; - Any other document that the competent authority deems relevant. <p>The documents must be displayed to the affected community for one month.</p>	<ul style="list-style-type: none"> - The E.I.A. and the application for the environmental hazardous activity are published in the local newspaper. - Anyone may request additional information after a secrecy check is performed by the relevant authority (on the basis of the Public Access to Information and Secrecy Act).
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Some additional remarks for Sweden and Poland:

150. The Swedish municipalities/CAB decide on the necessity of an E.I.A. in the framework of procedures leading to the start of exploration activities. This mostly is the case when the environmental information as presented by the applicant in the base line survey¹¹⁴ is not sufficient to perform an environmental "screening". In that case, the municipalities/CAB will demand an E.I.A. to be executed. The decision to require an E.I.A. needs to be motivated. According to our national correspondent, an E.I.A. would usually be considered as necessary for drilling.

Exploration drilling was performed by Shell in the County of Skåne in 2009. The drilling was assessed by the communities. During this process, an E.I.A. was demanded by the concerned municipalities.

The E.I.A. procedure is as follows:

The applicant needs to submit an E.I.A. together with the application for an exploitation concession (to be tried by the Mining Inspectorate together with the CAB). The CAB then gives a binding opinion on the E.I.A. Together with the CAB, the Mining Inspectorate assesses whether the E.I.A. is positive. The CAB opinion and the outcome of the assessment by the Mining Inspectorate are bundled in one decision. Municipalities furthermore can give their remarks on the application during the process of assessing the E.I.A. A positive decision on the E.I.A. is required for proceeding with the core authorisation procedure with a view of obtaining an exploitation concession. The Mining Inspectorate cannot continue with the authorisation procedure when the binding opinion of the CAB on the E.I.A. is negative.

The entity applying for an environmental permit also needs to submit an E.I.A. together with the application for an environmental permit (to be tried in a similar way by the Land and Environmental Court and the CAB).

151. During the exploitation concession procedure the Mining Inspectorate consults the CAB with a view on obtaining its binding opinion on the E.I.A. The CAB also must be consulted by the Land and Environmental Court in the framework of the environmental permitting procedure. The CAB handling the application provides other relevant authorities and entities with the information (i.e. Mining Inspectorate, Land and Environmental Court, concerned municipalities, and land owners)

152. With regards to Poland, the criteria for determining whether an annex II project has to be made subject to an E.I.A. relate to the:

- a) geological works and the use of explosives;
- b) performance of activity by underground method;
- c) performance of activity by drilling holes with the depth more than 1000 m.

¹¹⁴ A base line survey before any drilling activity can start needs to be provided. The survey contains an identification of the site, different water and soil monsters and samples on the initial state of the area before the drilling activity has started. This survey also contains information on the environmental impact of the activity. However, rather than measuring the environmental impact, the survey serves as a reference for compensating any damage resulting from the activity (comparison between monsters/samples before drilling and monsters/samples after drilling).

The above mentioned operations are subject to a screening procedure, after which the municipality after approval of the General/Regional Directorate together will decide whether an E.I.A. is needed (on the basis of criteria mentioned in Annex III of the relevant EU Directive).

The Ministry of Environment indicates that, generally speaking, use of deep drilling methods requires in most cases an E.I.A. (for exploration and exploitation).

Exploitation projects are considered to be annex I projects, if the quantity of extracted minerals is more than 500k m³/day (similar to Germany).

153. Lack of an obligation to perform an E.I.A. does mean that companies do not carry out such an assessment in practice and on their own initiative.

The fact that some companies are not under some obligation to perform an E.I.A. does not prevent them from carrying out some environmental impact assessment on a voluntary basis. At Total e.g. such assessment is carried out (by an independent third party specialised engineering company) for every new project of exploration and/or exploitation. TGSE and TEPF expected to perform such assessment for the Montélimar site. These assessments follow the standard timeline of an environmental impact assessment study. First, a baseline is identified (i.e. the detailed status of the site before any activity has started). Second, a typical social and environmental study is carried out. Such studies are favoured by Total who aims at obtaining an ISO 14000 certification as much as possible for all its major sites.

5.1.2 Environmental liability

154. Rules transposing Directive 2004/35/EC on environmental liability¹¹⁵ may, as a rule, be found in a general law on environmental liability. In some Member States, it may be also found in the general Environmental Act (or Environmental Code), in the Administrative Act (e.g. Sweden) and/or in implementing regulations. They are applicable to operations and do not relate to the authorisation and/or permitting procedures.

In Poland, the main provision for environmental liability sets up a strict liability in case of “damage to the environment caused by an activity posing a risk of damage to the environment and/or caused by other activities if they relate to protected species or protected natural habitats”. This provision is drafted in broad terms so that, as we understand it, shale gas activities fall within. By contrast, in Germany, there is a list of activities subject to a strict liability regime, to which shale gas activities do not belong. Consequently, shale gas activities require a fault for provisions on environmental liability to apply. In Sweden, damage shall be deemed to have been caused by pollution of water areas, pollution of groundwater, changes in the groundwater level, air pollution, land pollution, noise, vibration or similar disturbances, where, in view of the nature of the disturbance and its adverse effects, other possible causes and any other circumstances, the balance of probability indicates that the disturbance was the cause.¹¹⁶

Furthermore, compensation for damage caused by particularly intrusive work or involving special risks for other reasons (i.e. damage occurring from other causes than the ones mentioned above) shall be payable even where the person who performed the work or caused it to be performed was not negligent.¹¹⁷ However, it is not clear whether shale gas activity falls under this “particularly intrusive work”.

On liability, the EC foresees that “any other person [than the property owner] who pursues the harmful activity or causes it to be pursued and uses the property in his business activities or in public activities shall also be liable for compensation.”¹¹⁸

The behaviour does not need to be wilful for the liability to occur. The same applies for France.

155. In all scrutinised Member States, there is one (or several)¹¹⁹ obligation(s) to take preventive measures in case of imminent threat or to take restorative measures when the damage occurs. Not all jurisdictions foresee an obligation to put things back into their pristine state. Only our correspondent in Sweden mentions the obligation, for the owner of the land, to bear costs in second instance, i.e. when the operator is not able to pay for remedy. Our correspondent in Sweden mentions the existence of criminal offences applicable in the cases

¹¹⁵ 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 if environmental damage, OJ L 143, 30.4.2004.

¹¹⁶ Chapter 32, section 3 of the EC.

¹¹⁷ Chapter 32, section 5 of the EC.

¹¹⁸ Chapter 32, section 6 of the EC.

¹¹⁹ In Poland, the Environment Protection Law stipulates that “in case of an activity having negative impact on the environment, the competent authority may issue a decision obliging to reduce the risk of the negative impact or an impact as such and to take remedying actions”. Furthermore, “if the activity leads to serious deterioration of the environment and/or endangers the life or health of humans, the competent authority shall issue a decision suspending this activity to the extent necessary to prevent deterioration of the environment”.

foreseen in the Environmental Code, but it is in our impression these exist also in other Member States.

156. For more details, please refer to the comparative table below.

	Poland	France	Germany	Sweden
Triggering event	No fault needed. Environmental liability provisions apply to "imminent threat of damage to the environment or damage to the environment caused by an activity posing a risk of damage to the environment and/or caused by other activities if they relate to protected species or protected natural habitat".	No fault needed for a list of activities subject to a strict liability regime. Different aspects related to shale gas activities fall under this strict liability regime (e.g. use of chemical substances, waste management, water injection).	Under the environmental liability act, fault is needed. This is based on the fact that there is a list of activities subject to a strict liability regime, to which shale gas activities do not belong. Consequently, shale gas activities require a fault for provisions on environmental liability to apply.	No proof of fault is required. There is no need to have a wilful misconduct. "Persons who pursue a harmful activity or cause it to be pursued in their capacity as property owners or land leaseholders shall be liable for compensation for damage. Any other person who pursues the harmful activity or causes it to be pursued and uses the property in his business activities or in public activities shall also be liable for compensation." ¹²⁰
Preventive measures	Yes. In case of imminent threat of damage to the environment, obligation to take preventing actions immediately.	Yes. In case of imminent danger, obligation to take all necessary measures immediately.	Yes. In case of imminent threat, obligation to take all necessary measures immediately and to inform the competent authority.	Yes. The mere risk of damage or detriment involves an obligation to take the necessary measures to combat or prevent adverse health and environmental effects.
Restorative measures	Yes. Obligation to take action to limit damage to the environment and to prevent any further damage.	Yes. Obligation to put things back into their pristine state (ecological system, wildlife and landscape). A strict procedure regarding the adoption of these measures and the monitoring of their	Yes. Obligation to take actions to limit damage and the necessary remedial measures.	Yes. Obligation to take remedial measures to eliminate damage upon request of a supervisory authority. Restorative measures may include a duty to prevent further damage and/or to restore things into their pristine

¹²⁰

Chapter 32, section 6 of the Environmental Code.

		implementation is foreseen.		state.
Costs of remedy and/or preventive measures	Born by the responsible entity.	Born by the responsible entity.	Born by the responsible entity. The State may take a deviant scheme but this right was not implemented so far.	Born by the responsible entity. The extent of the liability shall be determined according to a cost/benefit assessment. If there are several operators they will be jointly accountable for the remediation that has been deemed necessary. If the operator is not able to carry out or pay for the remediation of polluted property, the property owner may under certain circumstances be liable in the second instance.
Possibility to undertake legal actions	Anyone has the right to report to the competent authority any threat of damage or damage. It remains unclear who is entitled to take legal action (individuals and/or the competent authority).	The affected persons/entities are entitled to report to the competent authority any threat of damage or damage. The competent authority takes legal actions.	Any affected person or NGO active in environment protection may request the competent authority to take action in case of threat of damage or damage.	Persons who suffer damage can bring legal claims before Land and Environmental Courts.

5.2 Water

157. Water protection legislation¹²¹ is, as a rule, implemented via a main piece of legislation, such as the Environmental Code and a general decree in France, the (new) Federal Water Act in Germany (or “Wasserhaushaltsgesetz” or “WHG”), the Water Law Act and the Environment Protection Act in Poland and the Environmental Code in Sweden.

In Germany, States (“Länder”) may adopt their own State Water Acts for the purpose of implementing (secondary legislation) the WHG. This had the consequence that State law could overrule the WHG. In 2010, this was corrected by a constitutional amendment allowing the Federal government to enact secondary legislation in the field of the WHG. Still, State legislation may overrule old Federal legislation.

Some separate pieces of legislation govern specific topics, such as e.g. the French Decree of 10 July 1990 on the prevention of contamination of ground water or Book V of the French Environmental Code listing some activities involving hazardous products that must be registered as “classified facilities” and that are, as such, subject to a declaration or authorisation.

158. Generally, legislations related to water protection (clean water use, waste water disposal) require some formalities (ranging from a mere declaration to an authorisation/permit) to be performed before the activity may be launched (as described into more details below), especially if the injection of water in relation to exploration and/or extraction of hydrocarbons, as under Article 11, §3 (j) of the Water Framework Directive, requires a permit or imposes another formality.

159. We generally find some general principles applicable to the water use/disposal aiming at water protection.

For instance, in Germany, any measure that “may permanently or for a long period cause material adverse effects to the ground water” requires a permit.¹²² Permits may be refused if: (i) the measures raise concerns of adverse changes of the water which can neither be avoided nor compensated; and/or (ii) other administrative law requirements regarding the use of water cannot be met.¹²³ In North Rhine Westphalia, the Land both the Ministry of Environment and (we understand: in collaboration with) the mining authorities are responsible for grant of and supervision on the water permit.

In France, every entity making use of water “for a non-domestic use having an impact on the natural flow or level of surface or ground water, its environment (fauna and flora) or polluting it” must either make a declaration or obtain an authorisation. Moreover, an entity wishing to exercise some specific activities and/or using some specific products falling under Book V of the Environmental Code (or “classified facilities”) must fill in a declaration or obtain a declaration.

¹²¹ By “water protection legislation” we mean the national legislation implementing (i) 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 (the “Water Framework Directive” or “WFD”); (ii) 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 (the “Ground Water Directive” or “GWD”); and (iii) Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment, OJ L 135, 30.5.1991 (the “Urban Waste Water Treatment Directive”).

¹²² On the basis of §10 Abs. 1 in connection with §9 Abs. 2 Nr. 2 of the WHG.

¹²³ §12 of the WHG.

In Poland, every entity making use of water “in a matter exceeding regular use, i.e. for business related purposes or for over 5m³ per day” (the “particular use”) must obtain a permit.

160. The following activities related to water require the following:

	Poland	France	Germany	Sweden
Clean water use	Assessment under E.I.A. Permit Taken into account by State Mining Authority in approving detailed plan of operations for mining plant	Declaration or authorisation	Permit or approval	Notification under EC Approval under E.I.A. or separate permitting procedure (exploration) permit (exploitation)
Waste water disposal	Assessment under E.I.A. Permit Taken into account by State Mining Authority in approving detailed plan of operations for mining plant	Declaration or authorisation	Direct discharge of waste water requires a permit	Notification under EC Approval under E.I.A. or separate permitting procedure (exploration) Permit for environmentally hazardous activities (exploitation)
Injection of water for hydrocarbons exploration and extraction	Permit Taken into account by State Mining Authority in approving detailed plan of operations for mining plant	Declaration or authorisation	Drilling or digging works that may affect ground water are subject to a prior notification or a permit	Notification under EC Approval under E.I.A. or separate permitting procedure (exploration) Permit for environmentally hazardous activities (exploitation)

161. We find no separate specific requirement regarding naturally occurring radioactive materials (or "NORMS")¹²⁴ or regarding the prevention of contamination of ground and surface water. However, we understand that these issues are assessed along with the assessment of the general principles mentioned under n° 159 above. So, these issues are covered by the permits or other mentioned in the table above. For instance, in Sweden, the possible occurrence of radioactive materials (NORMS), heavy metals or saline brines is taken into account by the permit for the environmentally hazardous activity, required for the disposal of waste water.

162. In Poland, the President of the National Water Management Authority is responsible for the Water Law Act. He supervises the regulation regarding effluents which are discharged into surface waters or ground. The National Water Management Authority deals with law regulations connected with granting water-law permits. These permits set out the purpose and scope of water use, the conditions for the exercise of the authorisation and the obligations necessary to protect environmental resources and the interests of the population and the economy. For example they are required for the special use of waters (among other things: the abstraction or discharge of surface waters or groundwater, the discharge of waste water into waters or onto land), the drainage of construction sites or trenches and mining plants or the discharge of industrial wastewater containing substances that are particularly harmful for the aquatic environment.

The water permits are delivered by different authorities depending on the location of the planned activity and its nature, namely by the: (i) Poviast Starost; (ii) Voivodeship Marshall for projects which always may have a significant impact on environment; or (iii) the Director of the Regional Water Management Board for projects located in closed zones. Since the impact on water also is being assessed in the framework of the general E.I.A., the Regional Directorate for Environmental Protection or the competent head of the municipality may be responsible as well. Furthermore, the Voivodeship Inspectorate of Environmental Protection ("VIEP") is responsible, since it monitors compliance with legislation on the protection of the environment. The VIEP may take samples at any time during operation with a view of checking compliance with the Water Law. Water permits are delivered for surface and groundwater abstraction with a capacity of more than 5m³ per day. Furthermore, permits are delivered for draining of facilities, construction excavation and mines. This application is being done in parallel with the application to obtain a drilling permit.

The above mentioned authorities are also responsible for the field of storage, treatment and disposal of waste water after hydraulic fracturing. Permits granted under the water law cover the discharge of waste water to waters, soil or sewerage system as well as collection of waste water and other materials.

The State Mining Authority shall monitor the proper separation of drilled reservoir levels including surface water and groundwater by putting down and sealing the appropriate column casing. The State Mining Authority furthermore is competent for the prevention of contamination of groundwater and surface water. Issues of prevention of contamination are dealt with under the detailed plan of operations of the mining plant, to be approved by the State Mining Authority.

Talisman had to perform a specific study of all water wells within a wide radius of the drilling spot, in the framework of the procedure to obtain a drilling permit.

¹²⁴ I.e. harmful substances mobilised from the source rock by the hydraulic fracturing process and concentrated in the flow back water and consequently in the waste water.

163. In France, the Prefect is responsible for water related permits. In Germany, if a permit under the new Federal Water Act is related to a mining activity, the mining authority is responsible for granting it. In such a case, the mining authority must consult the water authority (i.e. the water civil servants of the concerned Kreise and/or Bezirk) prior to issuing the said permit.¹²⁵ In Sweden, permits are granted by the Land and Environment Court. Beforehand, the applicant must consult the County Administrative Board, the municipality and "others that may be affected by the operation". Supervision pertains to the County Administrative Board.

164. In Poland, the permits are granted for a definite period that does not exceed four, five, ten or twenty years, depending on the nature of the planned activity. In France, there are no minima or maxima: permits may be granted for an indefinite period of time. In Germany, the grant of a permit under the Federal Water Act is at the discretion of the competent authority. Permits may be granted with retroactive effects. In Sweden, the permits are valid during the period of operation (we understand: as defined in the permit).

165. In Poland, the permits are granted upon the fulfilment of certain conditions. Permits are granted following the advice of water public stakeholders and after the performance of a public survey. In France, the permit contains conditions of exploitation and planning of facilities and implementation of the project that must be fulfilled. These conditions must be in accordance with the country planning.¹²⁶ The permit conditions related to "classified facilities" must be compatible with the country planning and the interests mentioned under articles L211-1, L220-1 and L511-1 of the French Environmental Code, i.e. interests on water management, air management and classified installations for environmental protection.

166. In Poland, permits may be withdrawn or reduced in scope (without any compensation) in well defined situations.¹²⁷ Sanctions for non-compliance vary from a fine to an imprisonment conviction, depending on the gravity of the breach. In France, sanctions for non-compliance vary from a fine to a permit withdrawal. In Sweden, the CAB may issue injunctions or prohibitions necessary to ensure compliance with the Environmental Code and any other piece of legislation or decision or judgment taken on the basis of it. In case of non-compliance penalties or forfeitures may be applied.

167. Our analysis of the transposition, under national law, of EU Directives related to water protection does not reveal any specific link with the main licence proceedings and/or with the main permits except in Sweden. In Sweden, the impact on surface and ground water resources during exploitation not only is considered under the environmental permit. The Swedish Mining Inspectorate also takes into consideration these aspects, whilst approving the location during the application for an exploitation concession. The CAB provides the Mining Inspectorate with

¹²⁵ §19, para. 2, 3 WHG.

¹²⁶ Especially the plan meant by articles L211-1 to -11 and L212-1 and -3 of the French Environmental Code.

¹²⁷ Such as: (i) alteration of purpose and scope of water use; (ii) water installations were made contrary to the conditions laid down in the water permit or are not properly maintained; (iii) violation of obligations towards other facilities with water permits, those entitled to fishing, neglecting the obligation of limiting the negative impact on the environment; (iii) naturally occurred reduction of groundwater resources; (iv) use of water is not initiated or is halted for at least 2 years; (v) amendment of the related legal provisions; (vi) it is necessary in order to achieve environmental objectives as set out in the water management plans for river basins and is reasoned by monitoring data; and (vii) when justified by public interest or important economic considerations.

the required information. However, as the Inspectorate point is out, the detailed terms and restrictions for the activities are decided upon during the environmental permitting procedure (under the competence of the Land and Environmental Court).

Depending on the impact of the exploration activities on the water resources, the concerned municipalities or the CAB can require a separate water permit for exploration activities. They can also demand an overall E.I.A. dealing with these aspects, if deemed necessary.

In Poland, the impact on water resources is assessed under the general E.I.A., leading to an environmental decision.

168. Licences for shale gas exploration and/or production do not authorise the use of clean water and/or the disposal of waste water as such. Also the permits themselves do not include any permission to either use clean water and/or dispose of waste water. Permits or other permissions must be obtained/fulfilled on the basis of the separate pieces of legislation that are specific to water protection. However, in Poland, the decision on environmental conditions is attached to the application. This decision is the result of i.a. assessment of the impact on water resources. In Germany, if a permit under the Federal Water Act is related to a mining activity, the mining authority is competent for granting it. In such a case, the mining authority must consult the water authority prior to issuing the said permit.

5.3 Extraction and disposal of mineral resources

169. Mining waste management requires a prior permit and/or approval in Poland on the basis of the Mining Waste Act transposing Directive 2006/21/EC on the management of waste from extractive industries (or the "Mining Waste Directive").¹²⁸ It requires a prior submission in France on the basis of Article L 541 of the Environmental Code (among others), transposing the Mining Waste Directive; and a prior notification in Germany on the basis of Article 22a of the Federal Mining Ordinance (also transposing the said Directive). In Germany, mining waste is further regulated by States regulation (States' Depth Drilling Ordinances). In Sweden, mining waste management is part of the general permit required under the Environmental Code, as mentioned in [section 5.1.1](#) above. Detailed regulations are found in the Ordinance on Mining Waste.

170. Article 22a of the German Federal Mining Ordinance does not apply to waste water, which is subject to the specific pieces of legislations mentioned above. In Sweden, waste water from mining operations are regulated by the Ordinance on Mining Waste, however this ordinance does not cover injection of water in geological formations conducted due to technical reasons.

171. In Poland, the following activities require the following permits/decisions: (i) the mining waste management programme must be subject to a prior approval; (ii) operating the mining waste disposal plant requires a prior permit; and (iii) the closing of the mining waste disposal plant requires a prior approval. The authorities granting the permits and/or approving the activities are (i) the Regional Director of Environmental Protection for undertakings in special

¹²⁸ 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 – Statement by the European Parliament, the Council and the Commission, OJ L 102, 11.4.2006.

restricted access areas; and (ii) the Marshal of the Voivodship for prospection, exploration or production of minerals for which an authorisation was issued by the Minister of Environment, if the project may have a significant impact on environment. The VIEP may check fulfilment of the permit requirements at any time during operation. The permit approving the waste management programme is valid as long as the programme is up-to-date. The permit approval of operations is granted for ten years. Permits or authorisations are granted subject to compliance with provisions on waste, safety of life and health of humans, environment protection and, for plant operation, conditions regarding monitoring of the plant. According to the competent Polish authorities, the permits need to be granted after the E.I.A. and before the beginning of exploration/exploitation activities. The applicant for operating the waste management plant must moreover have the necessary financial resources for it. Sanctions are applicable in case of non-compliance (fines, summons, withholding of activities, up to detention penalty for provisions on the closing down of plants).

Separate permits or approvals may be required for the following aspects, other than extractive waste management:

- Approval for hazardous waste management programme for waste production more than 0,1 Mg per year;
- Permit for hazardous waste production more than 1 Mg per year or other than hazardous waste more than 5000 Mg per year;
- Permit for activity of waste recovery or disposal.

The Polish State Mining Authority approves the inclusion of aspects on disposal of extraction minerals in the operation plan of the mining plant on the basis of the granted permits. Furthermore, a licence or notification is required with the President of the National Atomic Energy Agency, if the mineral resources contain radioactive substances. Such a licence/notification generally speaking is required for all activities of manufacturing, processing, disposal, transport or use of nuclear materials, radioactive sources, radioactive waste and spent nuclear fuels as well as trade in these materials and also isotopic enrichment.

172. In France, the management waste plan for operating a waste management installation must contain elements such as: (i) a sample procedure of waste characterisation; (ii) methods for waste management; (iii) control procedures; (iv) identification of potential damages; (v) risk analysis; (vi) etc.

173. In Germany, the waste management plan is valid for five years. Article 22a of the Federal Mining Ordinance applies to mining waste disposed within the mining facilities. The mining waste disposed outside is subject to the general German waste regulation, namely the Closed Substance Cycle Management Act. The general waste regulation is not applicable to mining waste (we understand: disposed within the mining facilities).

174. In Poland, under the general Waste Law – not transposing Directive 2008/98/EC¹²⁹ yet – the following actions require a permit: (i) dangerous waste management programmes are subject to a prior approval; and (ii) the production of waste from an installation, if more than 1 milligram (“Mg”) of dangerous waste are produced or more than 5k Mg of waste other than dangerous waste are produced. The authorities granting the permits/authorisations and supervising their implementation are: (i) the Regional director of environmental protection for

¹²⁹ 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.

undertakings in special restricted areas; (ii) the Marshal of the Voivodship for E.I.A. undertakings; and (iii) the Starost for other undertakings. Permits/authorisations are granted for ten years. Permits or authorisations are granted subject to compliance with provisions on waste, safety of life and health of humans and environment protection. Sanctions in case of non-compliance range from fines to withdrawal of authorisation/permit to imprisonment penalties.

175. In France, Article L 541 and its implementing Decree transpose (among others) Directive 2008/98/EC. Under this Article, all persons producing or dealing with waste are obliged to provide the administration with all information concerning characteristics, origin, quantity, destination and modes of waste elimination. Dangerous waste needs to be packed and conditioned as well as labelled. Collection, transport, trade of waste presenting serious danger or inconvenience (toxic) require authorisation by the administrative authority or a declaration that they do not present such a danger/inconvenience. Installations/establishments producing waste need to keep a chronological register of production and treatment of waste, during three years.

176. In Sweden, the Inspectorate confirmed that the competent authorities for dealing with extraction and disposal of mineral resources during exploration are the concerned communities and/or the CAB. Similarly to the impact on water, during the exploratory phase these issues can be dealt with by means of an overall E.I.A. (if deemed necessary).

The environmental permit as required for starting exploitation activities covers the extraction and disposal of other resources.

177. No additional information is available with respect to Germany. Germany, Sweden and Poland have not yet implemented Directive 2008/98/EC.

178. As a general rule, we do not find any specific interplay between permits for mining waste management/waste and the main authorisation or permitting procedure. Requirements must be accomplished before the activity (i.e., as we understand it: drilling) starts.

5.4 Gas emissions in the air

179. Generally, a distinction may be drawn between gas emissions in the air in general and emission of greenhouse gases falling under the European Emission Trading Scheme ("E.T.S"). In Germany, all gases (including greenhouse gases) fall under the same piece of legislation, i.e. the Emission Protection Act. Limit values for most gas emissions are laid down in the Technical Instruction on Air Quality Control ("TA Luft"). In North Rhine Westphalia, the competent authorities in the field of emissions resulting from mining activities are the same authorities supervising the core authorisation procedures. Therefore, in North Rhine Westphalia, the Ministry for Economic Affairs and the mining authorities are responsible.

180. In Sweden, obligations and limitations regarding emission of gases in the air find a legal basis in the Environmental Code, the Ordinance on Environmentally Hazardous Activities and the Ordinance on Environmental Quality Standards for Ambient Air. In Poland, Article 27 of the Environment Protection Law is applicable. In France, Title II of the Environmental Code on the surveillance of air quality (including greenhouse gases) is applicable, as well as the Act on air and rational use of energy and the Order of 24 December 2002 on yearly declaration of polluting emission.

181. In Poland, a permit for emitting gases in the air (including methane) is required whereas in France a prior declaration is required (including for methane) for classified installations when certain thresholds are exceeded (as defined in the order of 24 December 2002 on yearly declaration of polluting emission). Moreover, gas flaring and venting may require an authorisation in France. In Poland, the permit is valid for ten years. The declaration in France must be renewed on a yearly basis. In France, the yearly declaration must be made to the Prefect. In Poland, the emission permit must be obtained from: (i) the Poviast Starost; (ii) the Voivodeship Marshall; (iii) the Director of Regional Water Management Board, depending on the nature of the planned activity and its location. Furthermore, the State Mining Authority deals with methane and other gas emissions at the stage of the approval of the operations plan of the mining plant as well as during the inspection of the works in progress. The VIEP can verify compliance with the applicable legislation at any stage of operation by taking samples. No separate environmental permitting procedure exists for methane emissions. The permit may be withdrawn in several cases in Poland.¹³⁰ During the E.I.A., gas emissions also are being taken into account. In Poland, sanctions can range from a fine to an imprisonment penalty. In France, no specific sanction is foreseen.

182. In Sweden, gas emissions in the air is part of the general permit required under the Environmental Code, as mentioned in [section 5.1.1](#) above. A holistic and integrated approach is applied, where impacts on land, water and air are jointly considered. A permit is thus required for all gas emissions. Similarly to the above mentioned aspects, the concerned municipalities or the CAB can require an overall E.I.A., covering gas emissions into the air during exploration activities.

183. With respect to certification of equipment used for shale gas activities, we did not find any specific provisions requiring the use of certain types of equipments or requiring the equipment to be certified.

184. As far as acidifying and eutrophying pollutants or ozone precursors are concerned, i.e. nitrogen oxides ("NOX"), volatile organic compounds ("VOCS") and sulphur dioxide ("SO₂") falling under Directive 2001/81/EC,¹³¹ they are taken into account in Sweden both under the general permit under the Environmental Code and the regulation on E.T.S, as well as in Poland, under the above-mentioned permitting requirements.

185. In Poland, if greenhouse gases exceed the national emission ceiling, the National Emission Center must prepare a national emission reduction plan. On the basis of this plan, the competent public authorities are required to carry out a study on the need to limit or revoke emission permits and integrated permits to achieve the objectives of the plan. In Germany, the emissions must not exceed the values of the TA Luft.

¹³⁰ I.e. in case of: (i) improper exploitation of the installation, posing threat to the environment; (ii) threat to human life; (iii) exploitation of the installation in violation of the terms of the emission permit; (iv) national emission ceilings are exceeded; (v) activity is not initiated or is halted for at least two years; (vi) amendment to the related legal provisions; (vii) it is necessary in order to achieve environmental objectives.

¹³¹ Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain atmospheric pollutants, OJ L 309, 27.11.2001.

186. In Sweden, a separate permit under separate pieces of legislation, i.e. the Emission Trading Act and the Emission Trading Ordinances, is required for the emission of greenhouse gases. A permit is required for emitting greenhouse gases defined as “the release into the atmosphere of carbon dioxide, nitrous oxide and perfluorocarbons from one or more sources in an installation”. In order to obtain this permit, the information must be disclosed regarding: (i) the plant in operation (including engineering technique being used); (ii) the material (raw material and/or intermediate goods) used giving rise to emissions; (iii) the source of emission; (iv) the planned measures for monitoring and reporting; and (v) a non-technical summary of the information mentioned above. Non-compliance with the Emission Trading Act implies sanctions such as fines or imprisonments, name disclosure and different amounts of fees.

187. There is no direct link between the issue of regulation of shale gas activities and motor vehicle air pollutions, as regulated by Directive 2005/55/EC on pollutant emissions from heavy-duty vehicles¹³² (the “Emission from Diesel and Gas Directive”) as replaced by Regulation 2011/582/EU on emissions from heavy-duty vehicles.¹³³ This Regulation aims in the first place at manufacturers or importers of new vehicles rather than at operators willing to perform shale gas activities. Manufacturers or importers of new vehicles require a declaration (France) or a certificate of approval (Poland) before the said vehicles can be used, but we do not see a real interplay with shale gas activities apart from the fact that it is important to use a vehicle that complies with the applicable laws/regulations to perform shale gas activities. In North Rhine Westphalia, the Ministry of Economy told us that emissions from Diesel and Gas related to mining activities fall under emissions resulting from mining activities. The competence, therefore, lies with the Ministry of Economic Affairs and Energy and the lower mining authorities. In Poland, according to the Ministry of Environment, the Minister of Economy sets emission standards related to gas pollutants and particulates for diesel and gas engines. However, no separate permitting procedure exists.

5.5 Soil protection

188. Germany has a specific act dedicated to soil protection, namely the Federal Soil Protection Act. In Poland, the topic is governed by the Environment Protection Act and the Act on Protection of Agricultural and Forest Land. In France and in Sweden, soil protection is governed by the Environmental Code (Book V of the Environmental Code in France, as part of the general prevention of pollution, risks and nuisances).

189. No permit specifically related to soil protection as such is required in the scrutinised Member States. Some general obligations apply such as the obligation to avoid harmful damages to the soil in Germany or the obligation to observe soil quality standards in Poland.

¹³² Directive 2005/55/EC of the European Parliament and of the Council of 28 September 2005 on approximation of the laws of the Member State relating to the measures to be taken against the emission of gaseous and particulate pollutants from compressing-ignition engines for use of vehicles, and the emission of gaseous pollutants from positive-ignition engines fuelled with natural gas or liquefied petroleum gas for use in vehicles, OJ L 275, 20.10.2005.

¹³³ Commission Regulation 2011/582/EU of 25 May 2011 implementing and amending Regulation 2009/595/EC of the European Parliament and of the Council with respect to emission from heavy duty vehicles (Euro VI) and amending Annexes I and III to Directive 2007/46/EC of the European Parliament and of the Council, OJ L 167, 25.6.2011.

190. In France, general obligations concerning “classified installations” are applicable. The authorisation of some (more polluting) classified installations requires an impact study, specifying soil pollution among others. The declaration of some (less polluting) classified installations requires a document allowing appreciating the compatibility of the activity. The classified installations must keep up-to-date the state of pollution of the soil they are located on. When the activity ends, the entity must deliver the concerned Prefect a note describing (i) measures for managing possible risks linked to the soil; and (ii) prohibitions or limitations related to the use of the soil accompanied, if necessary, by any proposed provisions to set up limitations and/or easements. In case of imminent threat of soil pollution or soil pollution, the Environment and Energy Agency (“ADEME”) can start the necessary works to remedy it at the expenses of the responsible operator/entity.

191. In Sweden, soil protection is part of the general permit required under the Environmental Code, as mentioned in section 5.1.1 above. Similarly to the above mentioned aspects, the concerned municipalities or the CAB can require an overall E.I.A. on the impact of the exploration activities, covering soil protection.

192. In order to carry out shale gas activities on forest and/or agricultural lands, it might be necessary to change the use of land as defined in the zoning plans in Poland (the “land development plans”). The candidate willing to carry out such an activity on such a type of land must file a request for permit for change of land use to the competent authority, namely the (i) director of National Park of lands within the boundaries of national parks; the (ii) Poviast Starost for agricultural lands; and the (iii) director of the Regional Directorate of State Forest for forest lands. Permits are granted for an indefinite period of time. The entity who received the permit must pay a yearly lump sum and a fee. In case of non-compliance financial sanctions are applicable (e.g. increase of 10% of the fee in case of performance of such an activity without the right permit).

5.6 Wild life protection

193. Directive 92/43/EEC on the conservation of natural habitat and of wild fauna and flora¹³⁴ (the “Habitat Directive”) and Directive 2009/147/EC on the conservation of wild birds¹³⁵ (the “Wild Bird Directive”) are transposed into general pieces of law, such as the Environmental Code in France and Sweden, or general pieces of law in the field of environmental protection, such as the Act on Access to Environmental Information and its Protection, Participation of the Society in Environmental Protection and Environmental Impact Assessment in Poland or the Federal Nature Conservation Act in Germany. Specific implementing pieces of legislation implement specific aspects of wild life protection measures, such as the Order for obtaining derogations to the preservation measures in France, etc.

194. Activities in Natura 2000 protected areas require a prior assessment procedure in Poland, France and Sweden. Under the Polish Act on Natura Protection, “any plan or project not directly connected with or necessary for the management of the Natura 2000 protected site but

¹³⁴ Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992.

¹³⁵ Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on conservation of wild birds, OJ L 20, 26.1.2010.

likely to have a significant effect on it is subject to an assessment procedure". During this assessment, the competent authority verifies whether the plan or project "would not adversely affect the site at stake". In case it would and there is a lack of alternative solution, a plan or project can be authorised "for imperative reasons overriding public interest only" and provided that "compensatory measures" are taken and the Commission must be informed. For the sites hosting priority natural habitat types and/or priority species, the law forbids any considerations to carry with the plan or project other than those relating to human health or public safety, to beneficial consequences of primary importance for the environment or other imperative reasons of overriding public interest after obtaining an opinion from the Commission. As a general rule of thumb, assessment of the impact on a Natura 2000 area is part of the E.I.A. The General and Regional Directorate for Environmental Protection are the competent bodies. The Directorate assesses the proposed project, including in particular the verification of the environmental impact report for the project, the acquisition of the opinions and approvals required by the Act, ensuring the possibility of public participation in the procedure. The authority is responsible for carrying out the correct procedure and decides about a possible necessity of imposing the appropriate Natura 2000 assessment obligation on the investor.

195. In France, the Prefects determine in advance the operations being capable to significantly affect the Natura 2000 protected areas, under the form of a decree, after consultation of the Conseil Scientifique Régional du Patrimoine Naturel and the Commission Départementale de la Nature, des Paysages et des Sites. Applicants must file an application form to the Prefect. A public inquiry is conducted. The Prefect takes a decision within two months.

196. In Sweden, a permit may be granted only if the operations: (i) do not harm the habitat in the protected area; and (ii) do not disturb the protected species in such a way that it affects the preservation of the species in the area. During the application procedures for exploration authorisations, the Swedish Mining Inspectorate informs the applicant about the protected areas before granting an authorisation covering these areas. The Inspectorate furthermore informs the applicant about the consequences for the coming exploration/exploitation work. The information is provided to the Inspectorate by the CAB and the concerned municipalities. With a view of starting exploration activities, the CAB or the concerned municipalities can grant permits and/or foresee exceptions from local nature preserve regulations (municipality) and the national Natura 2000 regulations (CAB).

During the procedure for obtaining an exploitation concession, the Mining Inspectorate cannot grant a concession if nature preservation provisions and/or Natura 2000-regulations are not complied with. Binding opinions on this are provided by the concerned municipalities (local nature preserve regulations) and/or the CAB (national Natura 2000-regulations). If the Mining Inspectorate disagrees with this opinion, the concession must be tried by the Government. Verification of the Natura 2000 conditions also can happen under the overall procedure leading to the grant of an environmental permit. The issue of a separate permit only may arise, when the impact of the foreseen activities on the protected site is significant.

The Inspectorate confirms that, as a general principle, in Sweden, no drilling activities are allowed in Natura 2000 and nature preserve areas.

197. Activities in non Natura 2000 protected areas are subject to authorisations related to nature protection in Poland, such as the permit to remove trees and/or shrubs, derogations from the protection rules applicable to the species of wild animals, plants and fungi or derogations from prohibitions on certain activities in breeding or stay zones of protected

animals. In France, a demand for derogation to the preservation measures must be introduced to the Prefect or to the Minister in charge of the protection of the nature when the operations may lead to the destruction of endangered species protected under article L411-1 of the Environmental Code and whose geographic range covers more than one department.

198. In Germany, no specific permit is required but, as a general rule, avoidable environmental interventions are prohibited whereas unavoidable ones require a compensation, namely compensation measures locally ("Ausgleichsmassnahme") or contingency measures elsewhere ("Ersatzmassnahme"). The Federal Mining Act requires a weighing of the exploration or production activities with public interests. In the Land of North Rhine Westphalia, the Ministry of Environment and the mining lower authority are the competent supervisory authorities.

199. We do not find any specific link between the Natura 2000 protected areas procedures and other authorisation/permitting procedures for shale gas activities. In France and Poland, the Natura 2000 protected area procedures generally are carried out along with the environment impact assessment, before the core authorisation procedure. In Sweden, protection measures of Natura 2000 protected areas must be accompanied by an environmental impact assessment. According to the Swedish Mining Inspectorate, in the beginning of the procedure to obtain an exploration/exploitation authorisation, it informs the applicant on the Natura 2000-protection of certain areas within the territory to be authorised. In Germany, protection of Natura 2000 protected area is an integral part of the permit procedure.

5.7 Noise

200. Directive 2009/42/EC relating to the assessment and management of environmental noise¹³⁶ and Directive 2000/14/EC on the emission in the environment by equipment for use outdoors¹³⁷ are transposed, into the scrutinised national laws, by specific laws on noise emissions or general environmental laws, such as e.g. the Environmental Code in Sweden.

201. Outside activities related to shale gas exploration are submitted to noise limitations in all scrutinised Member States. In Poland e.g., no activity, including prospection, exploration or production of hydrocarbons, may lead to a level of noise in the environment exceeding the standards or levels set for "quiet zones". The Minister of Environment sets acoustic standards of environmental quality for all noise sources and activities generating noise. However, it is the Minister of Economy who sets the standards for noise emission generated by outdoor equipment. No separate permit exists, but remedial actions have to be taken in case of excessive noise. Again, the Storosta on county level, the Marshal of Voivodship for projects that may significantly affect the environment and the Regional Director of Environmental Protection (for closed zones) or the competent head of the municipality in the framework of the E.I.A. are responsible. The VIEP may check compliance at any stage of the operation.

¹³⁶ Directive 2009/42/EC of the European Parliament and of the Council of 6 May 2009 on statistical returns in respect of carriage of goods and passengers by sea, OJ L 141, 6.6.2009.

¹³⁷ Directive 2000/14/EC of the European Parliament and of the Council of 8 May 2000 on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors, OJ L 162, 3.7.2000.

202. In Germany, Technical Instructions on Noise Abatement ("TA Lärm") contain binding noise limits, differing according to the area and the time of the day. In Sweden, noise indicators, Lden and Lnight (as defined in Annex 1 to Directive 2002/49/EC), are to be used in the assessment. For industrial activity, Lden should be assessed in the intervals 55-59 dB, 60-64 dB, 65-69 dB, 70-74 dB and >75dB and Lnight in the intervals 50-54 dB, 55-59 dB, 60-64 dB, 65-69 dB and >70dB. If necessary in order to provide a true image of the environmental noise in a specific situation, complementing noise indicators can be used.

203. The main authorisation/permitting procedures do not have a specific link with standards regarding noise emissions: the licences/permits do not legalise noise emissions; any activity has to comply with the applicable standards. However, in North Rhine Westphalia, the competent authorities in the field of noise resulting from mining activities are the same authorities supervising the core authorisation procedures. Therefore, in North Rhine Westphalia, the Ministry for Economic Affairs and the lower mining authority are responsible. The levels of noise in Poland are considered in the E.I.A. and may be included in the decision on environmental conditions. Furthermore, noise pollution is taken into account by the State Mining Authority during the approval of the operations plan of the mining plant.

204. Manufacturers of outdoor equipments used for shale gas activities (such as e.g. drilling equipments) must comply with the noise regulations applicable to equipments. They must obtain a certain label, i.e. a C.E. logo together with the indication of the guaranteed sound level LWA in Poland e.g. or "declaration of conformity" in Germany. In France, depending on the noise-related risk of the equipment, the manufacturer or producer or the said equipment must obtain a homologation, a certification or a declaration, the observance of which allows the granting of the conformity mark. In Sweden, before placing drilling equipment on the market or putting it into service, the manufacturer, or his authorised representative, must subject each type of equipment to the internal control of production procedure; and/or periodical checking procedure, or verification of single units or full quality assurance procedure. The manufacturer, or his authorised representative, must establish a declaration of conformity for each type of equipment.

205. In France, similarly to drilling, noise resulting from mining activities is regulated by the Règlement général des industries extractives ("RGIE"), which contains a number of dispositions in the field of hygiene and security of workers active in the mining sector.

206. Sanctions are applicable in case of non-compliance with requirements on noise emission of outdoor equipments, such as e.g. fines or imprisonment penalties in Sweden, invalidity of the declaration in France, administrative fines in Germany.

207. The entities performing the shale gas activities do not have to comply with requirements for noise emissions of outdoor equipments (those putting the equipment on the market do). However, only those equipments that are compliant with the applicable rules may be put on the market.

5.8 Pressure equipments

208. Directive 97/23/EEC on the approximation of law on pressure equipment is transposed, into the scrutinised national laws, by specific pieces of legislation, such as the Decree on

pressure equipment in France or the Regulation on substantial requirements for pressure equipments in Poland. In Germany and in Sweden, we find transposing provisions in more general acts, such as the Equipment and Product Safety Act in Germany or the Work Environment Act in Sweden.

209. In all scrutinised Member States the transposing dispositions transpose, almost word for word, Directive 97/23/EEC into their national laws. Consequently, any pressure equipment falling within the scope of the Directive has to comply with the requirements exactly as specified in the Directive. With respect to shale gas (hydrocarbons) activities, it is worth noticing that, under Article 3, §9 of the Directive, equipment for well-control is excluded from its scope:

“Well-control equipment used in the petroleum, gas or geothermal exploration and extraction industry and in underground storage which is intended to contain and/or control well pressure. This comprises the wellhead (Christmas tree), the blow out preventers (BOP), the piping manifolds and all their equipment upstream”.

210. The obligation to comply with requirements regarding pressure equipment falls within the manufacturer/the person putting the equipment on the market. A declaration of conformity with an EC label must be obtained. The operation of the equipment is not subject to the requirements of the Directive. Our Swedish national correspondent mentions that unannounced visits to the production site may be undertaken by the authority competent for granting the said declaration and for monitoring the equipments.

211. In France, the Prefect may lay down specific conditions for putting into service certain equipments under the condition that the same safety level is guaranteed and after consultation of the Commission Centrale d'Appareils sous Pression. From the information at our disposal, we do not know how this possibility may affect equipments used for shale gas activities.

5.9 Summary of our findings with respect to environment and public health protection

Environmental Impact Assessment requirement

212. In Sweden, procedures for ensuring compliance with environmental requirements have a noteworthy feature. Any “environmentally hazardous activity”, as defined in the Environmental Code, is subject to a global prior approval procedure, covering all aspects related to environment protection and public health (including regarding chemicals). The applicant needs to provide an E.I.A. in order to obtain an exploitation concession. Furthermore, an E.I.A. is required in order to obtain a permit for environmentally hazardous activities, so it is required to start exploitation activities. Such an E.I.A. is not compulsory with a view of starting exploration activities. However, the municipalities/CAB can demand one, if they deem it necessary (i.e. if the information in the base line survey does not allow to “screen” the environmental impact of the exploration activities).

In Germany, the E.I.A. requirement is part of the planning approval, whereas it is part of the main authorisation and/or permitting procedure(s) in France and in Poland.¹³⁸ In Germany the

¹³⁸ In France, an E.I.A. properly speaking is required for obtaining the concession as well as for obtaining the AOTM. At the stage of the exploration authorisation phase, an environmental “notice” only must be submitted to the DGEC. See above for more details.

State Mining Regulator, in collaboration with other permitting authorities involved, has to deal not only with exploration and production related technical issues when deciding on the specific project application, but also with a variety of safety and environmental concerns which have to be regulated in the operating permit it grants. Applicants have to meet precautionary requirements as to accident prevention, various environmental issues, e.g. emission control, waste management, water use and discharge as well as nature conservation restrictions specifically outlined in Federal and State regulations. So, the link between the E.I.A. and the core-procedure is mainly (but not only) to be found at the level of the permits.

In France and Poland, the various environmental aspects tend to be assessed separately, on the basis of separate legal basis. In France specifically, the various environmental permits and some other permits (building permit e.g.) are obtained from various authorities who are independent from one another (Police des Eaux, Police de l'Air, Police des Installation Classées, etc.). These tend to act separately although there is some kind of coordination between some of them. According to TGSE, this fragmented way of proceeding is not a problem. Each Police is highly specialised and this has a positive impact on the duration for obtaining the necessary authorisations.

213. As a rule, "annex I projects" (as defined under Directive 85/337/EC) require a positive E.I.A. before the main authorisation and/or permitting procedure(s) (depending on the Member State) can start. In Germany and Poland, "any project whose contemplated aim is the extraction of 500k m³ a day" is subject to an E.I.A. requirement. The Land of North-Rhine Westphalia has filed a motion in the Bundesrat to extend this obligation to any framework operation plan involving hydraulic fracturing. In Poland shale gas projects are in any case at least considered as annex II projects which may require an E.I.A., following an environmental screening procedure after which the competent authorities decide whether or not to demand for an E.I.A. on the basis of criteria mentioned in annex III of Directive 85/337/EC.

214. In Poland, the E.I.A. leads to a so-called decision on environmental conditions. This decision needs to be attached to the application file for obtaining an exploration or exploitation authorisation. It is binding upon all administrative decisions relating to projects requiring an E.I.A.

215. The fact that some companies are not under any obligation to perform an E.I.A. does not prevent them from carrying out some environmental impact assessment on a voluntary basis.

216. Regarding disclosure of information to the public, we note that, in some Member States (Poland notably), the competent authority may refuse to give access to information on projects. The obligation to disclose information to the public is the broadest in Sweden where "anyone" may request for "any additional information" on the basis of the Public Access to Information and Secrecy Act, after a secrecy check is being performed by an independent authority.

Water protection

217. In Poland, permits related to water are delivered by various authorities, depending on the location of the planned activities or its nature. In other Member States, one single authority is competent with respect to water protection, such as the Land and Environment Court in

Sweden or the mining authority in Germany when the approval relates to mining. In such a case, the mining authority must consult with the competent water authority.

218. We find one Member State only where there is a requirement to perform a public inquiry, i.e. in Poland. In Sweden, as water protection is part of the general assessment of environmentally hazardous activities, we know that the public is involved as well, as defined in this more general procedure. According to the Mining Inspectorate, the public may also be involved by means of the E.I.A., under which water treatment in the exploration phase can be tried (if the municipalities/CAB deem an E.I.A. to be necessary). Similarly, in Poland, the public also may be involved in case the impact on water resources is being assessed in the framework of the E.I.A.

219. In Germany and Sweden, requirements regarding water protection are accomplished in the framework of the main authorisation/permitting procedure and/or stem from the E.I.A. requirement. In Sweden, this is part of the holistic environmentally permitting procedure. In Germany, mining authorities cannot grant an authorisation before they have obtained positive advice from the concerned water civil servants. In Poland, the Ministry of Environment indicates that permits are granted separately, but impact on water resources and measures thereto may be assessed in the framework of the E.I.A. The State Mining Authority furthermore takes into account the different granted permits/approvals in approving the plan of operations of the mining plant.

Mining waste extraction and disposal

220. Legislations regarding mining waste extraction and disposal vary greatly from one Member State to the other. For instance, mining waste management requires a prior permit and/or approval in Poland, a prior submission in France and a prior notification in Germany.

221. Different authorities may be competent depending on the type of activity concerned (mining waste management e.g.), the stage of the process (Poland e.g.) and/or the place of operation. In Germany, different rules apply depending on whether the waste is disposed of inside or outside the mining facility.

222. As a general rule, we do not find any specific interplay between permits for mining waste management/waste and the main authorisation/permitting procedure(s) and/or the E.I.A., except in Sweden. Requirements regarding mining waste must be accomplished before any activity starts, as a general rule. In Poland, the competent Polish authorities specify that mining waste disposal requires a separate permit, but may be part of the overall assessment under the E.I.A. The State Mining Authority also takes into account the separately granted permits in the process of approving the plan of operations of the mining plant.

223. Please note that most of the scrutinised Member States have not implemented Directive 2008/98/EC yet. However, they all have legislation in force regulating water protection.

Gas emissions in the air

224. Germany is the sole scrutinised Member State where all gases, including greenhouse gases, fall under the same piece of legislation, i.e. the Emission Protection Act. In the other

Member States, obligations and limitations regarding emission of gases are split in several different legal bases.

225. In some Member States a permit is required (Poland e.g.) whereas in other a prior declaration is required (France e.g.). The permit in Poland is granted for ten years whereas the declaration must be renewed on a yearly basis in France. In Poland, various authorities are competent for granting the permit depending on the place and type of activity. Furthermore, the State Mining Authority deals with methane and other gas emissions at the stage of the approval of the plan of operations of the mining plant. The VIEP can verify compliance with the applicable legislation at any of the operation by taking samples. No separate environmental permitting procedure exists for methane emissions. The permit may be withdrawn in several cases in Poland.¹³⁹ During the E.I.A., gas emissions also are being taken into account.

226. In Sweden, gas emissions in the air are part of the general permit required under the Environmental Code. A separate permit regarding all types of gas is required under a separate piece of legislation (than the Environmental Code), i.e. the Emission Trading Act and the Emission Trading Ordinances. Gas emissions resulting from exploration activities can be tried under the E.I.A. as demanded by the concerned municipalities and/or CAB. Similarly, in Poland, gas emissions in the air can be dealt with under the E.I.A. as well as in the framework of the approval of operations plan of the mining plant as well as during the inspection of the works in progress.

227. As far as acidifying and eutrophying pollutants or ozone precursors are concerned, i.e. NO_x, VOCs and SO₂, there are taken into account in Sweden both under the E.I.A. (exploration), general permit (exploitation) under the Environmental Code and the regulation on E.T.S, as well as in Poland, under the above-mentioned permitting requirements.

Soil protection

228. No permit specifically related to soil protection as such is required in the scrutinised Member States. Some general obligations apply such as the obligation to avoid harmful damages to the soil in Germany or the obligation to observe soil quality standards in Poland.

229. In France, general obligations applicable to "classified installations" are applicable. The authorisation of some (more polluting) classified installations requires an impact study, specifying soil pollution among others. The declaration of some (less polluting) classified installations requires a document allowing appreciating the compatibility of the activity.

230. In Sweden, soil protection is part of the general permit required under the Environmental Code. According to the Swedish Mining Inspectorate, soil protection during exploration can be tried under the E.I.A. as demanded by the concerned municipalities and/or CAB. Also in Poland, soil protection may be part of the E.I.A.

¹³⁹ I.e. in case of: (i) improper exploitation of the installation, posing threat to the environment; (ii) threat to human life; (iii) exploitation of the installation in violation of the terms of the emission permit; (iv) national emission ceilings are exceeded; (v) activity is not initiated or is halted for at least two years; (vi) amendment to the related legal provisions; (vii) it is necessary in order to achieve environmental objectives.

Wildlife protection

231. Activities in Natura 2000 protected areas require a prior and specific assessment procedure in Poland, France and Sweden. In Germany, as a general rule, avoidable environmental interventions are prohibited whereas unavoidable ones require a compensation, namely compensation measures locally or contingency measures elsewhere.

232. As a general rule, assessment of whether Natura 2000 protected areas are eligible for shale gas activities procedures is linked to the authorisation/permitting procedures for shale gas activities. In France, the DGEC receives, at the exploration authorisation phase, an "environmental notice" aiming at assessing whether the candidate is fully aware of all environmental issues that his/her project might raise. The notice may cover Natura 2000 aspects as the case may be. For exploitation activities, such an assessment will be part of the compulsory E.I.A.

In Poland, the Natura 2000 assessment is an integral part of the E.I.A. In Sweden, protection measures of Natura 2000 protected areas must be accompanied by an E.I.A. During exploration, the municipalities/CAB can decide on a separate permit and/or exception on the local nature preserve rules and/or Natura 2000 regulations.

During the exploitation concession procedure, furthermore, the Swedish Mining Inspectorate informs the applicant on the Natura 2000 character of the concerned area. During the procedure to obtain an exploitation concession, the Mining Inspectorate tries together with the CAB and/or the concerned municipalities on compatibility of the activities with the Natura 2000 restrictions. The Natura 2000 assessment also can be part of the holistic environmental permitting procedure. In Germany, protection of Natura 2000 protected area is an integral part of the permitting procedure.

Other rules

233. Outside activities related to shale gas exploration are submitted to noise limitations in all scrutinised Member States. The main authorisation/permitting procedures do not have a specific link with standards regarding noise emissions: the licences/permits do not legalise noise emissions; any activity has to comply with the applicable standards. Moreover, manufacturers of outdoor equipments used for shale gas activities (such as e.g. drilling equipment) must comply with the noise regulations applicable to equipments. However, in Poland, respect for noise limits may be taken into account in the E.I.A. and is verified by the State Mining Authority in approving the plan of operations of the mining plant.

234. Rules on environmental liability do not relate to the authorisation and/or permitting procedure(s) properly speaking. They apply to the carrying out of prospection, exploration and/or production activities. We find that shale gas activities fall under a strict liability regime in all scrutinised Member States, with the notable exception of Germany, where a regular fault is necessary for triggering environmental liability. As we will see it below, the situation may be different for civil liability. Rules regarding liability are more or less similar in all scrutinised Member States, especially regarding the obligation to take preventive and/or restoration measures.

235. The fact that no specific interplay exists does not mean that there is no link at all between the main procedure and environmental liability aspects. E.g. in France one of the main purposes, among others, of the environmental notice to be submitted to the DGEC at the

exploration authorisation phase, is to check whether the candidate has the necessary technical and financial capacity for facing environmental issues or liability (insurance against environmental liability for instance) or for putting things in their pristine state at the termination of the activities.

6 Legislation with respect to chemicals

6.1 Transport of dangerous goods

236. In all scrutinised Member States, but Poland, Directive 2008/68/EC on the inland transport of dangerous goods¹⁴⁰ has been implemented. In Poland, this implementation is considered to be one of the priorities for the Polish Government.

237. In all the scrutinised Member States, general transport law is applicable and there is no separate regulation governing the transport of chemical substances for the drilling and hydraulic fracturing process specifically (let alone for drilling and hydraulic fracturing in the framework of shale gas exploration or exploitation activities).

238. Sweden appears to be the only Member State requiring a permit for transportation of dangerous substances used for drilling and hydraulic fracturing. This submission is to be obtained from the Swedish Civil Contingencies Agency (Myndigheten för samhällsskydd och beredskap – “MSB”). The MSB is responsible for the supervision on transportation of dangerous goods on rail and railway. The application for such a permit takes approximately six weeks. Generally speaking, the application needs to contain details on the applicant and the transport as well as an explanation on why the permit is necessary and a suggested validity period of the permit. Within their county, the CAB can decide to limit or even prohibit transportation of dangerous goods.

239. In Germany, transportation of some chemical substances requires prior permission. However, this is not the case for transportation of substances used for the drilling and/or hydraulic fracturing process. In North Rhine Westphalia, the mining civil servant is competent for transport directly linked to the drilling. When the transport is located outside the area of exploration/exploitation, the general rules on transportation apply.

240. In Poland and France, no particular permit is required. However, the (possibly external) entity transporting the dangerous substances needs to adhere to certain administrative obligations. These obligations are laid down by the European Agreement concerning the International Carriage of Dangerous Goods by road (“ADR”), the Regulations concerning the International Carriage of Dangerous Goods by rail (“RID”) and the Regulations concerning the International Carriage of Dangerous Goods by Inland Waterways (“ADN”). They relate e.g. to the obtainment of an ADR certificate of approval for means of transport, drivers, other employees as well as the presence of experts and advisors in charge of the safety of the transport. In Poland, the Chief and Voivodship Inspectorate of Environmental Protection verify compliance with the ADR.

241. None of the above-mentioned procedures are connected to the core authorisation and permitting procedures. However, it is evident that transportation of chemical substances needs to be in line with the applicable regulation, before such transportation can take place.

¹⁴⁰ Directive 2008/68/EC of the European Parliament and the Council of 24 September 2008 on the inland transport of dangerous goods, OJ L 260, 30.9.2008.

6.2 Prevention of major accidents and limitation of their consequences for man and environment

242. All Member States have transposed Council Directive 1996/82/EC on the control of major accident-hazards involving dangerous substances as amended by directive 2003/105/EC ("Seveso II-Directive"). The regulations transposing the Seveso II-Directive follow relatively close the provisions laid down in the Seveso II-Directive.

243. However, in Poland, provisions transposing the Seveso II – Directive do not apply to prospection/exploration, extraction and production of minerals from deposits. This derogation also covers shale gas activities, unless the shale gas itself or dangerous waste resulting from the shale gas activity is stored or disposed. Processing of shale gas can fall within the scope of the provisions transposing the Seveso II – Directive, if storage, chemical and thermal processing is foreseen or dangerous waste is stored or dumped.

In France, the Seveso II-Directive has been transposed by the Order of 10 May 2000 on the prevention of major accidents involving dangerous goods in certain categories of classified facilities for the protection of the environment. The preliminary report of the CGIET and CGEDD on shale gas in France mentions that installations used for the exploration and extraction of shale gas do not fall under the category of "classified" installations. However, according to article R 512-37 of the Environmental Code the Prefect can grant, on demand of the operator, an authorisation as classified installation (valid for six months, renewable once).

244. In Germany and Sweden, different classes of chemical substances are foreseen, subject to different sets of obligations. In Sweden, each chemical is classified under either a higher or lower level of obligations, depending on quantity and characteristics. Operations classified under the higher level also need an environmental permit for environmentally hazardous activities. In Germany, notification and safety report are required if certain thresholds are exceeded, as set forth in the 12th Federal Emission Protection Ordinance.¹⁴¹

245. In accordance with article 6 of the Seveso II – Directive, all Member States require the operator to make a notification to the competent authority.¹⁴² Such a notification contains i.a. a description of the operator and his facilities, nature of current/planned activity, type of installation and existing security systems, detailed description of the dangerous substances, topography on the vicinity of the operator's facilities. Such notifications shall be made before the launch of the operation.¹⁴³ In Germany, a notification needs to be done if the above mentioned thresholds are exceeded. In Poland, the notification has to be made before the inauguration of a new facility.¹⁴⁴ Furthermore, any substantial change¹⁴⁴ of amount and the characteristics of a dangerous substance have to be notified beforehand.¹⁴⁵ This notification is

¹⁴¹ These thresholds follow the thresholds put forward in the Seveso II-Directive.

¹⁴² In Sweden: the CAB or the Swedish Work Environment Authority;
In Poland: the competent fire protection service authority;
In Germany: the competent Ministry of Environment;
In France: the Prefect of the concerned department.

¹⁴³ In Germany: at least one month prior to the start of the operation without further procedural requirements.

¹⁴⁴ I.e. 30 days before the inauguration or within three months from the date of determining that the existing plant should be covered by the Seveso II-notification.

¹⁴⁵ I.e. 14 days. The competent fire service authority also needs to be notified 14 days before closure of the facility containing the chemical substances.

also transmitted to the Voivodship environmental protection inspector. In France, notification takes place at the end of each year.

246. In accordance with article 9 of the Seveso II – Directive all Member States require the operators to produce a safety report. In Germany, a safety report needs to be produced if the above mentioned thresholds are exceeded. Similarly, in Sweden, the obligation to produce a safety report only applies to chemicals subject to the said threshold.

Such a report needs to demonstrate that the facility is prepared to implement the program aimed at preventing major chemical accidents. Furthermore, this report needs to show that the possibility of industrial accidents is analysed (risk analysis) and that adequate safety precautions are implemented.¹⁴⁶ Internal emergency and action plans need to be in place. Poland appears to be the only Member State to explicitly foresee a review mechanism of this report, in accordance with the Seveso II – Directive. Such a review takes place every five years and any time whenever a significant change occurs affecting e.g. the facility, the industrial process, and/or the chemical substances (the latter being of less relevance for shale gas activities).¹⁴⁷

247. Apart from the notification to the competent authority and the production of safety reports, all Member States foresee an obligation or possibility to provide any other information. In Poland, internal/external emergency plans, information on safety measures and procedure in case of major accidents¹⁴⁸ as well as a list containing data on the type, category and quantity of the dangerous substances in the facility needs to be provided (as far as such information had not been provided in the framework of the notification/safety report).¹⁴⁹

In France, the operator of the concerned facility needs to notify every other nearby classified facilities on any risk of major accident that might affect them. A copy of this notification is to be sent to the concerned Prefect.

In Germany, a similar information obligation rests on the operator. He has to inform all public institutions within the vicinity of the operation area e.g. about how an incident can affect the institution and how to react in case of an incident.

In Sweden, the MSB, Work environment Authority and the concerned municipality shall be informed on an imminent accident (kind of substances haled at the affected plant, rescue actions to be taken and all available information for assessing the consequences for humans and environment). Information also shall be provided on sanitation measures for limiting the consequences of the accident and measures planned to avoid an accident in the future. The Swedish Work Environment Authority shall provide information related to work environment and work safety aspects.

248. In Sweden, assessment of use and storage of chemicals is part of the environmental notification procedure (exploration) and the permitting procedure for environmentally hazardous activities (exploration). In the other scrutinised Member States, there is no direct link between the core authorisation and/or permitting procedure and the above mentioned procedures.

¹⁴⁶ Relating to maintenance, storage sites, equipment.

¹⁴⁷ If the report needs to be changed, an approval of the competent fire protection service authority is required.

¹⁴⁸ To be provided every five years to various bodies, such as different agencies of the education system and social care, concerned mayors, other institutions serving the public.

¹⁴⁹ This list shall be provide to the competent fire protection agency and the voivodship environmental protection agency (to be updated on a yearly basis).

6.3 REACH

249. Regulation 2006/1907/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals¹⁵⁰, establishing a European Chemicals Agency ("REACH") is applicable to the use of chemicals in the hydraulic fracturing process, which requires the use of fracturing fluid which consists of a mixture of chemical substances, provided that the thresholds for registration are fulfilled. Through registration, evaluation, authorisation and restriction the regulation is to provide that no undesired substances will enter circulation. The burden of obligation lays on manufacturers, importers and downstream users. Given the fact that shale gas operators use mixtures of chemical substances in the course of hydraulic fracturing, they are part of the category of downstream users under REACH. REACH defines a downstream user as any natural or legal person established within the Community/EU, other than a manufacturer, importer, distributor or customer, who uses a substance, either on its own or in a mixture, in the course of his industrial or professional activities (Article 3(13) of REACH).

250. Downstream users need to apply risk management measures for substances identified by the supplier and communicated through Safety Data Sheets. They also have the right to make their use of a substance known to the manufacturer so it can be registered as an identified use and covered in the supplier's chemical safety assessment. In this case they have to provide sufficient information to enable the supplier to prepare an exposure scenario for the use. However, they may prefer to keep their use confidential for business reasons. In that case, they may conduct their own chemical safety assessment and report this use to the European Chemicals Agency ("ECHA"). In any case, operators must notify ECHA if they identify that the substance they intend to use is not covered by the registration dossier as regards this specific use and take appropriate measures. They must also comply with restrictions applicable to the use of certain substances. ECHA may review registration dossiers submitted by the industry for chemicals used in hydraulic fracturing and verify the risk management recommendations suggested by the registrants for particular uses.

251. All scrutinised Member States foresee sanctions in case of non-compliance with REACH.

252. Sweden foresees in its Environmental Code fines and imprisonments up to six years. Supervision on the use of chemical products is divided between the Swedish Chemicals Agency (Kemikalieinspektionen) together with the concerned CAB and municipalities. The relevant municipal environment and health/safety board is responsible for the local supervision of handling of chemical products.

253. In France, compliance with REACH is also ensured under the Environmental Code. The Code empowers a wide scope of agents (e.g. work inspectors, custom officers, classified facilities inspectors) to monitor compliance with REACH-obligations. If they notice an infringement, they formally have to notify the owner of the chemical substances. If this notification does not result in compliance, an administrative sentence can be imposed, together with a periodic penalty, behavioural obligations (such as prohibition to import/export

¹⁵⁰ Regulation 2006/1907/EC of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation 93/793/EEC and Commission Regulation 94/1488/EC as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, OJ L 396, 30.12.2006.

substances or to put them on the market). The owner of the chemical substances can also be subject to criminal sentences (fines/imprisonment).

254. In Germany, REACH has been implemented by the REACH Adjustment Act¹⁵¹ and the Act on Chemical Substances (despite its direct effect as an EU Regulation).

255. In Poland, the Act of 25 February 2011 on Chemical Substances provides for penalties with the purpose of enforcing compliance with REACH. If obligations under REACH are violated during industrial activities, the consequences of this may vary depending on the nature of the breach. Such consequences can be a fine, detention, or eventually imprisonment. Non compliance with REACH can also be punished under the Penal Code (if it fulfils the conditions described in it). According to information we obtained from the competent Polish authorities, the Inspector/Bureau for Chemical Substances verifies compliance with REACH and supervises the export and import of dangerous chemical substances. The Inspectorate of Environmental Protection also supervises compliance with REACH, but only in terms of environmental risk. Similarly to France, further measures can include suspension of or ban from use of (certain and/or a mixture of) chemical substances and other behavioural measures (prohibition to import/export or put on the market).

In none of the Member States, a specific disclosure procedure of the composition of the hydraulic fracturing fluid is required yet. However, in Poland, the VIEP may require disclosure of composition if hydraulic fracturing fluids, whilst monitoring compliance with the applicable environmental legislations.¹⁵² Disclosure also could be considered in the framework of an E.I.A. and may be included in the decision on environmental conditions.

256. In Germany such information may be asked in the scope of the documentation to be filed with the application for the admission of the operating schedule. Furthermore, the German deep drilling ordinances require the mine operator to keep records of the composition of the injected fluids. The mining authority is entitled to inspect these records.

6.4 Conclusion

257. In all the scrutinised Member States, general law regarding chemicals applies also to shale gas activities, as any other activity falling within its scope of application. Furthermore, the procedures described above do not seem to be explicitly intertwined with the core authorisation/permitting procedures, Sweden excepted where assessment of use and storage of chemical substances during exploration can take place under the environmental notification procedure. Use and storage of chemicals falling under the higher level of obligations requires a permit for environmentally hazardous activities.

258. Sweden is the only Member State requiring a permit for the transportation of chemical substances used for drilling/hydraulic fracturing. Germany also requires some kind of permission with a view of transporting dangerous substances. However, this permission is not required for transportation of chemical substances for drilling/hydraulic fracturing. Poland and France

¹⁵¹ Act of 20 May 2008, BGBl. I S. 922.

¹⁵² Moreover, the Regional Directorate may "require basic information", but we do not have more information enabling us to clarify this.

require the entity transporting the dangerous substances to fulfil certain administrative obligations.

259. All Member States require obligations of notification and production of safety reports in accordance with the Seveso II – Directive. In Germany and Sweden, such obligations are dependent on respectively quantity thresholds and characteristics of substances and classification under higher or lower level obligations. In Poland, the provisions transposing the Seveso II – Directive do not apply to the prospection/exploration, the extraction and the production of minerals from deposits. This derogation also covers shale gas activities, unless the shale gas itself or dangerous waste resulting from the shale gas activity is stored or disposed.

260. REACH needs to be complied with, since operators using chemical substances for hydraulic fracturing will be considered being downstream users in the meaning of REACH. However, up to now, we do not have certainty yet whether the chemicals used for hydraulic fracturing will meet the relevant thresholds. As downstream users, they need to apply risk management measures for dangerous substances identified by the supplier and communicated through Safety Data Sheets. They also have the obligation to make their use of a substance known to the manufacturer so it can be registered as an identified use and covered in the supplier's chemical safety assessment.

261. Disclosure measures specifically aimed at disclosing the composition of hydraulic fracturing fluids do not exist yet. However, other mechanisms may be used to require disclosure, such as deep drilling ordinances and admission procedure for obtaining operating schedules (Germany), the E.I.A.-requirement and Seveso II (Poland).

262. All Member States foresee compliance mechanisms with REACH under the form of different kinds of penalties (behavioural measures/fines/imprisonment/administrative sentences).

7 Civil law aspects other than property law¹⁵³

7.1 Introduction

263. Mining activities, and more specifically shale gas activities, can bring along civil liability as a consequence of the work undertaken with a view of exploring for/producing hydrocarbons. The drilling processes required for exploration and production of shale gas can i.a. lead to land subsidence and earth vibrations. This section aims at analysing the legal framework of any damage occurring from these consequences of shale gas activities and its compensation.

264. Civil liability is to be distinguished from environmental liability where the “the polluter pays” principle counts. As it will be seen below, both types of liability govern damage resulting from exploration/production activities.

7.2 Legal regime concerning civil liability aspects related to shale gas activities

7.2.1 Civil liability

265. In the scrutinised Member States, civil liability as a consequence of activities under the mining/hydrocarbons legislation is covered by the mining legislation, general civil legislation¹⁵⁴ and environmental legislation.

266. In France, Germany and Poland the mining legislation foresees a separate regime on mining damage, i.e. damage sustained as a result of mining plant operation. As a general rule of thumb, the owner of the mine is liable for all damages occurring from the mining activities.

267. In France, the new Mining Code lays down that the authorisation/permit holder must act as a surety (“se porter caution”) to the profit of surrounding buildings to pay compensation for any damage caused by the mining activities. If the operator goes bankrupt and/or disappears, the State must be warrant (“être garant”) for the compensation of the damages.

268. In Poland, the NGML gives the land owner as well as any other entity with jeopardised property rights the right to demand the damage resulting from the mining operations to be repaired. The provisions of the Civil Code are to be followed for damage rectification. The system foreseen by the NGML relates to all activities covered by the NGML. Overall, the koncesja holder has the full civil liability for damages.

269. In Germany, civil liability is based on the Federal Mining Act, the German Environmental Liability Act and the German Civil code. General liability terms apply to protected interests such as life, body, legal property, etc. The Federal Mining Act provides stipulations resulting in liability

¹⁵³ Please refer to [section 2.4.2](#) for a description of the property law regimes in the scrutinised Member States.

¹⁵⁴ I.e. Civil code.

not requiring fault for damage caused by the listed activities. Similarly, the German Civil Code does not require a fault in case of damage to land property. However, as we have seen it, the German Environmental Liability Act states that strict liability applies to several profession activities which are listed in the addendum of the USchadG. According to our national correspondent, the exploration of shale gas is not covered. Therefore, it is assumed a fault is required.

270. In Sweden, damage caused by exploration/prospection of hydrocarbons activities is covered by the Environmental Code. As is the case under general environmental damage regulation, the operator needs to implement protective measures with a view of damage prevention and take the necessary precautions as soon as there is a reason to assume damage to environment and/or human health. For more details, please refer to [section 5.1.1](#) above.

7.2.2 Compensation of damage

271. As a general principle, compensation has to lead to a restoration of the conditions as they existed before the damage occurred.

272. In France, the compensation has to cover all rights of the owners of the damaged buildings. If restoration to the previous situation is not possible, the compensation must enable the owner of the building(s) to acquire a new equivalent building in the short term.

273. In Poland, damage reparation needs to take place by way of restoring land, buildings, equipment, premises, water and other goods in the same state as they were before occurrence of the damage. Any additional expenses incurred by the aggravated party in the process of remedying damage, needs to be compensated. Claims following damage resulting from mining activities expire after five years. This period is longer than the period under general civil liability rules. However, a very detailed assessment of the activities to be undertaken takes place in the framework of the approval of the plan of operations of the mining plant. This audit performed by the Mining Authority should limit any foreseeable damage as much as possible.

274. In Sweden, a difference needs to be made between compensation of damage caused to the affected landowners and compensation of damage caused to other parties. Furthermore, a distinction needs to be made between the above mentioned compensation and the compensation for rehabilitation of the area after termination of the exploration/exploitation activities.

During the exploration phase, the authorisation holder decides on the amount of compensation to be provided to the affected land owners. If they contest it, this compensation needs to be adjusted.

During the exploitation phase, the compensation for foreseeable damage is determined by the Chief Mining Inspector. For unforeseeable damage, the normal compensation rules apply. Furthermore, holders of an exploitation concession need to provide for securities with a view of restoring the area in its initial state as if the exploitation activities never took place. These securities are not restricted to the land owners.

The plan of operations required in order to start the drilling activities also requires a full compensation of the landowners for damage and encroachment.

Companies may need to provide for a base line survey, as a point of reference for determining any damage after drilling activities. This base line survey contains among others an identification of the site, impact on the environment as well as water and soil samples. These samples are saved in case of discussion later on with a view of determining any compensation. In case of discussion, samples taken before and after the activities can be compared in order to determine the damage that needs to be compensated.

7.3 Assessment

275. Damages resulting from shale gas activities fall under the liability regime established by the civil code, mining and environmental legislation. This legal framework also is applicable to any damage resulting from shale gas exploration/production activities.

276. Overall, the owner of the authorisation/permit is liable for all damage resulting from any of the authorised operations. In all Member States, this is foreseen by the applicable mining legislation. In Sweden, landowners receive a compensation for expected damage before the actual exploration/exploitation starts (as agreed with the authorised operator). Furthermore, holders of an authorisation need to deposit securities in order to compensate for any other foreseeable damages as well as for restoring the area in its initial state after termination of the activities. In Germany, the fault requirement is not necessary in case of damage from mining activities and damage to land property according to civil and mining law.

277. In France, liability is not linked to the authorisation and/or permit, but to the activity of the permit/authorisation owner. This has as a consequence that the operator remains liable for damages resulting from exploration/production activities outside the strict scope of the authorisation/permit and after its validity period.

8 Other permitting procedures

8.1 Introduction

278. Apart from procedures laid down under the mining and environmental legislation, other legislations may require additional obligations. These obligations can i.a. relate to workers' safety and health, construction of installations, handling of radioactive materials.

279. This section analyses whether such obligations exist and to what extent they impact the core authorising and permitting procedures.

8.2 Procedure relating to workers' health and safety

280. Council Directive 92/91/EEC concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling¹⁵⁵ was transposed in all scrutinised Member States. The national legislation transposing this Directive however differs.

281. In Germany, France and Sweden no specific permit is required with a view of conducting activities aimed at exploring/producing minerals through drilling. In those Member States, generally applicable regulations govern the working conditions of workers active in the mineral-extracting industry.

282. In France, for instance, the "Règlement général de l'industrie extractive" ("RGIE") lays down all kinds of rules on e.g. equipment, installations, working place, drilling activities. Furthermore, the application for an AOTM (production permit) as well as the DOTM (exploration declaration) needs to be accompanied by a yearly updated safety and health document. This document identifies and evaluates the risks, to which the personnel can be exposed. The document furthermore specifies measures to be taken concerning the design, use and maintenance of working place and equipment with a view of guaranteeing workers' health and safety.

283. In Sweden and Germany, there are similar regulations governing health and safety of the workers active on the drilling sites. In Sweden, a notification of the planned operations has to be made to the Swedish Work Environment Authority. Gripen Gas works with contractors and expects them to be compliant to the external health and safety regulations and their own internal procedures. These regulations and procedures do not differ from standard oil and gas practice.

284. In Germany, the mining civil servant takes care of health and safety of workers active in the mining industry. Specific provisions govern health and safety in the mining sector

¹⁵⁵ Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling OJ L 348, 28.11.1992.

("Gesundheitsschutz Bergverordnung"). Furthermore, the general law on the protection of workers is applicable.

285. In Poland, the manager of the permit plan must obtain several permissions for operation activities. Such activities can be the launch of operation of machines, devices and installations located at the drilling premises. Furthermore, use of blasting agents and equipment requires a permit of the supervising mining authority, i.e. the authority competent for the operator's registered office. In order to receive such a permit, he/she needs to submit documentation proving that he/she can fulfil the relevant technological and organisational conditions. Furthermore, members of the personnel need to be older than 21, mentally healthy and without criminal conviction. Most of these issues are included in the plan of the operation of the mining plant, which is subject to approval by the Mining Authority.

Drilling companies have to accept so-called bridging documents. In these documents, the drilling company confirms explicitly it adheres to Polish legislation on health and safety whilst performing the drilling activities.

286. In all scrutinised Member States, several general obligations concerning employee safety and working conditions are laid down by their respective labour code.

8.3 Other permitting procedures

287. In Sweden, the handling of radioactive shales requires a permit in accordance with the Radiation Protection Act and the Radiation Protection Ordinance.¹⁵⁶ This is the case when the uranium content exceeds 80 ppm. This permit is granted by the Swedish Radiation Safety Authority and the compliance therewith is supervised by the same authority. Non-compliance with the permit can lead to it being revoked and, if done intentionally, the responsible person can be fined or even imprisoned.

As we have seen it above, in Poland, the handling of radioactive waste requires a licence by the National Atomic Energy agency.

288. In Poland and Germany, building permits may need to be obtained regarding above ground parts of the exploration/production unit. Separate building permits must also be obtained in France on the basis of separate pieces of legislation.

The Polish Building Law¹⁵⁷ is applicable to construction of buildings/installations on the exploration/production premises. The Voivodeship (for undertakings at areas subject to special access restrictions) or the Starost (for other undertakings) are the granting authorities. According to the competent Polish authorities, such a building permit is granted after the decision on environmental conditions. The construction needs to be commenced within three years.

In Germany, building permits are required for buildings exceeding a specific size (differs from Land to Land). The permits are granted by the municipal authorities. For a number of industrial facilities, such as major exploration and production surface producing units (e.g. sour gas purification plants, fired power units, gas turbines, combustion engines etc.), specific emission control licences are required whereby authorities may impose emission limits and technical requirements, such as machinery standards for the installation of pollution control systems and require the operator to monitor emissions of pollutants regularly, as a condition of the licence.

¹⁵⁶ Radiation Protection act, 1988:220 and Radiation Protection Ordinance, 1988:923.

¹⁵⁷ Building Act of 7 July 1994, J.o.L. 2010, n° 243, item 1624.

In Sweden, special permissions may be required under the Minerals' Act if exploration works shall be performed close to roads, houses, etc. These permissions require certain distances (i.e. 100 m) to be respected whilst undertaking exploration activities. The competence for planning and building issues lies with the concerned municipalities.

8.4 Assessment

289. In the field of workers' health and safety, general law is applied.

290. In all Member States regulations govern the safety and health of workers active in the industry extracting minerals through drilling. However, in France, techniques including hydraulic fracturing seem to fall out of scope of such regulations. In Poland, such regulations lay down the obligation to obtain approval by the plant operations manager for the start up of installations/devices/machines on the drilling premises. Additionally, the labour code of all Member States applies to personnel active in the mining industry.

291. In Sweden, the handling of radioactive shales may require a specific permit granted by the Swedish Radiation Safety Authority. In France, Poland, Germany and Sweden, permanent buildings/installations constructed with a view of conducting exploration/production activities require a building permit.

292. None of these procedures appears to be directly linked to the core authorisation/permitting procedure. In France, the AOTM application and the DOTM must contain (among others) a document describing and assessing all risks to which personnel involved in these activities can be exposed.

9 Conclusions

9.1 Summary of our findings

293. Sweden, Poland, France and Germany all had or have shale gas projects on their territory. Without exception, these projects concern exploration/prospection for shale gas. They are in an initial phase, meaning that only limited exploratory drilling has so far taken place (cf. Sweden, Poland and Germany; in France it was only planned). In Sweden, the Swedish Mining Inspectorate has granted one exploitation concession. However, this concession has not lead to any exploitation activities. In France, companies who would intend to use hydraulic fracturing will have their exploration authorisation abrogated on the basis of the Prohibition Act. Hydraulic fracturing has taken place in Poland already, and, in Germany, at least one company performed hydraulic fracturing tests.

294. The general public attitude in France, Germany and Sweden towards shale gas projects is dominated by concern for the environmental impact of the shale gas activities. In France and Germany, this has resulted in studies assessing the impact of shale gas activities, leading in France to a legal ban on hydraulic fracturing, on the basis of the Prohibition Act. In Sweden, strong protest of concerned municipalities has resulted in the possibility to review the existing Minerals' Act in terms of transparency and participation of municipalities and public in the authorisation process. Poland, highly dependent on Russia for its energy resources is less sceptical towards shale gas activities. This Member State has granted the most authorisations so far and the exploration activities are the most developed.

295. The French Prohibition Act was adopted without having completed any substantial prior study on the consequences of shale gas activities on the environment. Moreover, the law entails extraordinary consequences for the companies falling under its scope of application as it has led to the announced abrogation of authorisations that were granted legally at the first place. Generally speaking, this act will have a negative impact on companies willing to (further) invest in France. This is especially true when we compare the Prohibition Act with the measures adopted in North Rhine Westphalia e.g., where shale gas activities are suspended until the completion of some environmental studies on the topic and analysis of their results.

296. In all Member States, the general mining or hydrocarbons legislation regulates licensing/authorisation procedures also for shale gas projects. Other legislation related to property, spatial planning or commercial activities also can play a role. Mining/hydrocarbons legislation also plays the central role with regards to the permitting procedure in Germany, Poland and France. However, Sweden is different, with the main permitting procedure being governed by the Environmental Code. Every entity performing environmentally hazardous activities needs to adhere to the requirements under the Environmental Code.

297. Shale gas activities entail a wide range of different aspects. Therefore, beside mining/hydrocarbons legislation, legislation governing e.g. land property, workers' safety and security, liability, pressure equipment, the use of chemical substances and environmental legislation as a whole is, to a different extent, applicable to shale gas activities. The overall legal framework an operator has to take into account before, during and after exploring or exploiting

for shale gas, is rather fragmented. Complexity of the activity automatically leads to complexity of the legislative framework applicable to these activities. However, such a diversified legislative framework does not necessarily lead to inefficiency or impracticability of the rules. In Sweden, for example, the comprehensive permitting procedure under the EC deals with a considerable number of aspects in the field of environment and use of chemical substances. In Poland, for instance, the parallel existence of a procedure to obtain a drilling permit and the procedure to obtain a water permit is apparently not necessarily considered as a burden by operators.

298. In analysing the core authorisation and permitting procedures, we came to the conclusion that different groups of Member States can be distinguished according to different parameters. Such parameters are the number of procedures to be followed under the mining legislation before actual exploration/exploitation operations can start and the type of procedure an operator needs to follow under the mining legislation.

299. The German and French mining legislation distinguish between the mining authorisations as a necessary legal title and their realisation by means of operational activities for which an independent permission/permit is required. In Poland and Sweden, no such difference is made, or at least, not that explicitly. The mining legislation only lays down the obligation to obtain an authorisation. Once such an authorisation is obtained, no other "core" permit is required.

In France, the exploration and/or exploitation authorisation granted by Ministerial Decree is a title to explore or exploit a certain area, on an exclusive and a priority basis. The start of exploration or exploitation activities is subject to a separate permit, namely the DOTM and the AOTM, granted by the Prefect. The permit procedure addresses issues that are of local interest, such as environmental, water protection, traffic issues, etc. During the permit procedure, the candidate takes formal contacts with the Prefect. The DGEC remains informed of the evolution of this separate procedure and it receives data that it will keep for updating its national databank on hydrocarbons.

300. In Sweden, besides the environmental permit/notification, a so-called plan of operations is required in order to start drilling. However, such plan is to be drawn up by the operator and is not subject to a fully developed application procedure. Once the concerned landowners have agreed, operations can start. Contrary to the German Betriebsplanverlassung, this plan is not subject to a formal approval procedure by the competent authority, as it is possible under Article 3, §3 of the Hydrocarbons Directive. In Poland, the specific activity of drilling requires a permit. However, this permit only relates to drilling and does not prohibit other activities undertaken before the drilling takes place (such as gathering of seismic data and other acts of survey). In France and Germany, a permit is required before any operation can be launched.

301. On the level of the type of authorisations to be followed, Poland and France generally require a tender procedure to be followed. Such a procedure does not need to be followed in Germany and Sweden, where the operator directly files his application with the competent authority. However, in Poland, no tender procedure will be followed, where only one company is candidate for obtaining a koncesja for a given area.

In France, this tender requirement means that the exploration authorisation gives a kind of exclusivity to incumbents due to the fact that candidates for exploration are put in competition with other potential candidates only once. Then, should explorations give positive results, the

company benefits from a kind of exclusive right for proceeding further. Exploitation is subject to both an exploitation authorisation and an AOTM. So, exploration authorisations do not automatically lead to exploitation.

302. The above mentioned Member States all have certain features in common. In all Member States separate procedures need to be followed with a view of obtaining an exploration authorisation or an exploitation concession. Furthermore, the authorisation and/or permitting procedures with a view of starting shale gas activities do not differ from the procedures leading to the award of conventional authorisations/permits.

303. In all Member States, as a general rule, every area for which there is reason to believe successful exploration/exploitation can be realised, can be made subject to an authorisation. This does not exclude restrictions resulting from e.g. legislation on spatial planning or property. Furthermore, in Poland the operator willing to explore or exploit needs to conclude a Mining Usufruct with the State, in order to obtain the right to use the mineral resources underneath the area to be authorised. In Sweden, the operator needs to follow a procedure for designation of the specific areas within the authorised land, after the grant of the concession and the environmental permit (in concertation with the concerned land owners). Furthermore, shale gas activities may, generally speaking, not be performed in areas covered by the Natura 2000-network or landscape protected areas. At least an extensive E.I.A. is required before any activity may take place.

304. As mentioned above, no separate procedures are laid down to authorise/permit shale gas activities. The procedures that need to be followed are the general procedures every operator has to follow in order to be able to explore/exploit conventional and unconventional hydrocarbons. Differences may occur between procedures to obtain authorisations/permits for shale gas activities and procedures to obtain authorisations/permits for other hydrocarbons. However, they are limited and an indirect result of e.g. the bigger than normal size of the area to be authorised or the lack of experience of the competent authorities. Furthermore, the description of the activity itself as required in most applications obviously will differ from applications for other hydrocarbons exploitation/exploration. Competent authorities and companies active in shale gas confirm that they do not experience significant differences between the regular hydrocarbon procedures and procedures with a view of permitting/authorising shale gas activities. One concern may be that shale gas projects often start on a very small scale (the exploration phase), but develop into large scale projects, having a higher potential impact on the environment and on the population as originally foreseen/expected.

In France, the application of the Mining Code provisions to the exploration authorisation for three shale gas plants turned out to be problematic. One of the main reproaches that were formulated against the authorisations granted for shale gas projects was the fact that the public had not been consulted during the procedure for granting such authorisations. The absence of public consultation during the exploration authorisation phase was, however, due to the absence of such requirement under the French Mining Code as it currently stands, as we have seen it above. In such a context, things are expected to change in France from a legal viewpoint with respect to shale gas activities. One of the main concerns of the French government is to include public participation during the exploration authorisation phase. This requires an amendment of the French Mining Code, which is, at the date of drafting the present report, under preparation.

305. An important aspect is public participation, since the exploration of shale gas raises significant concerns, especially in the field of environment. Our main finding is that public participation is rather limited. The administrative procedures properly speaking foreseen by the mining legislation rarely lay down such a requirement. In all scrutinised Member States, participation of the public is mainly foreseen by environmental legislation, and more specifically, legislation on environmental impact assessment. If no such E.I.A. is required, as can be the case especially for exploration activities, the public may not be consulted. This is the case in France, Poland and Sweden, where exploration activities are not always subject to public participation. In Poland, a decision on environmental conditions may be required, whereby the public needs to be consulted. However, this is not always the case. Generally speaking, it is the environmental legislation that governs the participation of the public rather than the mining legislation. In France, legislation with this respect will change – with the view of including public participation at the exploration authorisation phase, as mentioned above.

306. Transparency as regards licensing procedures, another important element from the point of view of public acceptance, is foreseen by mining legislation as well as general environmental and administrative legislation. Tender notices and final decisions have to be published in the Official Journal of the EU, national, regional and/or local press.

307. Some procedures result in more investment and planning security than others. In Poland, mechanisms to increase the stability of the decision granting authorisation are put in place. Once a decision is granted, nullity or revision of the authorisation is very difficult. In Sweden, the applicant is left out of the procedure to obtain an exploration authorisation, once it has filed its application. It is the Mining Authority, rather than the concerned company, that will deal with the concerned municipalities. Furthermore, companies willing to explore/exploit for shale gas have the possibility to follow a procedure, according to which they only have to demonstrate they have not been found unable to perform exploration activities in the past.

308. As it is the case with the procedures leading to authorisations/permits, the authorisations/permits for shale gas activities themselves do not significantly differ from those granted for exploration/exploitation of other hydrocarbons. Their content mostly is a reflection of the application file containing information on the applicant, the activity, validity period, impact on environment, danger analysis, etc.

309. In most Member States except Poland, there is a significant difference between duration of the exploration authorisation and duration of the exploitation concession. This difference in duration reflects the rather temporary nature of exploration versus the more permanent nature of exploitation. In Germany, France and Sweden, the authorisations can be prolonged. Poland appears to be the only Member State, where exploration authorisations also can be granted up to fifty years. In all Member States, non-activity has an adverse impact on the validity of the authorisations, ranging from warnings by the competent authority to a refusal to prolong the authorisation/permit or a withdrawal of the authorisation/permit.

It is worth noticing that, in France, at each renewal of the exploration authorisation, the geographic area for which the authorisation was initially granted is reduced (50 and then 25% reduction). This rule –applicable to all gas exploration activities, including shale gas, might turn out to be problematic for shale gas activities (assuming that the Prohibition Act would be lifted

in the future...). Indeed the availability of shale gas deposit is generally diffuse throughout a large territorial area, by contrast to conventional gas which is available in a more concentrated fashion.

310. In all Member States, operators disposing of an exploration authorisation have some kind of priority over other operators in obtaining an exploitation concession (within a limited period of time). Furthermore, all operators need to pay royalties for exploitation, based upon the production output. Generally speaking, these royalties go to concerned landowners and the State. In Germany, Poland and Sweden, companies have to pay application fees, depending on the size of the area. Furthermore, Poland establishes additional levies to be paid upon conclusion of the mining agreement. No particularities regarding shale gas exploration/production exist.

311. Where it is not very clear to distinguish the different stages during exploration/exploitation, the termination of hydrocarbon exploration/exploitation activities is always clearly marked as a separate stage. This stage requires a separate permit/approval/declaration in all Member States.

312. As mentioned above, shale gas projects are subject to various regulations, due to their complex character. As it appears from this report, a considerable amount of the relevant legislation is to be situated in the field of environmental protection. In all Member States, interplay between the administrative procedures required under the mining legislation and the environmental legislation exists by means of the environmental impact assessment, if it is required or, to a certain extent, by means of the environmental notice in France.

313. In all scrutinised Member States, the environmental impact assessment is part of the core authorisation and/or permitting procedure for obtaining an exploitation concession. Given the fact that the E.I.A. is only explicitly required when certain thresholds are reached, such an E.I.A. is not always mandatory according to Member State law before exploration activities can start. In Germany and Poland for instance, an E.I.A. is mandatory for projects leading to a gas extraction of more than 500k m³ per day. In Sweden, the exploration activities mostly are considered to be type C- activities, for which an E.I.A. is not mandatory (but can be required). This is a result of the sometimes limited impact they have on the concerned area. However, this does not exclude that certain types of activities, as exploratory drilling in Sweden for instance, may require a separate E.I.A. Thus, some problems may arise regarding small scale projects (under the E.I.A.-thresholds) evolving into projects of a considerable scale. In this view, as it is currently happening in Germany, requirements for conducting an E.I.A. need closer scrutiny. This especially since consultation of the public and the concerned municipalities is often linked to an E.I.A.

314. In most Member States, possible environmental impact assessments do not deal with all environment related aspects, such as e.g. the use of chemical substances. One Member State disposing of a procedure encompassing all these different aspects appears to be Sweden. In Sweden, the permit for conducting environmentally hazardous activities covers all aspects related to environmental protection and public health, including chemicals. If no permit is required, a notification needs to be done under the Environmental Code. This notification also covers the above mentioned aspects. Such a holistic procedure has the benefit of clarity and uniformity and may be preferred above numerous procedures each having its own view on the project. Furthermore, as we have seen it, an E.I.A. for exploration activities normally is not

compulsory, but can be demanded by the concerned municipality and/or CAB. Such an E.I.A. also has a wide range, dealing with e.g. water protection and mining waste extraction. However, the picture appears to be more nuanced in the field of gas emissions. These emissions, as well as NOX, VOCS and SO₂, can be covered by the holistic notification/permitting procedure, but also may require a separate permit under the Emissions Trading Act.

315. In Poland and France separate requirements apply for a number of aspects in the field of environment, i.e. water protection, mining waste extraction and disposal, gas emissions in the air, noise limitations, pressure equipment and environmental liability. They have no direct interface with the core authorisation and permitting procedures. Different authorities on different levels assess these aspects within their competence and deliver the necessary permits, approvals, declarations or authorisations. Communication between the different competent authorities appears to be rather limited. However, from the point of view of the applicants, this does not necessarily have a negative impact on the practicability of the procedure.

316. As mentioned above, the E.I.A. requirement or similar requirements (i.e. base line surveys) form the main link between the environmental legislation and the mining legislation. In that field, intense communication between the competent mining authorities and the competent environmental authorities is often necessary.

The fact that there is no direct interface with the main procedure does not mean there is no link at all. For instance, in France, the "environmental notice" submitted to the DGEC at the exploration authorisation phase does address such kind of environmental issues. The purpose of the notice is however not to check the correct implementation of the environmental requirements (which is done at the local level, via the E.I.A.) but to assess coherency and awareness of candidates beforehand.

317. In Germany (North Rhine Westphalia and Lower Saxony), the mining authority (i.e. the authority competent for granting the authorisation and the core-permit) is a "one-stop-shop", the central authority in charge of coordinating the procedures for obtaining the various other permits including the environmental ones.

318. No specific provisions are foreseen to regulate the use of chemical substances in the framework of hydraulic fracturing, but REACH applies to the use of chemical substances in whatever industrial process hence also for the purpose of hydraulic fracturing. This being said, our analysis reveals that all Member States have (differing) sanctioning mechanism in place in order to verify compliance with REACH. Operators using chemical substances for hydraulic fracturing are considered as downstream users of chemical substances. In that quality, they fall in the scope of application of REACH. If operators prefer to keep their use confidential for business reasons, they may conduct their own chemical assessment and report this use to the European Chemicals Agency. The Agency then may review such a registration dossier submitted by the industry for chemicals used in hydraulic fracturing and verify the suggested risk management recommendations.

319. Furthermore, in accordance with the Seveso II - Directive, operators need to notify and report on the substances at their disposal and being stored on their premises. Obligations may differ depending upon the quantity and characteristics of the chemicals at hand. As we have seen it above, no direct/specific interplay with core authorisation and permitting procedures exists, except for Sweden where this may be dealt with under the overall assessment of environmentally hazardous activities.

320. Damages resulting from shale gas activities as well as their compensation are governed by mining legislation, environmental legislation and/or general civil liability rules. As a general rule of thumb, the operator can be held accountable for all damages resulting from the authorised operation. In most Member States, no fault is required in case of damage to property of landowners. In Sweden, the operator has to agree on compensation for expected damage with the concerned landowners before the start of any shale gas activity.

321. With regards to the health and safety of workers, general law is applicable. Authorised operators often work with subcontractors. They have to adhere to the regulations in force of the concerned Member State as well as to the (often stricter) regulations of the authorised operator. The presence of strict regulations relating to workers' health and safety may be a requirement for obtaining a permit for the launch of operations. In France, for instance, the operator needs to submit a document explaining how the health and safety of workers will be guaranteed during operation in order to obtain an AOTM.

322. Overall, we can conclude that the current legislation, especially in the field of environmental protection, already covers most aspects linked to shale gas activities. Furthermore, a considerable number of national legislations is the result of implementing EU Directives. These Directives use flexible mechanisms allowing the Member States to regulate more accurate shale gas activities. For instance, projects listed in Annex II of the E.I.A. Directive do not require an E.I.A. However, Member States may examine the necessity of an E.I.A. on a case-by-case basis (as is the case in Sweden). Furthermore, they may set different thresholds or criteria to qualify the projects for E.I.A.

9.2 Overall appraisal

323. From our point of view an adequate regulatory framework for early exploration (seismic/test drilling) activities exists taking into account all scrutinised laws and regulations.

324. The activities relating to exploration/exploitation of shale gas are already subject to EU and national laws and regulations, e.g.:

- The grant of authorisations for exploration/production is covered by the Hydrocarbons Directive;
- Water protection is covered by the Water Framework Directive the Groundwater Directive and (regulating a potential source of water contamination) the Mining Waste Directive;
- The use of chemicals is covered by REACH and administered by the ECHA;
- Protection of Natura 2000 areas for the sake of safeguarding biodiversity within the EU is regulated by the Habitats Directive and the Wild Birds Directive;
- The requirement of an E.I.A. as well as public access to environmental information is laid down by general environmental legislation (the E.I.A.-Directive and European legislation implementing the Aarhus-Convention);
- Operators may be subject to liability for damages under the Environmental Liability Directive and the Mining Waste Directive.

Most of these Directives have been implemented into the national law of the scrutinised Member States. In the rare case of non-implementation, other national regulations exist governing the concerned activity and/or transposition is imminent.

As mentioned above, most of the relevant EU regulations use flexible mechanisms (see e.g. E.I.A. Directive), allowing the Member States to adjust their legislation to regional or local specifics of shale gas exploration and potentially exploitation.

Neither on the European level nor on the national level have we noticed significant gaps in the current legislative framework, when it comes to regulating the current level of shale gas activities. However, this is no reason for complacency, since this assessment explicitly refers to the current level of experience and scale of operations as can be expected during the exploration phase. As the US example indicates, commercial scale shale gas exploitation would involve operations on much larger scale. Especially, related potential cumulative impacts need to be further investigated to provide a basis for a more thorough assessment of the appropriateness of the regulatory framework(s) – both on EU as well as on Member State and/or regional level.

However, as we will see it below, some adjustments to legislation should be further considered in order to improve its appropriateness and practicability with a view of regulating shale gas activities.

325. In some of the scrutinised Member States, legal uncertainty surrounds the regulation on shale gas activities. In North Rhine Westphalia, as well as on the federal German level, studies on the impact of shale gas activities are pending. In North Rhine Westphalia, companies cannot proceed with their activities, as long as the outcome of the study is not known.

In France, an act has been adopted prohibiting all exploration activities by means of hydraulic fracturing, until the impact of hydraulic fracturing on public and environment is properly being assessed. This Prohibition Act is problematic from a legal and from a practical point of view. Since it has resulted in the announced abrogation of three shale gas authorisations, it may be seen as a serious threat to a reasonable legal security investors might expect from an authorisation granted legally by an administrative authority. Moreover, the notion of hydraulic fracturing has not been defined properly, leaving the door open for different interpretations. Pending studies in Germany as well as the French Prohibition Act with a questionable rationale have a negative impact on ongoing and future investments of companies being or willing to be involved in shale gas activities.

326. Legislation may need to be more adjusted to the way in which a shale gas project develops. Often, exploration projects start on a very small scale, without a relatively low potential impact on environment and public in the concerned areas. However, if exploration results appear to be positive, the dimensions of such a project can develop into larger scale operations with a higher potential impact on environment and public in the concerned areas. Our analysis reveals that this change in dimensions is not always dealt with in the most appropriate way. In most scrutinised Member States, neither an E.I.A.-assessment nor consultation of the public (mostly in the framework of an E.I.A.) is required for starting exploration activities. This may be due to the fact that the existing explicit E.I.A.-thresholds are not met by the exploration activities. At the moment where the project is still small scale and thus easy “reversible”, consultation of the concerned public is not necessarily foreseen and hence has no say in the decision to allow/refuse its start. It is exactly at this stage that public

participation is required the most. Informing the public by means of publications in Official Journals or local newspapers has a limited effect, if the reactions thereon cannot be taken into account in the procedures leading to the grant of authorisations and/or permits.

327. We have noticed that Member States as Germany and France are aware of this weakness in their national legal framework. As we are finalising this report, they are undertaking actions to remedy this lack of public consultation and E.I.A. for exploration activities. In France, inclusion of a public participation mechanism in the procedure leading to the grant of an exploration authorisation is being considered in the framework of the restructuring of the Mining Code. In Germany, the Land of North Rhine Westphalia has filed a motion to make the E.I.A.-requirement compulsory for all hydrocarbon activities involving hydraulic fracturing. Regardless the explicit thresholds foreseen in the E.I.A.-Directive, Member States have all the means to adjust E.I.A. requirements according to their needs.

328. However, a discussion on an appropriate application of the instrument of Environmental Impact Assessment should not be limited to the issue of thresholds. Sweden and Poland already have a more flexible regime in place. Instead of a rigid system oriented on thresholds according to Annex I of the E.I.A.-Directive only (i.e. the 500k m³/day threshold), Poland also uses the "screening procedure" according to annexes II and III of the E.I.A.-Directive to decide on a case-by-case basis. In Sweden the possibility for local governments to demand an E.I.A. can contribute to improved local acceptance of projects.

329. As it appears many times in this report, exploration/exploitation of shale gas activities requires the regulation of numerous aspects e.g. in the field of environment, chemicals, civil law, law on worker's health and safety. This leads to the situation where a diversified regulatory framework, requiring the involvement of different authorities, is applicable to shale gas activities. In order to lower the burden on the operators and the involved authorities as well as to ensure a coherent procedure, the core authorisation and permitting procedures on the one hand and the environmental procedures and other permitting procedures on the other hand could be more integrated, as is already the case in Germany and Sweden.

Such an integrated approach can take the form of holistic procedures wherein a limited number of authorities deal with all hydrocarbon-related activities, and not several independent authorities treating the different issues separately. Such an overall approach also can be realised by means of a coordination mechanism, allowing different authorities to keep their competences. They then would have to submit their analysis to one coordinating authority who takes into account these different assessments for deciding upon the grant of an authorisation and/or a permit (cf. one-stop-shop, as is the case in Germany). Such an approach has its pros and cons for companies. On the one hand, they would not have to deal with different authorities with potentially contradicting verdicts. On the other hand a more fragmented administrative structure may increase their influence on the permitting procedure by assuming a kind of coordination role between the different involved authorities. This could be of benefit to companies, especially if they have an advantage as regards knowledge on shale gas projects compared to the public authorities.

The ideal scenario would consist of a combination of the best of both worlds. Highly specialised organisations, having their own competence and making their own analysis, who will then be submitted to a coordinating body taking into account these detailed assessment in the core

procedure and are then responsible to grant (or refuse) the authorisation and/or permit. It is also advisable to have in this coordinating organ, civil servants who specialised in the field of shale gas and to provide appropriate training.

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