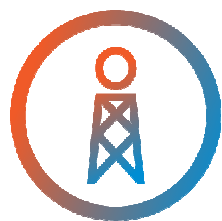


**International experience for regulation of  
exploration and production of unconventional  
hydrocarbons:  
Environmental protection of and monitoring.  
Ukraine's opportunities**



**UGI**

UKRAINIAN  
UNCONVENTIONAL  
GAS  
INSTITUTE



**UNCONVENTIONAL GAS**  
in Ukraine

**Kyiv 2014**

The survey has been prepared by KT-Energy LLC within the framework of Ukrainian Unconventional Gas Institute project, implemented by Shell Exploration and Production Investments (IV) BV in cooperation with the British Council.

The survey has been prepared with consulting support of Salans FMC SNR Denton Europe law firm.

Compiled by M.Y. Shlapak

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## About the survey

The research was prepared by KT-Energy LLC within the framework of the Ukrainian Unconventional Gas Institute, implemented by Shell Exploration and Production Investments (IV) BV in cooperation with the British Council.

The Ukrainian Unconventional Gas Institute projects aims at promoting exploration and production of unconventional gas in Ukraine, enhancing awareness and researching economic, environmental and social aspects of industry's influence at national, regional and community level.

Shell, international group of energy and petroleum companies, is present in Ukraine since 1992. Currently Shell is carrying out activities related to exploration and production of hydrocarbons, natural gas supply, marketing of fuel and lubricants and network of fuelling stations. In Ukraine the company is involved in two exploration and production projects in the sphere of unconventional gas production. For detailed information, please visit [www.shell.ua](http://www.shell.ua).

KT-Energy LLC provides consulting services in the sphere of energy and impact of economic activity on the environment. The company has established and develops information resource about unconventional gas in Ukraine - [www.shalegas.in.ua](http://www.shalegas.in.ua). The "Unconventional gas in Ukraine" project illustrates technical, economic and other matters related to production of unconventional hydrocarbons, including shale gas, tight gas, deep offshore and coal bed methane, etc. For detailed information, please visit [www.kt-energy.com.ua](http://www.kt-energy.com.ua).

The research represents analysis of legislative framework of the British Columbia (Canada), the United Kingdom and Poland with respect to regulatory and permitting practices for production of unconventional hydrocarbons. The research offers information about regulatory bodies, covers the issue of environmental impact assessment, oil and gas well deployment restrictions, permitting procedures in the sphere of subsoil preservation and water use, process requirements to hydrocarbon production, as well as suggests brief outline of the implemented and proposed measures for optimization of regulatory and permitting practices in each country or province. The "Comparison of regulatory practices" section provides consolidated comparison chart about regulatory practices for hydrocarbon production in the British Columbia (Canada), the United Kingdom, Poland and Ukraine.

Moreover, the "Proposals for adjustment of regulatory practices in Ukraine" section represents potential enhancements to regulatory environment recognizing the international experience and "Regulations on exploration and production of (unconventional) hydrocarbons in the framework of environment protection and monitoring" research. The proposals analyze three aspects of reforming regulatory framework, namely: enhancement of permitting procedures, unconventional hydrocarbon production specifics and raising transparency and awareness.

Subsoil users, governmental officials, non-governmental organizations and other stakeholders are the primary audience of this research.

## British Columbia, Canada



*Key unconventional gas deposits, British Columbia.*

Source: [www.bcogc.ca](http://www.bcogc.ca)

Production of unconventional gas has developed significantly in British Columbia (Canada) in the recent years. The quantity of conventional gas wells in 2008 was equal to 85% of the total well stock, while in 2013 it reduced to 14%. As of 2013, hydraulic fracturing has been applied in 86% of new wells in British Columbia.

In British Columbia, the Ministry of Environment and Oil and Gas Commission deal with regulatory matters in environmental impact and environmental monitoring in course of oil and gas production. The Oil and Gas Commission carries out regulatory (issues acts) and permitting (issues permits) activities and holds the role of the “single point of contact” for petroleum companies. The Oil and Gas Commission accepts and reviews permit requests for well drilling, waste disposal permits, water use, etc. It also inspects and supervises compliance with the Law.

Authorities and purposes of the Commission are defined in the [Oil and Gas Activities Act \(OGAA\)](#). The Ministry of Environment may provide consulting services and take part in inspections.

Prior to submission of the request for well drilling, a company must register at the Oil and Gas Commission (if the company is not registered) and digital request submission system. The following requirements are to be met for acquisition of well drilling permit:

- ensure rights for subsoil hydrocarbon resources;
- prepare design (plan) for well construction;
- conclude agreement with land lot owner;
- carry out archeological check-up;
- prepare and map emergency planning zones;
- notify about the intention to construct wells and consult stakeholders.

A company may submit request for multi well package in the course of permit acquisition.

After receipt of the request and support documents, the Oil and Gas Commission verifies completeness of the submitted documents and registers the request at common database, carries out technical analysis and check-up of stakeholder consulting report. In case of positive resolution, permit for well drilling is granted, defining the terms and conditions of use and permit granting notifications are send out to owners of land lots adjacent to the future rig sites. Drilling operations may commence only 15 days after the permit is granted to enable land owners to submit claims.

### **Environmental impact assessment (EIA)**

Environmental impact assessment is carried out as per [Environmental Assessment Act](#). The assessment process [includes](#) involvement of all stakeholders, consulting with indigenous

communities, technical research with the view to evaluation of potential negative consequences, development of means for avoiding or minimization of the consequences and preparation of report, containing initial information and results of environmental impact assessment.

The key project criteria to be assessed are defined in the Environmental Assessment Act – [Reviewable Projects regulation](#). The necessity of environmental assessment is subject to the type of economic activity, project and company's capabilities. Natural gas production projects (well construction, hydraulic fracturing) are not subject to environmental impact assessment (EIA). For purposes of petroleum industry, the EIA is mandatory for projects aiming at construction or modernization of energy resource storage facilities (i.e. gas storage facilities), gas processing plants, gas pipelines and offshore oil-and-gas production facilities. Regulatory documents define quantitative and qualitative parameters for the mentioned projects, excess of the said parameters leads to mandatory EIA.

Also, EIA of specific projects may be carried out on demand of the Ministry of Environment or subject to investor's request.

The EIA consists of three stages, namely: preparation (verification of EIA necessity, defining the EIA subject, procedures and techniques), establishment of work group consisting of representatives of Ministries, governmental agencies and indigenous communities; issuance of technical assignment with account for stakeholders' comments; data collection and research; submission of request to the Environmental Assessment Office and analysis thereof for completeness), analysis of the request (collecting stakeholders' comments, public hearings, meetings of work group, drafting conclusions) and adoption of a resolution. The positive resolution is adopted by two Ministries – Ministry of Environment and another Ministry the project belongs to the sphere of interests thereof (i.e. Ministry of Energy, mining and hydrocarbon resources for petroleum projects). If positive EIA certificate (Environmental Assessment Certificate) is issued, it lists the commitments of project owner, aimed at minimization of environmental impact.

At preparation stage there are no time restrictions except for the 30 day period for completeness analysis of the submitted request. Request analysis lasts for 180 days, while resolution process lasts for 45 days.

Once a decision on necessity of EIA is made, project information and description thereof is published online at [List of Projects in EA](#) and on a [map](#). The site lists information about the EIA status, scope of investment, quantity of jobs and documents related to the project (resolution on EIA necessity, stakeholders' comments, detailed description of the project and potential environmental impact, EIA technical assignment, etc.).

The draft EIA technical assignment is prepared by project owner, however, the final version is subject to approval by regulatory body with account for comments of the work group members, indigenous communities and general public. Comments are collected via publication of the draft technical assignment, collection of written comments and public hearings in one or several localities in the vicinity to the project zone. Information about collection of public comments is published via local mass-media, radio and site of the Environmental Assessment Office. Comment collection period last for 30-75 days. Project owner must provide response to all received comments. Responses and comments are published online. Also, comments of the general public are collected after the EIA documents are accepted for consideration.

Single EIA procedure is carried out for projects that require EIA subject not only to province, but also by federal Law of Canada (Canadian Environmental Assessment Act), however two conclusions are formalized.

## Well placement restrictions

Restrictions to Well placement are listed in the [Environmental Protection and Management Regulation](#) (Oil and Gas Activities Act).

Drilling sites, other petroleum facilities, transportation routes and pipeline corridors cannot be placed closer than 100m from water intakes, water bodies, water supply wells or water supply well feed zones. Exceptions may be allowed if placement does not impact quality and quantity of water reserves and natural water flows or any impact may be effectively eliminated and if owner of petroleum facilities is also the owner of water intake, water bodies or water supply wells.

The Operator carrying petroleum activity within areas containing water intakes or water supply wells or in the vicinity thereto (within 100m radius) must ensure avoidance of impact over quality and quantity of water resources coming into the water intake or water supply well. Nevertheless, activities impacting water supply may be allowed if avoidance of such impact is impossible, impact is minimized and water users and notified in advance and provided with alternative water supply of equal or better quality for period of impact over the main water source.

Moreover petroleum facilities as well as seismic acquisition corridors cannot be placed with the legislatively defined feed zones of groundwaters, watersheds and aquifers. Exceptions may be allowed if such activities do not lead to material impact over quality, quantity and natural flows of water resources. As of [2013](#), not a single aquifer or feed zone of groundwaters has been approved. Instead, several [watersheds](#) were approved, requiring submission of detailed impact mitigation plan by operators.

An operator, carrying out petroleum activities within areas overlying aquifers must ensure avoidance of material impact over quality, quantity and natural flow of water in the aquifers.

Drilling sites and other petroleum facilities cannot be placed on streams, rivers, lakes and swamps with acreage between 0.25 and 5ha and onshore within such swamps if acreage thereof is below 5ha.

It is prohibited to place drilling rigs and other petroleum facilities within riparian reserve zones and riparian management zones. The dimensions of riparian reserve zones, water protection areas and riparian management area depend upon the type of water body, its position and size.

Placement of facilities within water protection zones may only occur if such actions do not cause significant impact to the functions of water protection zones for bio-diversity preservation, water quality and riparian reserve zones in compliance with [specific additional requirements](#).

<i>Water body</i>	<i>Riparian reserve zone</i>	<i>Water protection zone</i>	<i>General water protection territory</i>
<i>Streams and rivers</i>	0-20-50m	20-50m	20-100m
<i>Swamps</i>	10m	20-40m	30-50m
<i>Lakes</i>	0-10-50m	20-30m	20-80m

Exceptions may also be allowed if there is a necessity to install infrastructure facilities (i.e. pipelines or deviated/horizontal wells) below/above streams, lakes or swamps.

If a well is located closer than 100m from water body or at larger distance, on a terrain allowing uncontrolled fluid flows to reach the water body, the drilling permit owner must deploy surface control means to avoid water contamination as per Drilling and Production Regulation.

The Drilling and Production Regulation also prohibits well construction at the distance under 100m from houses, constructions and mass gathering locations.

Drilling sites and other petroleum facilities also cannot be located within nature preservation territories, winter pastures of hoofed animals, within water basins with significant fish resources. However, deployment thereof may be allowed if petroleum activities do not have material impact over life support of species, protection or preservation whereof caused establishment or designation of nature preservation territories, winter pastures of hoofed animals and within water basins. Additional restrictions, including seasonal ones, may also be established with the view to preservation of some species.

Well placement permits within nature preservation territories may only be granted as exceptions subject to substantiation of such works within the mentioned territories and submission of impact minimization plans.

Well placement restrictions may also be established for territories with subsoil or surface karst system elements; territories used for research purposes, recreation territories, age-old forests, cultural heritage territories, etc.

Moreover, the [Drilling and Production Regulation](#) sets restrictions for deployment of waste tanks. The tanks must be located at least 100m away from the boundary of a water body and 200m away from water supply wells.

### **Permitting procedures in the sphere of environment protection**

Subject to the [Environmental Management Act](#), the term “waste” includes solid and liquid wastes, polluting agents emitted into the atmosphere, hazardous wastes and some other substances. Permitting documents in the sphere of waste treatment cover the matters of creating and disposal, emissions into the atmosphere and dumping liquid wastes accordingly.

Subject to the [Environmental Management Act](#), any waste disposal by enterprises of specified industries and activities without respective permit is prohibited by legislation. The list of activities that are subject to acquisition of permits or approvals for waste disposal is defined in the [Waste Discharge Regulation](#). The list includes oil-and-gas production industry. Petroleum companies are differentiated into large (emitting 30 tons of sulfur or more and/or emitting 4 tons of volatile organic carbon compounds or more into the environment within 15 days) and small (emitting smaller amounts of sulfur and volatile organic carbon compounds).

Subject to the type of activity and size of a company, requirements towards compliance with specific permit may differ. Usually, large enterprises must acquire special permit for waste creation or approval for waste disposal, as well as submit detailed technical report in the process of permitting. Specific regulatory acts or specific approved rules and regulations apply to small companies.

If special permit for waste creation is granted, it may contain additional requirements on environmental impact minimization, environmental monitoring, data research, pollutant handling procedures, requirements to re-sue of specific wastes or use of waste energy. The permit does not allow disposal of hazardous wastes unless explicitly specified otherwise.

Approval of waste disposal without acquisition of permit may be granted for the maximum period of 15 months.

Specific regulatory documents are formalized for some industries or activities. The [Oil and Gas Waste Regulation](#) applies to petroleum industry.



Special standards and waste handling rules are developed for some types of activities, i.e. re-injection of flowback water into subsoil for coalbed methane – Code of Practice for the Discharge of Produced Water from Coalbed Gas Operations.

In British Columbia, the procedure for acquisition of waste creation permit is simplified for petroleum companies. In addition to the general Environmental Management Act, special [Oil and Gas Waste Regulation](#) was approved. The document governs waste handling by petroleum companies. The [Oil and Gas Waste Regulation](#) allows waste discharges to the environment (liquid, solid and gaseous) for the majority of oil-and-gas production facilities (drilling sites, compressor stations, waste storage facilities, etc.) without acquisition of special permits for each facility.

The simplified regulatory approach includes engine and generator emissions into the atmosphere, emissions resulting from flaring gaseous mixtures while drilling, rainwaters, liquid drilling wastes and water-based cuttings, rock debris and residual cement, re-injection of flowback waters into subsurface horizons after stimulation (including hydraulic fracturing), etc. Emissions resulting from flaring of gases during stimulation are allowed in flaring period does not exceed 24 hours (approved duration may be extended subject to the resolution of the Ministry of Environment).

Waste waters, used for equipment cleaning and may contain hydrocarbons and other pollutants, other solid industrial and household wastes do not fall within the provision of simplified regulatory framework. The said wastes require acquisition of additional permits or approvals and/or recycling by specialized companies.

The document sets forth general requirements to petroleum activity facilities, declaring that the average volumetric concentration of H<sub>2</sub>S per hour in surface air within site perimeter may not exceed 10ppm. Moreover, the document defines requirements to nitrogen oxide emissions produced by drive engines at 2.7-10,2 gr/kWh subject to fuel type used (natural gas, liquid fuel or combination thereof) for engine power equal to 100kW or more.

Large industrial facilities do not fall under simplified regulatory framework, namely: facilities emitting large amounts of sulfur (30 tons or more within 15 days) or volatile organic carbon compounds (4 tons or more within 15 days), facilities with total power of compressor drives, pump drives or generator drives over 3,000kW, facilities located within marine tidal zones.

Handling of hazardous wastes must be carried out subject to the Hazardous Waste Regulation. However, the Oil and Gas Waste Regulation ascribes exceptions for re-injection of flowback waters and sour gasses despite the fact that they may contain hazardous wastes.

If specific type of wastes or petroleum facility does not fall under provisions of the Oil and Gas Waste Regulation, permits should be acquired subject to general legislation addressing the Oil and Gas Commission.

The general permit acquisition procedure includes preliminary meeting with specialists of the Ministry of Environment, notification and stakeholders' [consulting](#) in the course of permit request preparation, preparation of [technical assessment](#) report, submission of request and support documents, refining the submitted documents or denial of a permit.

Preliminary consulting includes consulting with local and federal governmental bodies, general public, indigenous communities and other stakeholders. Consulting are carried out via publication of a notification (Environmental Protection Notice) on a special site, local press, official publications of the province and delivery of notifications via mail (Public Notification Regulation), collection of comments during 30-day period, provision of replies to the comments received and preparation of report on consulting.

The technical evaluation report must contain information about the project, sources of wastes (solid and liquid wastes, emissions into the atmosphere), quantity and composition of wastes, waste handling system as well as information on waste disposal locations, dumping and leak locations, potential environmental impact and environmental monitoring arrangements. In specific cases the said technical information may be represented immediately in the application, not a separate document. The scope and form of technical information is defined in the course of preliminary meeting with specialists of the Ministry of Environment.

A separate document governs handling leaks and spills of pollutants, including sudden outbursts – the Spill Reporting Regulation.

### **Water use permits**

In British Columbia there is a number of typical procedures for acquisition of water use rights for petroleum companies, namely: water license and permit for short-term water use subject to the [Water Act](#) and designated water wells for groundwater extraction as per Oil and Gas Activities Act.

Petroleum companies utilize the largest amounts of water for hydraulic fracturing. In [2013](#), 31 petroleum companies of British Columbia have used 5.34 million m<sup>3</sup> of water in the course of fracturing operations in 433 wells. Out of the mentioned volume, 48.8% have been provided by means of short-term water use permits, 13.5% - by means of water licenses, 7.8% - by means of designated water wells for groundwater extraction, 15% - by means of flowback water, while the remaining share – by means of contracting private water owners or purchase of water at municipal water treatment facilities.

The [water license](#) grants the right for extraction the licensed amount of water, water storage, construction and management of facilities required for extraction, storage and distribution of water as well as use of water and energy produced therewith. License validity period ranges between 5 and 20 years. The water license is acquired by petroleum companies in case of construction of permanent infrastructure for water intake (i.e. pipelines) and in case a company wishes to guarantee primary right of water supply subject to the legislative requirements. Petroleum companies submit reports on licensed water intake to the Oil and Gas Commission.

[Short-term water use permit](#) is granted in writing for the period under 24 months (12 month usually). With the view to acquisition of short-term water use permit for fracturing purposes, the application is submitted along with analysis of water resource demand and supply for a specific water intake. Such permits may be suspended in case of shortage of water resources within specific territory ([example of permit suspension resolution](#)). Companies submit monthly data on water intake to the Oil and Gas Commission on quarterly basis.

Water licenses and short-term water use permits for petroleum purposes are issued by Oil and Gas Commission.

In case groundwaters are used for fracturing, a permit for water source well drilling must be acquired at Oil and Gas Commission subject to the requirements of the Oil and Gas Activities Act. Reports on use of such water source wells are submitted to the Commission on monthly basis.

### **Process requirements to hydrocarbon production**

Special requirements to well placement, cementing, hydraulic fracturing, isolation of aquifers, flaring hydrocarbon gases, etc. are represented in the Oil and Gas Activities Act – [Drilling and Production Regulation](#).

The said regulatory act establishes some restrictions on hydraulic fracturing. It is prohibited to carry out hydraulic fracturing above 600m depth unless a special approval for the operation is granted in well permit. In order to acquire the special approval, the subsoil user must submit risk assessment, analyzing all potential risks of hydraulic fracturing over condition of fresh groundwaters (mineralization below < 4000mg/l) along with permit application. Risk assessment must include at least: hydraulic fracturing program (pressure, capacity, quantity of fracturing fluid, composition thereof, etc.), evaluation of maximum fracture length, analysis of water quality produced from water source well (within 20m radius, before and after operation), well casing and cementing integrity assessment, etc.

Also, well permit holder must manage and store information about composition of all chemicals used for hydraulic fracturing, including fracturing date, names and functional information about frac fluid components and number thereof subject to Chemical Abstracts Service, information about general water volume used and ingredients, trade names and suppliers of each components, etc. the said information must be submitted to the Oil and Gas Commission not later than 30 days before well development.

The regulatory document also defines the requirements to protection of groundwater resources. Permit holder must ensure casing strengths that would make damage under maximum stress and expected production conditions impossible. Non-toxic drilling chemicals must be used until 600m depth is reached and all freshwater aquifers (suitable for household or agricultural purposes) are isolated from drilling mud. The annular space of surface casing and subsequent casing string must be cemented to surface. If surface casing string isolates all freshwater aquifers or reaches 600m depth, surface casing annulus must be cemented to surface. Annular space of all subsequent casing strings must be cemented 200m above casing shoe of the precedent casing string.

Legislation also prohibits dumping natural gas into the atmosphere only if its calorific capacity, volume and rate are sufficient for steady combustion. If combustion cannot be maintained, dumping of hydrocarbon gases into the atmosphere must be carried out in compliance with safety regulations, dumping volume and duration must be minimized. Natural gas flaring should also be minimized. Flaring is allowed if it is necessary for well stimulation or servicing and flared gas volume does not exceed 50Km<sup>3</sup>/year. Also, flaring is allowed if special approval is granted in well permit. Companies must keep accounts of flared gas volumes and report them to the Oil and Gas Commission. If gas with high H<sub>2</sub>S content is flared, flares must be at least 12m high.

### **Access to information**

Access to information on water resources and water licenses - North East Water Tool - <http://geoweb.bcogc.ca/apps/newt/newt.html>

Information about key water bodies, precipitation, water licenses and permits, allowed maximum and current water intake levels, etc.

Water Information Portal - <http://waterportal.geoweb.bcogc.ca/#>

Information about water levels in surface and groundwater bodies, water quality in surface and groundwater bodies.

Access to information about components of fracturing fluids – FrackFocus - <http://fracfocus.ca/>

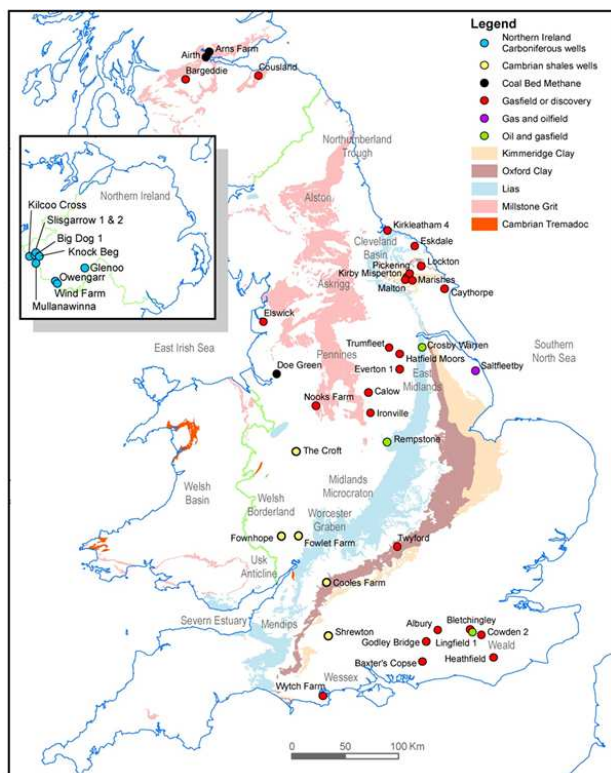
Since January 1, 2012, British Columbia has implemented mandatory disclosure of information about components of frac fluid. Publication of data on components and total quantity of frac fluid is carried out via special site – [www.FracFocus.ca](http://www.FracFocus.ca).

## **Optimization of permitting and regulatory practices**

Implemented and planned activities on optimization of permitting and regulatory practices for petroleum companies include:

- transfer of authorities related to petroleum permitting procedures to single regulatory body – British Columbia Oil and Gas Commission;
- unified permit documents for wastes, emissions into the atmosphere and disposal of fluid wastes;
- special regulatory mechanism for petroleum companies in terms of waste handling and creation of pollutants ([Oil and Gas Waste Regulation](#)) and special regulations for handling specific petroleum wastes (Code of Practice for the Discharge of Produced Water from Coalbed Gas Operations);
- differentiation of requirements by company size and simplified permitting procedures (waste creation permit without permit acquisition) for small companies;
- differentiation of requirements by duration of water use and simplified permitting procedures for acquisition of short-term water use permits;
- [digital system for permit applications](#) is being developed.

## The United Kingdom



Key shale deposits in the United Kingdom.

Source: [bgs.ac.uk](http://bgs.ac.uk)

The following documents are required for unconventional hydrocarbon projects in the UK: license for development of specific area, planning permit, environmental permit and well drilling permit. Moreover, operator must acquire permit from land owner and, in case site is located within coal fields – permit from the Coal Authority.

Regulatory and permitting practices may differ in England, Scotland, Wales and Northern Ireland. Hereinafter we will focus on experience of England.

The Department of Energy and Climate Change, grants Petroleum Exploration and Development Licenses within a specific territory (area) subject to the Petroleum Act and approved field development plan. Licenses are granted on tender basis under [periodic licensing rounds](#) framework. In July, 2014, [call for bids](#) has been announced under 14th licensing round, listing numerous areas with shale gas

potential. The [strategic environmental assessment](#) has been carried out at preparation stage of the auction.

Moreover, the Department of Energy and Climate Change grants final permit for well drilling and approves the fracturing program with account for conclusions of the Environmental Agency and authorized healthcare and safety body, and with account for seismic activity minimization efforts. The Department also approves well suspension plans. Permit for drilling and fracturing may only be acquired after planning permit and environmental permits are granted.

Planning permission (permit for drilling site development within specific land lot) is granted by local Minerals Planning Authority, usually represented by county council or unitary council. The permission is granted with account for economic, social and environmental factors and consulting with the Environmental Agency. One of the requirements for acquisition of planning permission is due remediation of land lot after well operation is complete. In case of material environmental risks, the authorized body may demand EIA. Under the permitting procedure, authorized bodies announce construction plans and, if necessary, disclose environmental impact assessment to collect comments from general public.

Information on permit applications is published on authorized body's site and local mass-media. Stakeholders' comments are collected in digital hardcopy format within at least 14 days period. The total document consideration period [constitutes](#) 16 weeks for projects with EIA and 13 weeks for other projects.

Environmental permits in England are granted by the Environmental Agency subject to [Environmental Permitting \(England and Wales\) Regulations 2010 \(EPR\)](#). Environmental Agency also carries out audits and inspections with the view to verification of environment protection compliance. Both environmental and planning permits may specify requirements to monitoring of



baseline environmental parameters. Well drilling may commence only under the condition that the said requirements are complied with. To acquire environmental permits, submission to the Environmental Agency contains well drilling plan with geological assessment (including information about surface and groundwater bodies), well description, monitoring plan, frac chemicals. Natural radioactive materials, water sampling and water resources handling.

The authorized [Health and Safety Executive \(HSE\)](#) body verifies well project documents to confirm compliance with requirements on control over key human health risk factors during well operations on in case of an emergency. The operator must submit design documents and work plans at least 21 days in advance of the planned well spud.

Submission of applications for planning and environmental permit may occur simultaneously.

The general flowchart for permit acquisition for petroleum companies is listed at [United Kingdom Onshore Oil and Gas website](#).

Also, there is simplified and fast track permit acquisition process for Major Commercial Projects and Nationally Significant Infrastructure Projects. Potential application of the said simplified processes towards shale gas production had been considered in 2013, however [waived by the government](#).

### **Environmental impact assessment (EIA)**

Not all well drilling projects are subject to mandatory EIA in the UK. In 2013, there had been attempts to amend the EU Directives on EIA and include shale gas production projects into the mandatory EIA category, however the amendments into legislation were blocked.

At the same time, companies acquiring hydrocarbon production permits in the UK must carry out activities in compliance with best practices, including assessment of environmental risks at early stages of project cycle for shale gas projects using frac technology.

The Department of Energy and Climate Change, in cooperation with other governmental bodies and scientists, has developed [guidelines](#) for preliminary assessment of environmental risks in shale gas projects.

Risk assessment must include all material aspects of project's impact over the environment since commencement and until completion (well abandonment). At the same time, projects at exploration phase do not need to investigate specific risks related to commercial production phase only.

The key objective of the initial environmental risk assessment for shale gas projects is provision of overview of all material environmental risks (including human health risks) at early project implementation phase without detailed research thereof for the purposes of initial discussion with stakeholders and local communities specifically.

The preliminary assessment must contain information on geological and hydrological characteristics of the territory, preliminary list of frac chemicals and properties thereof, information on water use, pollutant emission during flaring, risks related to waste handling and transportation of chemicals, etc.

Initial assessment is submitted to the Department of Energy and Climate Change for review at least 4 weeks in advance of submission of planning permission application.

The initial assessment may constitute basis for further detailed research of environmental impact (if required subject to legislation), however cannot change them in any way.

Necessity for full-scale EIA is defined during consideration of planning permit application by the respective authorized body.

The list of projects and project criteria to be evaluated under the EIA are specified in the [Town and Country Planning \(Environmental Impact Assessment\) \(England and Wales\) Regulations](#).

[The list, provided in Schedule 1](#) to the said regulatory document defines project types with mandatory EIA. Projects for commercial production of oil and gas with 500 ton (oil) and 500,000m<sup>3</sup> (gas) production rates must undergo EIA. Unconventional gas projects may not fall into the category due to the fact that production rates of unconventional gas wells are often below the mentioned values.

[The list, provided in Schedule 1](#) to the said regulatory document defines project types that may potentially have environmental impact and may be subject to assigned EIA. Mining projects, including deep well drilling and projects for deployment of oil, gas, ore and shale production facilities belong to the said category.

The local Minerals Planning Authority issues resolutions on necessity for EIAs. Resolutions are adopted on the basis of parameters and threshold values, defined for each type of projects and conclusions on potential significant environmental impact based on project proposals screening. For oil and gas production projects, drilling site acreage is a criterion (threshold value – 0.5ha site). In addition to the defined criteria, screening may be substantiated on the basis of location of proposed project within sensitive areas. The sensitive areas include sites of specific scientific value, national parks, flood plains, territories of high natural value and world cultural heritage objects.

During project proposal screening, the authorized body takes into account project parameters (project types, scale, amount of wastes and pollutants created, emergency risks), sensitivity of project area to potential impact factors (current land lot use, characteristics of natural resources within the area, density of population, presence of nature preservation territories, woods, swamps and other valuable natural sites) and description of potential environmental impact (scale, potential, duration of potential impact, etc.).

Resolution on necessity of EIA for specific projects may be adopted by the Secretary of State for Energy and Climate Change.

Moreover, operator who plans producing hydrocarbons may make a decision on implementation of EIA, prepare respective report and submit it with planning permit application.

Cuadrilla company, in cooperation with [Arup](#) consulting company, has prepared such an EIA. EIA materials are available at [company site](#) and site of [Lancashire County Council \(authorized body for mineral use planning\)](#).

[The National Planning Practice Guidance specifies that, despite the fact that resolutions for EIA necessity are made on each specific case, it is unlikely that the necessity will be established for projects at exploration drilling phase if no hydraulic fracturing is planned.](#)

If project requires EIA, the operator may address the authorized Minerals Planning Authority with a request for conclusions on EIA scoping opinion. The conclusions may be prepared with account for Environmental Agency's comments.

The EIA report is submitted along with planning permit application. It [must contain](#) information about the project (physical characteristics of the facility and land lot necessity, description of key processes, assessment of types and quantities of wastes and pollutants, etc.), description of key alternatives of the proposed project, description of environment components that may suffer from

impact, characteristics of such impact, environmental impact minimization efforts and other relevant information.

Consideration of planning permit application and EIA report is carried out during 16 weeks. At the same time, [subject to Cuadrilla evaluation](#) all research necessary during report preparation requires approximately 6 months. Therefore, the total period of execution and approval of EIA may constitute 10+ months.

For example, in February 2014, Cuadrilla had submitted [request](#) on subject of the EIA of one of the potential drilling sites, while [planning permit application and EIA report was submitted in June, 2014. However, decision making was postponed to late January, 2015.](#)

### **Well placement restrictions**

The English Law [does not ascribe restrictions](#) on minimum distances between inhabited localities and industrial enterprises; however permits for placement of industrial facilities are issued for each specific case.

In July 2014, along with announcement of the next hydrocarbon licensing round, [explanatory statement](#) has been published with regard to restrictions on well placement within nature preservation territories and world cultural heritage sites. Subject to the [new regulatory provisions](#), authorized bodies must refuse granting planning permits for unconventional hydrocarbon wells within nature preservation territories (national parks, flood plains and outstanding natural beauty sites), except for cases of proven substantiated social value of such permit.

Consideration of applications [must include](#) necessity for well construction and influence thereof over local economy, possibility and cost of well construction elsewhere outside nature preservation territories, as well as any impact to the environment, landscape and recreation value of a territory. Moreover, authorized bodies must refuse granting planning permits for unconventional wells within territories holding status of world cultural heritage. Exceptions may occur in rare cases if proven substantiated social benefit of such permit may outbalance loss of territory's cultural value..

In the [Groundwater protection: Principles and practice](#) guidelines, the Environmental Agency has ascribed that shale gas production permits will be denied within the territory of the 1<sup>st</sup> belt of groundwater preservation zones for water supply purposes. The standard belt length constitutes 50m from water intake center. Outside the 1<sup>st</sup> belt, shale gas production facilities may be prohibited in case of unacceptable risks for groundwater resources. The standard length of the 2<sup>nd</sup> belt ranges between 250 and 500m (subject to water intake capacity) from water intake center. Similar provisions apply to production of conventional hydrocarbons.

### **Permitting procedures in the sphere of environment protection**

Subject to provision of the Water Resources Act 1991, operator must submit letter of intent on well drilling to the Environmental Agency one month before well spud. The letter must be supported with information about well drilling parameters, well casing data, storage of chemicals and fuel on Well site and drilling mud handling plan. Moreover, if well stimulation is planned (i.e. hydraulic fracturing), the letter must also contain information on chemicals to be used. Having analyzed the received information, the Environmental Agency may demand additional clarification or amendments to well construction plans.

Granting of environmental permits is governed by the [Environmental Permitting \(England and Wales\) Regulations 2010](#).



In England, environmental permits are granted by the Environmental Agency. There are two types of environmental permits – standard permits (list of requirements to environment protection for specific activities) and bespoke permits (used in case of absence of standard requirements on environment protection). Petroleum companies must acquire bespoke environmental permits. At the same time, implementation of standard permits for oil and gas production in [planned](#) for 2015.

Subject to the [Onshore oil and gas exploration in the UK: regulation and best practice](#) operators are recommended to consult regulatory bodies prior to submission of environmental permit application and submit applications along with acquisition of planning permits.

The following environmental permits may be necessary if operators plan producing hydrocarbons:

- permit for activities within groundwater zones (includes any activities that may result in groundwater contamination; permit is not required if the regulator does not recognize any risks to groundwaters that may result from activities);
- permit for drilling waste handling (drilling wastes include flowback waters and gases emitted into the atmosphere);
- permit for industrial emissions (if flaring of over 10 tons of gases per day is planned);
- permit for radioactive material handling;
- permit for waste water dumping (if waste waters are contaminated within site).

All of the mentioned permits are required for the majority of unconventional gas projects.

If drilling rig is deployed in the vicinity to large rivers, the operator must acquire the flood risk consent.

In case of transfer from exploration operations to commercial production, all permitting documents must be re-acquired.

The Environmental Agency has prepared [technical guidelines](#) for operators with clarification of requirements to acquisition of each environmental permit and sequence thereof.

The first stage of permit acquisition is preliminary consulting with the specialists of Environmental Agency with the view to specification of permit list and acquisition requirements.

A [special application form](#) is filled in with the view to submission of environmental permit application, containing general data section and separate sections of various environmental permits. The application form is filled in if permit for radioactive material handling is acquired. In the future, the Environmental Agency plans merging all permits into a common one with the view to simplification and acceleration of permitting processes.

After receipt of the request, the Environmental Agency verifies correct filling thereof and completeness of the provided data and accepts for consideration or returns the request to the applicant for refining.

Permit application for activities within groundwater zones must contain detailed assessment of contamination risks and description of efforts aimed at prevention of hazardous substances into groundwaters and minimization of contamination of groundwater by other substances. The request must contain information on drilling parameters and well casing, techniques for casing integrity testing, well position data and expected zones of distribution of stimulation fluids, information on frac fluids and quantities thereof, data on environmental monitoring, etc.

Permit application for drilling wastes handling must be supported by waste management plan. The waste management plan must contain assessment of environmental risks, description of minimization efforts, data on expected quantity of various wastes, description thereof and monitoring measures. Wastes are solid, liquid or gaseous substances, including cuttings, flowback water, used proppant and gaseous pollutants. Hydrocarbon waste waters are classified as drilling wastes and must be recycled safely. Potential waste water handling options include purification onsite and reuse at licensed enterprises, forwarding waste waters to licensed waste water treatment facility of dumping into special sewer subject to respective permits.

Also, detailed information on gas flaring must be submitted (flare type, technical parameters, capacity, safety and monitoring measures, etc.) and information on monitoring and avoiding methane leaks. The granted permit for drilling waste handling may contain additional requirements and validity conditions.

[It is necessary to](#) acquire a separate permit for industrial wastes if over 10 tons of gas per day are to be flared.

Oil and gas production with application of stimulation techniques (hydraulic fracturing specifically) is classified as activities related to natural radioactive substances, therefore operators must acquire [permit for radioactive materials handling](#). Requirements to acquisition of the permit include use of the best available technologies aimed at minimization of radioactive impact, for example use of closed storage systems for flowback waters.

Non-contaminated water flows (rain water for example) may be dumped into water bodies without acquisition of special permits. However, in the mentioned flows are contaminated, it is necessary to apply for waste water dumping permit. The permit may only be issued when it is impractical to avoid contamination of flows and if the flows do not contaminate water body.

Applications for environmental permits are published on Environmental Agency site and public register of permit documents with the view to collection of comments.

Application for acquisition of a typical environmental permit may be considered for approximately 13 weeks (the period is not legally binding).

If the Environmental Agency claims the project area [to attract significant public attention](#) (quite possible for unconventional hydrocarbon projects), the comment collection period may be extended and wider promo campaign may be carried out, for example in local newspapers, with recurrent public discussion on permitting at the stage of project preparation. For such instances, the full environmental permitting process may last 4-6 months or more. Period for application consideration is subject to quality thereof and support of the local community. If standard permits are introduced for oil and gas production projects, consideration period for environmental permits may reduce to 2-3 weeks.

According to [Cuadrilla evaluation](#), the full period of acquisition of all permits and approvals before commencement of drilling may last 16 months.

The resolution to grant permit is also published in common access register.

Granting of environmental permits is chargeable.

### **Water use permits**

The operator should not acquire a separate permit for water use if water is used for hydrocarbon production, including frac operations, and supplied by specialized companies.

Subject to the provisions of Water Resources Act 1991, operators must acquire water abstraction license, if water intake exceeds 20m<sup>3</sup>/day. The license is issued by the Environmental Agency if the specified water intake does not impact the environments and other water users. Applications for water abstraction license from petroleum companies are reviewed subject to standard procedure.

Application for water abstraction license must contain information of water supply sources, expected water intake, hydrological and hydrographic information. Operators must inform the Environmental Agency on planned efforts for preservation of water resources, including groundwater resources, in the course of drilling and production. Environmental agency considers the submitted information and may set additional requirements with the view to protection of water resources.

If water originates from groundwater sources, it is necessary to acquire additional approval for water well construction and testing prior to application for license.

License validity period may range between 6 and 18 years and may be extended by additional 12 years. In specific cases, the license may be granted for 24 years.

Moreover, Environmental Agency may grant a short-term water abstraction license if water intake lasts less than 28 days.

[Consideration period](#) for acquisition of short-term water abstraction license constitutes 28 days, for regular license – 4 months.

Granting of water abstraction licenses is chargeable.

Applications for water abstraction licenses are published on [Environmental Agency site](#).

### **Process requirements to hydrocarbon production**

Only non-toxic substances (subject to Groundwater Daughter Directive) may be used for hydraulic fracturing.

In the UK, three casing strings design is typical (surface, internal, production) plus cemented annulus. In specific cases, additional casing string may be installed.

Project's compliance of the planned well design and actual design with regulatory requirements is verified by inspector of the authorized HSE body and an independent inspector.

Requirements to labor safety at rig site are ascribed in the Health and Safety at Work Act 1974, Borehole Site and Operations Regulations 1995 (health and safety matters at rig sites) and Offshore Installations and Wells (Design and Construction, etc.) Regulations 1996 (well integrity, applicable to onshore projects).

[Design and Construction Regulation](#) contains provisions, requiring the well to be designed, constructed and used in a manner that will minimize the risk of fluid leaks into the environment ALARP- as low as is reasonably practicable. According to the Regulation, operator must conduct geological evaluation of the site prior to commencement of well construction and regularly submit reports on well operation to the authorized HSE body.

Subject to the Borehole Sites and Operations Regulations 1995, operator must notify the authorized HSE body about intention to commence well drilling or well abandonment 21 days before commencement of operations. The notification must contain information about the well, equipment to be used, work program, information about geological environment, etc. Moreover, Borehole Sites and Operations Regulations contain requirements on issuance of Emergency response plan and requirements to well control.

The authorized HSE body has established the [following](#) requirements to casing of oil and gas wells:

- all casing strings must be fully pressure tested after the annulus is cemented and before further drilling;
- hydrocarbon bearing zones must be isolated;
- after cementing operations, cement quality must be verified and comply with planned parameters.
- Surface casing and 1<sup>st</sup> intermediate casing string is cemented from bottom to surface, while internal and production casing strings are to be cemented at least to the casing shoe of the previous string.

The UK Oil and Gas Industry Association has developed guidelines on well integrity assurance, containing references to applicable legislative requirements and industry standards - Well Integrity Guidelines.

### **Access to information**

The Environmental Agency must maintain a number of public registers for environmental data. The [Main Public Register of the Agency](#) includes information about permits (for industrial companies, radioactive materials handling, waste recycling, waste water dumping permits), waste handling companies and measures for enforcement of compliance with legislation. Information stored in the registers must also be provided to stakeholders in digital or hardcopy format at local division of the Environmental Agency.

Moreover, Environmental Agency site contains maps with environmental data, namely: [water abstraction licenses](#) for surface and groundwaters, [map of water protection zone for groundwater sources and map of aquifers](#), [map of protection zones for surface and subsoil potable water sources](#), [map of air pollution](#) etc.

British Geophysical Survey has published [maps](#), illustrating location of shale deposits and key aquifers on their web site.

The Environmental Agency usually discloses information about substances used for hydraulic fracturing, however, may not disclose parts of separate substances due to commercial secret status.

Chemicals that operators plan to use for hydraulic fracturing are [inspected for hazards in each specific case](#) by Environmental Agency. Hazards related to chemical agents are verified using a [special technique](#). Operators submit detailed information on fracturing fluid composition to the regulatory authority and publish brief description for common access. Currently, the only company that has applied fracturing technology in the UK is Cuadrilla. Information about chemical agents used may be found on [company's web site](#).

British Geophysical Survey has carried out national survey for methane content in groundwaters within the territories of potential shale gas production ([National Baseline Methane Survey](#)). [National Survey data](#) are used as baseline for comparison and designation of environmental impact of hydrocarbon production within the framework of environmental monitoring and inspections.

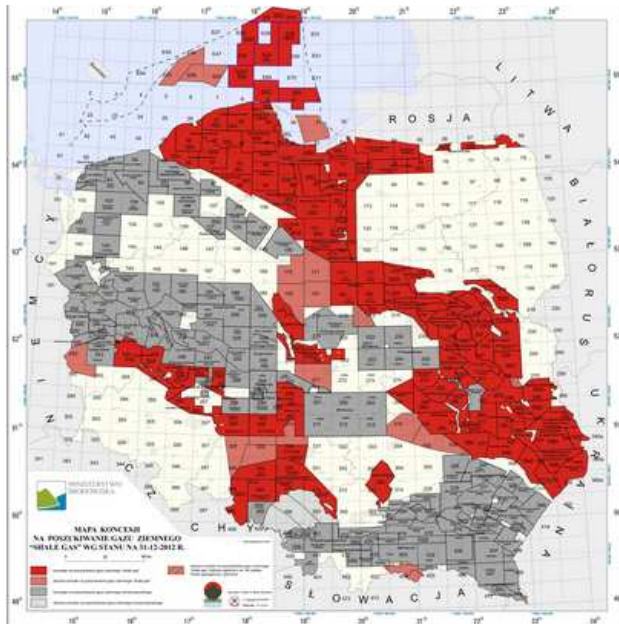
### **Optimization of permitting and regulatory practices**

Implemented and planned activities on optimization of permitting and regulatory practices for petroleum companies include:

- possibility of implementation of simplified permit acquisition process for priority projects;
- publishing official guidelines and clarifications on permit applications, regulatory procedures, filling in applications, etc.;

- plans for implementation of standard environmental permits, listing specific sets of environmental requirements to specific activities and simplified approval procedure for oil and gas projects;
- practice of preliminary consulting with regulatory bodies and simultaneous formalization of planning permits and environmental permits;
- Common application form for all environment protection permit documents.

## Poland



*Map of license areas in Poland.*

*Source: polskielupki.pl*

As of the end of 2014 66 exploration shale gas wells have been drilled in Poland. However, commercial natural gas inflows have been obtained yet. The number of international companies has left Polish market, though the government of the country continues to improve the legal base in order to facilitate unconventional hydrocarbon exploration.

The key legal document regulating hydrocarbon production in Poland, including that of unconventional gas, is Geological and Mining Law ([Geological and Mining Law](#) / [Prawo geologiczne i górnictwo](#)).

In compliance with the Law, the right for reserves and subsoil in Poland is preserved by the state. The right on geologic exploration and natural gas production is granted by the

Ministry of Environment (Ministry of Environment / Ministerstwo Środowiska).

To acquire such rights the company shall receive the respective license (concession) and conclude with the Ministry of Environment mining usufruct agreement ([mining usufruct agreement](#)). License is granted and agreement is concluded based on the results of the auction held between bidding companies.

Licenses are granted for the period of 3 to 50 years and cover either hydrocarbon exploration or production on the defined area. License is subject to fee the amount of which depends in the size of the license area. 60% of the fee is paid to local budget and 40% is paid to National Environment Fund and National Water Management Authority.

In case the operator breaks the legal requirements, namely those on environment protection and efficient natural resources use, or violates the license conditions (including work performance terms) the Ministry of environment can suspend the license until the breaches are eliminated. In case the requirements are not fulfilled the license can be cancelled or limited in area without any loss reimbursement.

Mining usufruct agreement transfers the rights for natural resources exploration and production from the state to the license holder. The agreement specifies the key conditions of geologic exploration on certain territory and conditions of hydrocarbon production on a specific field. Such conditions are defined for a definite timeframe. Agreement is also subject to a fee the amount of which depends in the size of the license area.

As of 2014 individual agreements shall be concluded and individual licenses shall be obtained for geologic exploration and commercial production stages.

The license area at geologic exploration stage cannot exceed 1200 square kilometers. Companies, which have performed geologic exploration and approved field geologic documents, defined by law, have the priority right for license and mining usufruct agreement.



At geologic exploration stage activities are performed in compliance with the approved Geological Works Plan (projekt robót geologicznych). Such Plan shall include the purpose and method of geologic works performance, type of geologic documents which will be designed based on geologic works results, environment protective measures, including those aimed to protect groundwater, etc. Geologic Works Plan shall include textual and graphic (maps) parts. Detailed requirements to such plans are set forth by the Ministry of Environment. At exploration stage geologic works can include analysis of geologic data, seismic survey and drilling one or more wells.

As the operator goes to commercial production and based on the results of geologic exploration the operator shall prepare and approve with the Ministry of Environment field geologic documents (dokumentacja geologiczna złoża) and Field Development Plan (projekt zagospodarowania złoża). Field Development Plan is attached to application for commercial hydrocarbon production license. Geologic works at commercial production stage are performed in compliance with Mining Plant Operation Plans ([plan ruchu zakładu górniczego](#)) prepared individually for each production site after the license for commercial production has been granted and approved by respective authorized body of geologic service accounting for local government feedback.

Mining Plant Operation Plan [provides](#) general data on company and project, information on well development, geologic and hydrologic conditions of the field, recoverable oil and gas reserves, method of produced reserves' accounting and other data. The document also provides for drilling site properties, description of structures and facilities, information on defined protective zones and project environmental impacts.

Besides, Mining Plant Operation Plan provides information on key equipment units used for production, stimulation and power production; measures on labour, health and environment protection; information on drill muds, waste water management and well abandonment techniques.

Mining Plant Operation Plan in environmental part shall contain such information as data on surface soil protection, soil reclamation after production is finished, waste management, water and waste water managements, protection of surface and ground waters, noise and vibration protection, ambient air protection, storage of hazardous and radioactive substances.

Schematics and maps providing wells', drill sites', natural protective areas and territories' locations shall be attached to Mining Plant Operation Plan. It is designed for the period of 2 to 6 years or for the whole period of work performance in case such is less than 2 years.

Besides at commercial production stage well construction permit is required (pozwolenie na budowę zakładu górniczego). It is issued by State Mining Authority.

State Mining Authority (Wyższy Urząd Górniczy) controls safety, labour protection, and is engaged in issues of operational control, environment protection. It issues facilities and equipment operations permits and approves Operational Plans of producing and geologic exploration enterprises and amendments thereto.

General Directorate for Environmental Protection (Generalna Dyrekcja Ochrony Środowiska) and its regional departments provide their conclusions on environmental impact assessment necessity, subject of such assessment and feasibility of conclusion on environmental requirements set forth for project execution.

Environment Protection Inspection controls adherence to environment protection laws.

## **Environmental Impacts Assessment (EIA)**

Requirements on environmental impacts assessment are set forth in the [Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments \(Ustawa ...\)](#), corresponding to requirements of EU Directive 85/337/EU.103.

Specified law defines that environmental impact assessment is performed for projects which always do or may negatively impact environment. Besides, environmental impact assessment is required for projects which may negatively impact natural protective areas, listed in Natura 2000 network.

[Decree of the Cabinet Council](#) defined projects which may considerably negatively impact environment. Projects which always impact environment significantly include commercial natural gas production with more than 500 000 m<sup>3</sup> a year rate and oil commercial production with more than 500 tons a year rate, off-shore production projects. Projects which may considerably impact environment include:

- oil and gas commercial production projects with rates lower than mentioned above;
- geologic exploration oil and gas well drilling projects, with TD of more than 1000 meters, on areas located less than 500 m from settlements, in water sources' protective areas, water protective zones or natural reserved areas;
- oil and gas exploration well drilling with TD of more than 5000 meters, located outside areas, mentioned above.

Decision on the need to perform environmental impact assessment is made by the authorized body responsible for issuance of decision on environmental conditions (decyzja o środowiskowych uwarunkowaniach).

To obtain a decision on environmental conditions for project execution the company shall submit an application, environmental impact assessment report (for projects which permanently impact environment) or informational card with key project parameters (for projects which may considerably impact environment in cases when the company strives to approve the subject of environmental impact assessment for projects which permanently impact environment) and land cards and references from land register and other supplementary documents.

Decision on environmental conditions for the project is needed to obtain exploration or production license. Prior to obtaining construction permit it shall also be attached to application for the specified permit. Decision on environmental conditions for project execution is valid for 4 years and can be extended for another 2 years in specific cases.

The term of documents review and decision making is defined by Administrative Procedural Code and constitutes 1 month, or 2 months in complicated cases. The term can be extended in case the review of the documents has been suspended or additional approvals and consultations from other state authorities have been delayed. Besides the law provides 14 days for appeal of the decision made by authorized body.

For hydrocarbon production projects decision on environmental conditions is made the heads of local administrations and city mayors (wójt, burmistrz, prezydent miasta).

For projects which may impact environment the authorized body shall make decision on the necessity of environmental impact assessment based on informational project card. At making such decisions type and parameters of the projects (scale, use of natural reserves, contamination, use of hazardous substances, etc.) are taken into account as well as project location, location of protective



areas (water sources, forestry facilities, etc.), type, scale, probability and duration of potential negative environmental impact.

Decision is made taking into account conclusions of Regional Directorate for Environmental Protection. In case environmental impact assessment is performed in order to obtain the permit for construction conclusion of local bodies of sanitary inspection is also required.

To obtain such conclusions state authority reviewing documents sends respective request, informational project card and abstracts and plans from land registers. Bodies receiving such requests shall provide their conclusions on the need of environmental impact assessment and its subject within 14 days. Such term can be extended in legally specified cases.

Based on review results the authorized body makes decision on environmental impact assessment need and subject of such assessment, or decision on absence of the specified need. Justified decision may be made by the authorized within 30 days after documents are submitted.

In case the company in the framework of obtaining decision on environmental conditions applies for definition of the environmental impact assessment subject for project permanently impacting environment, such decision shall be made within 30 days taking into account conclusions of Regional Directorate for Environmental Protection and, if needed, local sanitary inspection bodies (by analogy with making decision on EIA necessity). At the same time document review for project decision on environmental conditions shall be suspended until the Environmental Impact Assessment Report is submitted.

If the Environmental Impact Assessment Report is submitted for projects permanently impacting environment documents for conclusions of the Regional Directorate for Environmental Protection and, if needed, local sanitary inspection bodies shall be submitted simultaneously. Regional Directorate for Environmental Protection shall approve the project and set requirements to its execution or provide conclusion on necessity of additional environmental impact assessment under procedure of construction permit obtaining. Such decision shall be made within 30 days term.

Additional environmental impact assessment under procedure of construction permit obtaining may also be performed in case project parameters are changed at project owner initiative.

Environmental impact assessment shall include defining and analysis of project impact factors for environment, human health, living conditions and impact factors for cultural heritage and buildings. Besides, environmental impact assessment shall include description of measures of project negative environmental impacts mitigation and environmental monitoring.

Environmental impact assessment includes preparation and approval of the report, getting approvals and participation in public discussions.

To ensure public discussions the body authorized to make decisions on approval of environmental impact assessment shall publicize data on collecting public feedback, way of familiarization with information or feedback providing, authority responsible for review of feedback provided and on time and place of public discussion. Public feedback is collected during 21 day. Comments are collected in written, electronic or verbal form with further inclusion to public discussion minutes. Public environmental organizations have the right to participate in discussion and submit complaints on decisions made by authorized bodies and approving environmental impact assessment.

Environmental Impact Assessment Reports shall be available for community in public environmental data register.

Based on the results of Environmental Impact Assessment Report analysis, conclusions of Regional Directorate for Environmental Protection, public feedback and other supplementary documents the authorized body makes decision on project environmental conditions. Such decision shall include description of requirements on environment protection, avoidance of emergencies during project execution and may include requirements on supervision of requirements fulfillment in course of project execution.

Regional Directorate for Environmental Protection has the right to find the decision on environmental project conditions, issued by local administrations and city mayors, invalid.

### **Well placement limitations**

According to [Poland Safety Rules on Hydrocarbon Production](#) (Regulation of the Minister of Economy of 28 June 2002. On occupational health and safety, operation and specialized fire protection in the mineral-extracting industries through drilling) the following requirements are set forth for well placement:

- well shall be located at least 50 meters from open fire sources;
- Distance between the well and railway, streams and other water sources, roads of general standing and buildings shall be not less than 1.5 times more than the height of drilling rig; the same requirements is valid for the distance between the well and high voltage lines, which at the same time shall not be less than 30 meters.

Hydrocarbon production facilities (wells, pipelines, gas storages, gas treatment plants, etc.) shall be located not less than 50 meters away from roads of general standing, rail ways, administrative and residential buildings, other structures with open fire.

In event there is a risk of H<sub>2</sub>S emission distance between the well and residential buildings shall be 100-1500 meters depending on potential concentration of H<sub>2</sub>S in the air, types of buildings and number of people residing therein.

In case oil and gas well is located in the forest or 100 meters from its borders additional forest protective measures shall be performed.

Limitations on well placement are generalized for conventional and unconventional hydrocarbons.

Besides, in compliance with [Law on Water Reserves](#) limitations on hydrocarbon production and other economic activity are set forth in water protective areas and water supply protective areas. Namely, in the first belt of ground and surface water take zone any activity not related to water supply is prohibited.

In the second belt of ground and surface water take zone activity which may negatively impact water take operations, namely waste water discharge, soil works, placement of polygons of hazardous and other wastes and construction of new water takes is prohibited.

For ground water take zones additional limitations on mineral resources production and disposal of the drilling wastes are imposed. Sizes of water take protective zones are set in each individual case by local water management bodies based on water take owner's application prepared on the basis of hydrogeologic, hydrologic, hydrographic and geomorphologic survey.

In surface water take zones limitations on economic activities can be imposed. Such activities are construction of buildings, performance of works which can lead to soil contamination, execution of investment projects with can significantly and negatively impact environment. Water protective zones are set by local bodies of Water Management Authority.

Additional limitations on placement wells for hydrocarbon production may be set forth on natural protective areas.

Besides the area where hydrocarbon production is expected shall be of certain designation. In compliance with the [Geology and Mining Law](#) land plot on which hydrocarbon production is expected shall be put on local maps of agricultural land use after geologic documents for the field are approved. In case significant environmental impacts are expected such maps shall also have protective zones where productions activities or buildings' placement are prohibited. Hydrocarbon production on specific land plot may be allowed in exclusive case when planned activity does not contradict land designation or its properties defined in the local plan of land plots' use or other regulatory documents.

### **Permitting procedures in environment protection sphere**

In Poland most of procedures of permit issuance in environment protection sphere are regulated by the Administrative Code ([Kodeks postępowania administracyjnego](#)). In compliance with the Code state authorities shall review applications for not more than one month and in most complicated cases for not more than 2 months. However these terms do not include periods when the review is suspended in compliance with legal requirements, delays in providing additional approvals or consulting, delays not caused by state authorities. The Law provides for 14 days' period when decision on issuance or refusal to issue the permit can be appealed. Such appeals [may be under review for years](#).

In case it is necessary in course of permitting application review to account for opinion of the other authority (issuing conclusion, approving or otherwise providing feedback) such opinion shall be received by the authorized body without economic entity participation. Interested authorities shall provide their conclusions or approvals within 14 days from the date respective request is received, or within any other legally set period.

Taking into account the need of approvals and suspension of documents' review procedures of environmental permits issuance can be several months long.

To start hydrocarbon production operators shall obtain water use, waste production, air emission permits and the license for radioactive materials and substances use.

There is also practice in Poland to issue integrated environmental permits. However oil and gas production are not included into the list of [spheres for which integral permit issuance is possible](#).

Environmental permits are issued by local governmental bodies. For projects with permanent environmental impact permits are issued by voivodship marshals (heads of regions). For other projects those are issued by region prefects.

Requirements on environmental permit issuance are set forth in Environment Protection Law and Water Management Law.

Water use permit regulates the use of surface and ground water sources, discharge of waste waters into surface and ground water sources or on soil. Special water use permit is issued for the period of not more than 20 years and permit for waste water discharge for the period of not more than 10 years.

Waste permit is required un case more than 1 ton of hazardous or more than 5000 tons other wastes are produced a year. If needed the company may also obtain waste treatment and waste collecting permit.

In case hazardous wastes are produced the producer shall approve the hazardous waste management plan which has to be submitted simultaneously with an application for permit. Documents shall be submitted 30 days prior to production start.

Procedure of permit issuance for contaminating substances and dust emissions into ambient air is defined by the Decree of the Ministry of Environment. Permits for contaminating substances and dust emissions into ambient air are issued for 10 years period. Contaminating substances emissions amounts shall not exceed the values specified in the permit and shall not lead to exceeding of the quality norms for air outside operational areas. The company shall attach the model of contaminating substances dispersal when submitting an application for permit.

Adherence to permit provisions is controlled by Voivodship Inspectorate for Environmental Protection. In case environmental impact assessment has been done for the project investor shall inform Inspectorate for Environmental Protection on anticipated works start date 30 days prior to it.

### **Water use permits**

Use of water resources for hydrocarbon production is performed on the basis of respective permit (pozwolenia wodnoprawne). Permits for oil and gas companies are issued on the general basis.

Water use permit is issued on the basis of administrative decision of the local government body, i.e. region prefect and voivodship marshal.

Permit is issued on the basis of application to which non-technical description of the project, special hydrogeologic survey results and detailed data on planned water use, with respective schematics, maps and diagrams are attached.

Term of permit for special water use is defined by provisions of the Administrative Code ([Kodeks postępowania administracyjnego](#)).

State authorities shall review an application within one month, and 2 months in most complicated cases. The Law provides 14 day period to appeal the decision on issuance or refusal to issue a permitting document.

Water use permit is issued taking into account the existing water need, human health and environment impact factors.

According to the Water Law (Prawo wodne) water use permit is not required in case surface or ground water take does not exceed 5 m<sup>3</sup> a day.

Water use permit is issued for the period of not more than 20 years.

The permit specifies purpose and allowable rates of water use, environment protection measures and requirements on accounting quantity and quality of water reserves.

### **Process requirements to hydrocarbon production**

Control over adherence to process requirements set to hydrocarbon production is performed by State Geologic Service. Namely, inspection of wells drilled is performed to check adherence to safety and labour protection rules.

Detailed requirements to safety and labour protection rules and equipment use at hydrocarbon production are set forth in the decree of the Ministry of Economy of Poland. Specifically, the safety rules require thorough shut-off of aquifers to prevent their contamination during well drilling. Requirements to casing set in intervals where aquifers deposit are developed on the basis of special survey and shall be approved by Geologic Service.

Casing used shall have certificates issued by manufacturer specifying steel grade, wall thickness and threads type. Cement used to isolate annulus shall have certificate of laboratory testing and conclusion on correspondence to requirements set to well cementing.

Conductor and the first intermediate casing are cemented to surface. Other intermediate casing are cemented such that aquifers are reliably isolated, Production string is cemented such that hydrocarbon reservoirs from which production is performed are reliably isolated. After cementing is performed its testing is done.

In cases when natural gas produced during well testing cannot be used, it is allowable to flare it. In case of process necessity it is also allowed to discharge natural gas into air.

Stimulation of hydrocarbon flow shall be performed in compliance with technical plan approved by the head of the company.

Decree of the Ministry of Economy ([Rozporządzenie Ministra Gospodarki z dnia 12 czerwca 2002 r. w sprawie ratownictwa górniczego](#)) defined requirements on preparation of emergency response plans, trainings in safety and actions in emergency situations, salvation and respective equipment therefor.

Technical requirements on equipment used for hydrocarbon production and procedure of obtaining permits for use thereof is provided in the [Decree of the Cabinet Council of Poland](#).

Additional technical process requirements can be set forth for each individual case and stated in permitting documents.

### **Access to information**

Applications for integrated environmental permits, permits for contaminating substances' and dust emissions, water use permits, permits for waste water discharge and waste permits as well as data on permits issued shall be made available for community in public digital registers of environmental data managed by local governmental bodies.

Reports on environmental impact assessment shall be made available in public digital registers of environmental data managed by local governmental bodies, authorized to make decisions on environmental conditions for project execution. Such reports shall be available for community during the whole period of environmental impact assessment preparation. There are no generalized registers in Poland which would publish reports on environmental impact assessment for all projects. However, such reports can be obtained upon request of the authorized body of local government.

Polish Laws do not define the obligation to disclose information on substances used for hydrofracturing. However such data are published at [www.ngsfacts.org](http://www.ngsfacts.org) voluntary by the companies being participants of International Association of Oil and Gas Producers.

### **Measures on improvement of permitting and regulatory practices**

In July 2014 [amendments to laws](#) were adopted in Poland. Those introduced the combined license for geologic exploration and commercial production (amendments will be enforced starting of January 1, 2015). License will be issued for the periods of 10-30 years stating duration of geologic exploration and commercial production stages. At the same time geologic exploration stage shall not exceed 5 years and can be extended for another 2. Besides procedure of obtaining permits for geophysical research has been substituted by notification of such research performance. That was done to facilitate permitting procedures. Changes also refer to making decision on approval of

environmental impact assessment. Currently such approval is required prior to obtaining a drilling permit and not when the application for license is submitted.

In September 2014 the draft of the new regulatory act (Hydrocarbons Investment Act) has been published. It provides for simplification and facilitating of permit issuance procedure for construction and environmental permits. It is expected that the permit for contaminating substances emissions will be issued within 45 days, water use permit will require 30 day and construction permit will take 30 days. Besides, it is expected that responsibility for breach of document review terms and “silent assent” will be intensified. The document may be adopted in 2015. In case it happens the period of issuance of all permitting documents and approvals will potentially reduce from around a year to 3 months.

## Comparison of key regulatory requirements

<b>Information</b>	<b>British Columbia, Canada</b>	<b>England, UK</b>	<b>Poland</b>	<b>Ukraine</b>
Unified special permitting authority for oil and gas companies	Yes. British Oil and Gas Commission	No. Key authorities: Department of Energy and Climate Change, Environment Protection Agency, HSE, local councils.	No. Key authorities: Ministry of Environment, State geologic Service, Directorate of Environment Protection, local governmental bodies.	No. Key authorities: Ministry of Energy and Coal Industry, State Geologic Service, State Mining Control, regional state administrations
Authority, issuing well drilling permits	Oil and Gas Commission	Department of Energy and Climate Change, after the permit for site preparation for drilling and environmental permit are obtained	Ministry of Environment	State Mining Control approved drilling design
Authority issuing environmental permits	Oil and Gas Commission. Simplified regulatory regime, permits are not obtained for minor oil and gas facilities	Environment Protection Agency	Local governmental bodies (voivodship marshals and regional prefects)	Regional state administrations (departments of environment and natural resources), Ministry of Natural resources, regional councils
Duration of procedures of environmental permit issuance for well drilling	No permit is required in case certain legal conditions are fulfilled	3 (13 weeks) to 6 months	1 month, 2 months for complicated cases, 14 days to appeal decision	from 2 months
Availability of integrated environmental permit for oil and gas companies	Yes. Contaminating substances air emissions, waste water and wastes are unified under term “wastes”	No. However unified application form for environmental permits has been introduced	No	No
Authority issuing water use permit	Oil and Gas Commission.	Environment Protection Agency	Local governmental bodies (voivodship marshals and regional prefects)	Regional state administrations, regional councils
Duration of water use permit issuance	/Not defined	28 days for short term licenses, 4 months for standard license	1 month, 2 months for complicated cases, 14 days to appeal decision	1 month
Need of environmental impact assessment (EIA) at hydrocarbon producing well construction	EIA is not performed for well construction. EIA is performed when gas storages, gas plants and gas pipelines are constructed.	Occasionally. Mandatory for commercial producing wells with rate of 500 000 m3 of gas or 500 tons of oil a day. In other cases depends on decision of the authorized body. Such decision is made based on screening of the design solutions upon resolution of the Ministry of Energy and Climate change or project owner initiative. Additionally environmental risks assessment is performed at early stage of unconventional gas production project	Occasionally. Mandatory for commercial producing wells with rate of 500 000 m3 of gas or 500 tons of oil a day. In other cases depends on decision of the authorized body. Such decision is made based on screening of the design solutions	Yes, in all cases.



Term of decision making for approval of EIA	8.5 months (255 days) + preparatory period which may extend from several months to a year and more	4 months (16 weeks) – this is the term of review of application for drill site preparation for projects, for which EIA is performed + preparatory period (around 6 months)	6-15 months. 11.5 average	6-12 months
Public participation	At the stage of EIA technical assignment approval and at the stage of EIA documents review	Feedback is collected in the framework of site preparation and environmental permit obtaining procedures	Feedback is collected at the stage of EIA documents review	Feedback is collected at the stage of EIA documents review
Public access to EIA reports	<a href="#">Yes, reports are available at web-site of Project Information Center</a>	Yes. Reports are published on local governmental web-sites and additionally on companies' web-sites,	Yes. Reports are published on local governmental web-sites	No. Some reports are published on companies' web-sites,
Availability of public register of permitting documents in environmental protection sphere	Data on water resources and water use licenses are available - <a href="#">North East Water Tool</a>	Yes. Key one is a <a href="#">public register of Environment Agency</a>	Yes. Public digital registers of environmental data	No general open for public access register of permitting documents.
Oil and gas wells' placement limitations	100 meters from water supply sources; 20-100 meters from water reserves, 100 m from buildings and natural protection objects	50 meters from groundwater sources. Natural protection areas. Other limitations are defined individually, case-by-case.	Water protective zones, water sources protection; 50 meters from buildings, structures, roads of general standing, natural protection areas	Water protective zones, water sources sanitary protection; 300 to 1000 meters from residential buildings
Overall time estimation for all permitting procedures	Undefined	Up to 16 months	<a href="#">Up to 18 months</a>	Up to 24 months
Measures on improvement of permitting procedures in oil and gas industry	Unified permitting authority for solid, gaseous and liquid wastes; special mechanism of regulating oil and gas companies in waste management, electronic applications system for environmental permits.	Special departments in permitting authorities, official instructions on permitting procedures, introduction of the unified application form, development of standard permits for oil and gas industry with simplified issuance procedure.	Unified license for geologic exploration and commercial production, facilitating construction and environmental permit issuance	See section "Suggestions on reforming regulatory practices in Ukraine"
Requirements on disclosure of hydrofracturing (HF) data	Yes. From January 1, 2012. <a href="#">fracfocus.ca</a> .	Yes. Environment Agency. Producers' web-sites.	Undefined Voluntary disclosure at <a href="#">www.ngsfacts.org</a>	No



## Suggestions on reforming regulatory practices in Ukraine

Permit and various approvals obtaining procedures in oil and gas industry in Ukraine are multi-stage and long (see Appendix 1).

In compliance with the Law of Ukraine "[On oil and gas](#)", use of oil and gas bearing subsoil, appraisal and exploration of oil and gas fields and production thereof is performed exclusively on condition license for oil and gas bearing subsoil use has been acquired.

An integral part of oil and gas license is an agreement stipulating conditions of subsoil use. It is concluded with the State Geologic Service of Ukraine (Derzhgeonadra). Significant conditions of such agreement are availability of work program, description of funding source, terms of work performance, liabilities in environment protection, etc.

Special permits for hydrocarbon production may be issued for:

- geologic exploration of oil and gas bearing reservoirs, including pilot commercial production of the field. These are issued for 5 years for on-shore projects;
- oil and gas bearing production (including commercial production of the field). These are issued for 20 years for on-shore projects;
- geologic exploration of oil and gas bearing reservoirs, including pilot commercial production of the field with further oil and gas production (commercial production of the field). These are issued for 20 years for on-shore projects.

Exploration work on oil and gas fields (geologic exploration of oil and gas bearing rocks) are finalized by approval by [State Reserves Committee of Ukraine \(SCR\) supervised by Derzhgeonadra](#) of geologic and economic evaluation of oil and gas reserves and associated components. Approval of geologic and economic evaluation of oil and gas reserves is performed on the basis of estimation performed in SCR. State expert review and reserves estimations is performed based on reports including data on geologic research of the field, reserves calculation and technical and economic justification of their commercial value. Report on geologic and economic evaluation of reserves is transferred to State Informational Geologic Fund of Ukraine. Positive results of expert review and reserves estimation are the basis for putting such on state balance and inclusion into the State Fund of Mineral resources Fields.

Starting field or separate oil and gas deposit into pilot commercial production or commercial production is subject to Ministry of energy and Coal Industry approval based on justified application of subsoil user. Application for pilot commercial production start shall include Pilot Commercial Production design, Development Plan and Investment Plan (program). To start oil and gas field into commercial production the subsoil user shall have the following documents: special permit for oil and gas production (commercial field production); approved geologic and economic evaluation of the field (deposit) reserves based on the results of exploration works; acts or agreements for land use and mining allotment act issued for field development; process scheme (design) of commercial field development approved by CCR (Central Committee of the Ministry of Energy and Coal Industry engaged in production of gas, condensate and oil fields and operation of underground gas storages), complex design of field development and investment plan (program); permit issued by central executive authority implementing state policy of industrial safety and state mining control. Practically, permit for field commercial production is approved by respective Order of the Ministry of Energy and Coal Industry.

At each stage (geologic exploration, pilot commercial and commercial production) to drill well subsoil users shall prepared and approve design documents, perform environmental impacts assessment and obtain environmental permitting documents (see Appendix 2).

The need to agree and approve design and permitting documents with various interested parties and regulatory authorities as well as existence of various decision making centers engaged in issuance of environmental permitting documents, discrepancies between valid legal and normative documents lead to delays in oil and gas production projects.

The following suggestions on improvement of regulatory and permitting practices have been developed based on the research "Regulating unconventional exploration and production in part of environment protection and monitoring" as well as based on analysis of international experience in regulating unconventional gas production, presented in sections above.

Suggestions focus on three aspects of regulatory base reforming as follows: improvement of permitting procedures, accounting for peculiarities of unconventional hydrocarbon production and enhancement of information transparency and availability.

### **Unified body for permitting documents obtaining**

In compliance with the [Resolution of the Cabinet of Ministers of Ukraine #526 as of May 21, 2009, "About measures for harmozining issuance of permitting documents in the sphere of economic activity"](#) environmental permitting documents (conclusion of state expert review, permit for contaminating substances' air emissions from stationary sources, waste permit, and special water use permit) are issued exclusively in permitting centers.

Permitting centers are part of Administrative Service Centers which accept applications and supplementary documents transfer those to permitting authorities and issue permits.

Basically, decision on permit issuance or refusal to issue such is made by permitting authority. For environmental permitting documents such authority may be:

- department of environment and natural resources of the regional state administration (issuing permit for contaminating substances' air emissions from stationary sources, special water use permit in case water supply is performed from water sources of state standing, conclusion of state environmental expert review, etc.);
- regional council (issuing special water use permit in case water supply is performed from water sources of local standing).

Besides, the number of environmental permitting documents may be issued by the Ministry of Environment and Natural Resources of Ukraine. These are as follows:

- permit for hazardous wastes management;
- conclusion of state environmental expert review for projects approved by the Cabinet of Ministers of Ukraine;
- permit for contaminating substances' air emissions for economic entities facilities of which are categorized in class one.

Existence of various decision making centers complicates permit issuing process.

It is suggested to unify the procedure for permit issuing in part of environment protection ensuring an opportunity to submit all applications and claims to regional (by location of facilities) permitting centers and ensure decision on permit granting is made by local/regional permitting authorities upon

approval (if needed) with the Ministry of Environment and Natural Resources of Ukraine. The functions of the unified permitting authority for obtaining environmental permits for oil and gas companies can be performed by departments of environment and natural resource of regional state administrations or respective departments of executive committees of regional councils.

In compliance with the Law of Ukraine "On Permitting System in Economic Activity Sphere" all required approvals and conclusions on issuing permitting documents shall be obtained without economic entity.

Functioning of the unified permitting center in environment protection sphere will correspond to best international practices. Thus, in British Columbia (Canada) the functions of the unified authority on regulatory issues are performed by the Oil and Gas Commission which issues all environmental permitting documents to oil and gas companies. Moreover, for low capacity facilities, including wells, there is a simplified procedure which ensures the right to produce wastes and right for contaminating substances emissions without a need to obtain a respective permit. In England there is no special authority patronizing all regulatory procedures for oil and gas industry. However all environmental permits are issued by the unified body of Environment Agency. In Poland all permitting documents in environment protection sphere are issued by the local governmental bodies. In case it is necessary to account, during permit application review process, for opinion of the other authority (get conclusion, approval or other feedback) such opinion shall be obtained with no participation of the economic entity.

Establishing a unified permitting authority will simplify and facilitate permitting documents issue, namely will facilitate the transfer of documents and provide an opportunity to authorized bodies to more efficiently monitor and control the use of mineral resources.

To avoid dependence of economic entities on efficiency of permitting centers practical implementation of the principle of "silent assent" is feasible in cases there are no comments provided within the defined term. In such a case the permit and/or approval or conclusion for that matter may be deemed issued. [The Law of Ukraine "On Permitting System in Economic Activities Sphere"](#) provides that in case an economic entity has not been granted or did not receive the permitting document or denial resolution, an economic entity shall have the right to make certain steps and perform certain types of economic activities in ten business days after the set period is finished. Application copy (description of documents accepted) with notification of date of their acceptance shall be deemed a confirmation of application and documents submitting to state administrator or permitting center.

Reinforcement of such measures can be performed by enhancement of state officials' responsibility in sphere of environment protection (e.g. administrative penalty may be introduced) at issuance of permitting documents with a breach of terms envisaged by laws. Currently laws envisage the terms for different permitting documents. However, absence of responsibility of state officials allows them actually violating those terms with almost no accountability. Besides limitations of additional comments and introduction of transparent and efficient procedures of appeal the decision on refusal to issue permitting documents are also important. Avoidance of multiple submissions of documents needed to obtain environmental permits can reduce overall duration of permitting procedures by several months.

The other effective mechanism is establishing the system of electronic tracking of permit application review process. For example, in Poland, starting from 2013 [electronic](#) tracking system of permit application review process has been established for construction permits. Also the system of penalties for every day of delay in decision making has been introduced for permitting authority.

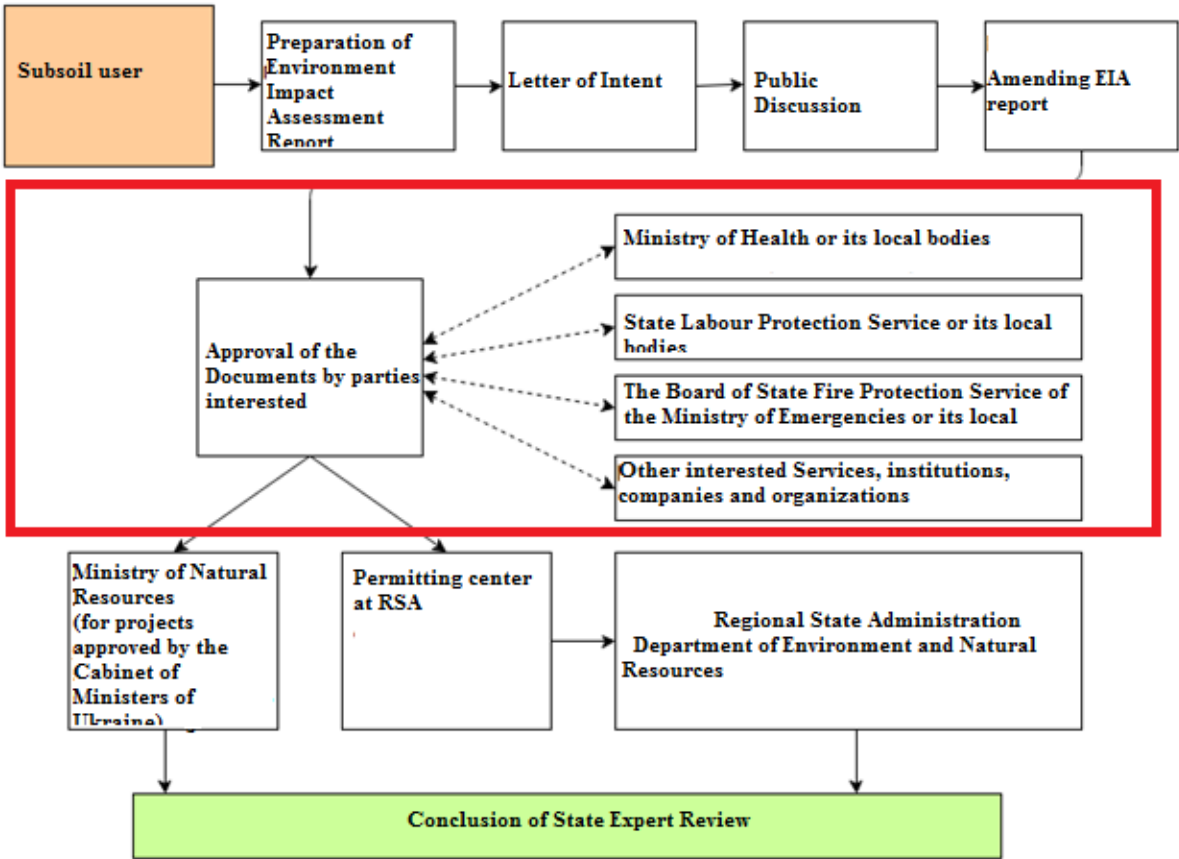
At the same time to fulfill the obligations mentioned authorized bodies shall be provided with proper human and financial resources. This can be achieved by increase of permitting authorities funding at expense of environmental taxes.

**Obtaining environmental expert review conclusion and approval of environmental Impacts Assessment Report**

The Law of Ukraine "On Permitting System in Economic Activities Sphere" (as amended on 09.04.2014) sets that activities aimed at obtaining approvals, conclusions and other documents needed for permit issuance, are carried out by the permitting authority issuing such documents without economic entity's participation.

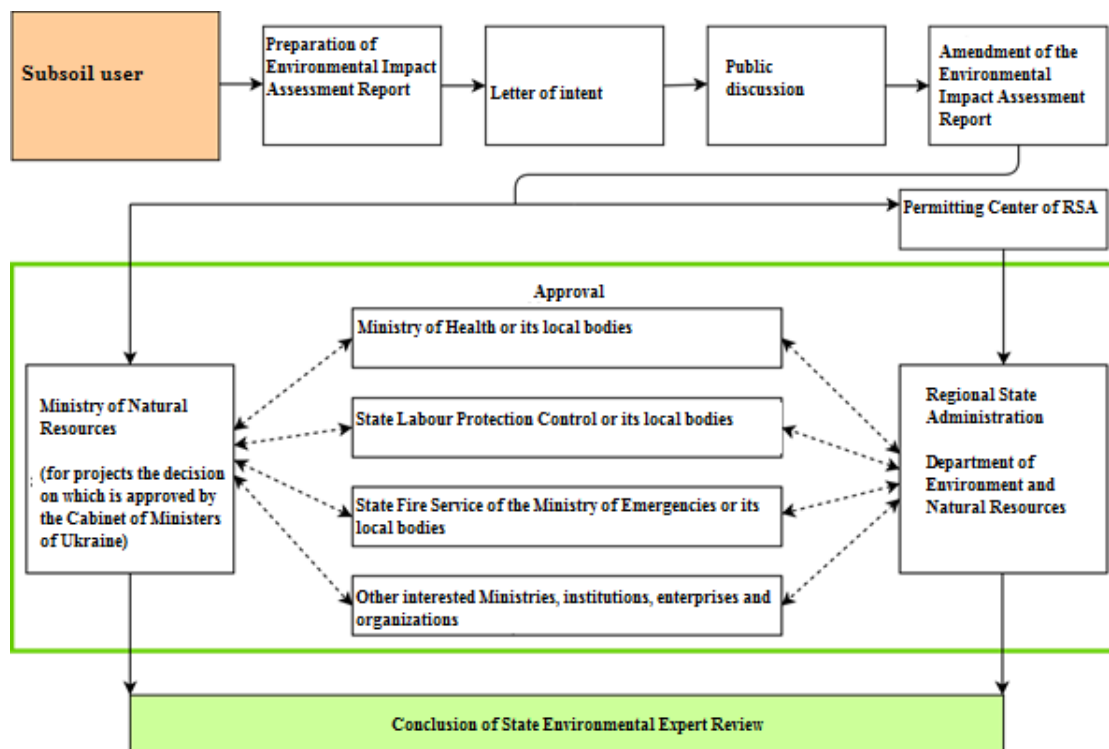
At the same time in compliance with the decree of the Cabinet of Ministers of Ukraine # 870 dated 31.10.1995 (as amended) "On Procedure of Submitting Documents for State Environmental Expert Review" documents being submitted for state environmental expert review shall be approved with the interested parties as follows: Ministry of Health or its local bodies (conclusion of state sanitary and hygienic expert review), State Labour Protection Authority or its local bodies (expert conclusion on compliance of documents with labour protection laws), State Fire Inspection of the Ministry of Emergencies and its local bodies (expert conclusion on compliance of documents with fire safety acts).

Thus responsibility for getting approvals is kept with economic entity which complicates and extends significantly the procedure of state environmental expert review conclusion issuance.



It is proposed to transfer responsibility to approve documents to regional state administrations (departments of environment and natural resources) or other established unified permitting authority (by analogy with approval of special water use permits performed by geologic or water management authorities). Such approvals may be obtained in unified permitting centers (by analogy

with obtaining permits for contaminating substances air emissions issued by bodies of State Sanitary and Epidemiological Service).



The mentioned step will reduce the time (time saved can amount to several weeks) and improvement of permitting procedures of state environmental expert review. Besides, implementation of the norms mentioned will allow reducing the level of abuse from the side of state authorities as state officials will have no direct contact with the economic entity.

To fulfill the suggestion described it is necessary to make changes in the Decree of the Cabinet of Ministers of Ukraine # 870 dated 31.10.1995 (as amended) "On Procedure of Submitting Documents for State Environmental Expert Review" and in Regulations (informational cards) of regional permitting centers which accept documents for obtaining of state environmental expert review conclusion.

### **Permit for contaminating substances ambient air emissions produced by stationary sources and legal discrepancies**

Analysis of legal acts regulating issuance of permits on contaminating substances ambient air emissions produced by stationary sources has defined certain discrepancies between provisions of regulatory documents in part of applications' review terms and permits' validity periods.

In compliance with the Law of Ukraine "On Permitting System in Economic Activities Sphere" the term of permit issuance is ten business days unless other is provided by law.

Validity period of the of permits on contaminating substances ambient air emissions is defined not by the Law of Ukraine but by [The Decree of the Cabinet of Ministers of Ukraine # 302 dated 13.03.2002 "On Approval of Procedure of Performance and Payment of the Work Related to Issuance of Permit for Air Emissions Produced by Stationary Sources, Accounting of Companies, Institutions, Organizations and Physical Entities which Received such Permits"](#).

The mentioned decree among other sets that authority issuing the permit within 30 calendar days reviews an application and permitting documents and if there are no comments issues a permit.

As the Law of Ukraine "On Permitting System in Economic Activities Sphere" has a prevailing legal force over the Decree of the Cabinet of Ministers, permitting center shall be guided by it. For example [in regulation \(informational card\) on permitting document "Permit for contaminating substances air emissions produced from stationary sources" of the unified permitting center of Kharkiv city](#) it is stated that the document shall be issued within 10 business days.

At the same time such term does not allow adhering to provisions of permit issuance procedure for contaminating substances air emissions produced from stationary sources, defined by the Cabinet of Ministers of Ukraine.

It is proposed to define the terms of issuance of the permit in the Law of Ukraine "On Ambient Air Protection" or make changes to the Decree of the Cabinet of Ministers of Ukraine # 302 dated 13.02.2002 which would be aimed at reduction of documents' review and approval periods in compliance with the requirements of the Law of Ukraine "On Permitting System in Economic Activities Sphere".

In compliance with the Law of Ukraine "[On Ambient Air Protection](#)" the validity period of permit for contaminating substances air emissions produced from stationary sources, issued to economic entity the facility of which is categorized in class one, is seven years. For second class facilities it is defined as ten years and is unlimited for third class facilities.

The first class facilities include state registered facilities, with production or process equipment on which environmentally safe processes and management methods are applied. The second class facilities include state registered facilities, with no production or process equipment on which environmentally safe processes and management methods are applied. The third group includes facilities which are not included to the first or second class. The List of production types and process equipment on which environmentally safe processes and management methods shall be applied are provided in the Order of the Ministry of Natural Resources # 108 dated 09.03.2006 "[On Approval of the Instruction on General Requirements to Documents Justifying Emissions Amounts and Aimed at Obtaining Air Contaminants Emissions from Stationary Sources Permits Issued for Companies, Organizations and Physical Business Entities](#)".

At the same time in compliance with [the Decree of the Cabinet of Ministers of Ukraine # 302 dated 13.03.2002 "On Approval of Procedure of Performance and Payment of the Work Related to Issuance of Permit for Air Emissions Produced by Stationary Sources, Accounting of Companies, Institutions, Organizations and Physical Entities which Received such Permits"](#) the permit is issued free of charge for the period of not less than five years.

Though formally these normative documents do not contradict each other it is proposed to make changes in the Decree of the Cabinet of Ministers of Ukraine # 302 dated 13.03.2002 and define the period of permit validity for each facility class or refer to the Law of Ukraine "On ambient Air Protection".

Making the mentioned changes will allow improving permitting practices and mitigating the risk of different interpretation of legal provisions.

### **Special water use permit and legal discrepancies**

The Law of Ukraine "On amending some legislative acts of Ukraine and reducing the number of permitting documents" adopted on April 9, 2014, has canceled the obligation of the water users to obtain approvals for special water use permit application in local water economy, health protection and geologic authorities. This obligation has been transferred to regional state administrations and regional councils (permitting authorities).



Authorities who accept applications of the water users shall within five calendar days from the date the application for the special water use permit has been submitted send the verified copies of respective documents to State Water Resources Agency of Ukraine for approval in case the permit is issued for surface water. The documents are sent to State Geologic and Subsoil Service in case the permit is issued for groundwater. Conclusions of these authorities on possibility of permit issuance shall be provided within fifteen calendar days from the date the copies of respective documents are received. Conclusions shall be taken into account as the resolution on permit issuance is made.

At the same time as proposed changes aimed at concordance of permitting procedures and Law of Ukraine "On Permitting System in Economic Activities Sphere" were made procedure of issuance conclusions on possibility of special water use permit has not been accounted for. This led to nonconformity of actions of different regulatory authorities, significant delays on review and even [refusals to accept](#) applications for special water use permits (see also [comments of the Ministry of Economic Development and Trade of Ukraine](#)).

State Water Resources Agency of Ukraine has developed typical form of conclusion on possibility of special water use permit issuance.

However State Geologic and Subsoil Service of Ukraine have not yet established the procedure or form of conclusions. On the basis of [consulting](#) with permitting bodies State Geologic and Subsoil Service of Ukraine has developed [draft of changes](#) to procedure of approval and issuance of special water use permits and requirements on scientific and technical check of possibility of such permit issuance. In compliance with changes proposed in case the ground water is used water users shall provide justification of water need and calculation of water consumption and supply together with application for special water use permit. Calculation is performed in the basis of scientific and technical check of possibility of such permit issuance. Such check is performed by specialized geologic companies, institutions and organizations, which in compliance with the Law of Ukraine "On State Procurement" have managed, within previous year, the state register of water sources, state accounting of ground water use, monitoring of resources and reserves of groundwater in region, where the groundwater source is located.

It is proposed to regulate the procedure of providing conclusions on possibility of issuance of special water use permit accounting for opinions of interested parties. In future during reforming the permitting practices and to avoid delays and differences in interpreting legal requirements on permit issuance it is important to ensure synchronized amending of the Laws of Ukraine and supplementary legal acts accounting for governmental proposals, submitted by authorities participating in permitting procedures. Additional mechanism of avoidance of differences in interpreting legal requirements may be preparation of instructions and recommendations on application and supplementary documents compiling. Such can be prepared by permitting authorities.

### **Waste management permits**

In compliance to [the latest changes](#) in the list of permitting documents economic entities shall obtain permit for waste management (previously [permit for waste production and disposal](#)) or submit waste statement (for facilities waste production of which does not exceed 1000 c.u.).

In connection with the above mentioned legal changes, starting from April 26, 2014 acceptance of applications for waste production and disposal is temporary suspended until the renewed procedure

of permit issuance in waste management sphere is adopted. Given that the new permitting documents to which issuance procedure has not been prepared is currently introduced.

Paragraph 3 of the Miscellaneous Section of the Law of Ukraine № 1193-VII dated 09.04.2014 "[On amending some legislative acts of Ukraine and reducing the number of permitting documents](#)" the Cabinet of Ministers of Ukraine has been instructed to ensure development of legal acts, stipulated by the mentioned law, within 3 months period.

Article 18 of the Law of Ukraine "On Wastes" one of the Cabinet of Ministers functions is to approve procedure of permit issuance for waste management operations. Draft of the new permit issuance procedure for waste management has been prepared by the Ministry of Environment and Natural Resource and [shall be approved by the Cabinet of Ministers of Ukraine](#). See the draft of the Decree of the Cabinet of Ministers of Ukraine "On approval of procedure of permit issuance for waste management operations and waste statement submissions", published [on web-site of the Ministry of Environment and Natural Resources](#).

Delay in adoption of the new procedure of permit issuance for waste management operations led to the fact that permitting documents were not issued for at least 6 months. Ministry of Environment and Natural Resources in its [letter dated 20.05.2014 p. N 7/1409-14](#) stated that starting of April 26, 2014 economic entities can carry out economic activity without approval of waste forming and placement and without permit for waste disposal.

It is proposed to immediately approve procedures and regulations of permit issuance for waste management operations. This is aimed at compliance with provisions of the Law of Ukraine "On Permitting System in Economic Activities Sphere" in part of obtaining approvals, document review terms, etc.

### **Environmental impacts assessment (EIA) for hydrolic fracturing operations**

Hydrofracturing during unconventional gas production is related to significant environmental risks and environmental impacts. Well drilling stage and hydrofracturing may be extended in time and information on specific parameters of planned HF and parameters of potential environmental impact may be not available at the stage of design documents preparation or at stage when environmental impacts assessment is being performed for drilled well.

It is proposed to reinforce legal requirements on development and approval of design documents for hydrofracturing. In compliance with laws hydrofracturing design documents shall include the section of environmental impact assessment, be publicly discussed and sent to state environmental expert review. As hydrofracturing technology is applied for production stimulation also in conventional gas production, it is necessary to accurately define quantitative limits of hydrofracturing operations for which individual design documents are required (e.g. by number of HF fluid which is expected to be used).

### **Monitoring of environment background condition**

Monitoring of environment background condition, specifically, surface and ground water and air, is an important element for analysis of further unconventional gas production and environmental condition. In compliance with the state construction norms SCN A.2.2-1-2003 "Content and composition of environmental impact assessment (EIA) at design and construction of industrial facilities, buildings and structures" EIA section shall include brief description of physical and geographic conditions, landscape data, data on availability of natural protected areas, description of all negative impact factors in the area of planned activity influence, description of past and current



condition of environment for every component (air, water, geologic environment). However laws do not stipulate any specific requirements for environment background condition.

It is proposed to amend legal requirements with provisions in assessment of background environment condition for unconventional gas projects. Based on international experience such assessment is performed prior to HF with definition of the list of needed survey, survey area, number of samples, etc.

In England requirements on basic environmental assessment may be set in environmental or drill site preparation permits issued by Environment Agency or local governmental bodies respectively. Well drilling can be started only in case such requirements are fulfilled. Besides, British Geologic Service has carried out national survey of methane content in ground water on the areas where shale gas production is possible ([National Baseline Methane Survey](#)). Data of this survey is used as a basis for comparison and defining environmental impact of hydrocarbon production in the framework of environmental monitoring and inspections.

Experience of environmental background survey on Yuzivska area can be used as a sample at development of requirements on environmental background survey. Scope and procedure of mentioned survey has been developed by Shell and approved with the Ministry of Environment and Natural Resources of Ukraine.

### **Environmental Impact Assessment Report Disclosure**

The Law of Ukraine does not require publishing of EIA reports containing detailed environmental risks description and measures of mitigation thereof. Currently web-site of environmental departments and departments of natural resources of state regional administration may publish only lists of EIA documents being reviewed and those, which received positive conclusion of environmental expert review. Full EIA Reports are not published.

Individual companies, for instance [Shell](#), at their own discretion publish on their web-site documents on environmental impacts assessment.

It is proposed to set the requirement on mandatory on-line publishing of full texts of EIA reports and Environmental Consequences Statements (additionally to publishing in printed mass-media).

For this web-site of the Ministry of Environment and Natural Resources of Ukraine, web-site of state environmental and natural resources bodies or specially created web-site can be used. Also informational resources can be used for collecting public feedback in electronic form.

Analysis of international experience shows that in those cases when EIA is carried out, respective reports, as a rule, are available in open public access. In British Columbia project information and documents related to EIA (decision on EIA necessity, feedback from interested parties, detailed project description and description of potential environmental impact, technical assignment for EIA, etc.) are published on special web-site [Project Data Center](#) and [map](#). However, in British Columbia EIA is not required for individual well construction projects. In England EIA documents are published on web-sites of the authorized bodies on mineral resources use planning (local governmental authorities) which are responsible for issuance of permits for drill site preparation and making decisions on need and subject of EIA. In Poland reports on EIA are published on public electronic environmental data centers located on official web-site of governmental bodies responsible for issuance of conclusions on environmental conditions of project execution. This is done under procedure of collecting feedback of interested parties. EIA Reports may also be obtained upon request sent to the authorized local government body.

## **Informing community on hydrofracturing operations**

To track connection between unconventional gas production and potential environment contamination, specifically contamination of water sources, it is important to have access to information on hydrofracturing (including composition of HF fluid). The laws provide for publishing of the Letter of Intent and Environmental Consequences Statement in which composition of HF fluid can be stated. These are published in mass-media. Practically, such publications are done in local mass-media with limited public access. At the same time the laws do not contain any direct requirements on publishing data on HF fluid composition.

It is proposed to set the requirement on publishing information on intent to carry out hydrofracturing providing composition and volume of HF fluid. It is also proposed to develop standard forms of information provisioning and set forth procedure of publishing on web-sites with general access. For this purpose web-site of State Geologic and Subsoil Service of Ukraine, State Geologic Data Fund of Ukraine (SE "Geoinform") can be used. On those, starting from 2014 [list of special subsoil use permits](#) is published. Specially designed informational platforms can also be used.

This suggestion fully corresponds to the best international practices. Responsibility for information publications in respect of HF fluids is valid in British Columbia, UK and many states of USA. British Columbia has introduced mandatory disclosure of data on HF fluid composition starting from January 1, 2012. Publishing data on all components and total volume of HF fluid is done on special web-site FracFocus.ca. In UK operators provide detailed data on HF fluid composition to Environment Agency and publish brief descriptions for public access. Currently only one company, Cuadrilla, has carried out hydrofracturing in UK. Information on chemicals used has been provided on [company's web-site](#). In USA data on HF substances are published at [frackfocus.us](http://frackfocus.us). Polish laws do not set the requirement on mandatory publishing of data on HF substances. However such data are published voluntary at <http://www.ngsfacts.org/> by companies being members of Association of Oil and Gas Producers.

## **Open register of environmental permitting documents**

In Ukraine [permitting documents register](#), being a unified automated state system of collecting, storing, protection, accounting system. It also provides information on issuance, refusal to issue, extension, copying or termination of permitting documents (see. [Order of State Committee of Ukraine engaged in Regulatory Policy and Business issues # 39 dated 18.04.2006 "On Temporary Procedure of Forming, Keeping and Use of Permitting Documents Register"](#)). The keeper of the permitting documents register is the State Committee of Ukraine engaged in Regulatory Policy and Business Issues. It provides data from the register to the interested parties upon [request](#) in kind of [reference](#). Thus the register is not public and generally accessed.

Besides, on the web-site of the Ministry of Environment and Natural resources information on companies which permits and companies which licenses is published with different regularity.

Taking into account importance of environmental information for community it is proposed to establish an open register of environmental permitting documents based on data from the permitting documents register. Special informational web-site with the register of environmental permitting documents can be used to place notifications on intents to obtain a permit, collect public feedback if such is required by law (specifically for permit on contaminating substances air emissions produced by stationary sources). Establishment of such web-site will also allow canceling requirements to send copies of permitting documents to supervisory or other state authorities (currently resolutions

on issuance of permit on contaminating substances air emissions produced by stationary sources is sent to territorial bodies of State Sanitary and Epidemiological Service, copies of special water use permits are sent to bodies of State Sanitary and Epidemiological Service and Water Management authorities).

Open registers of permitting documents are common in international experience. Specifically, in British Columbia there is a special web-site Tool where data on water resources and water use permits issued for oil and gas companies is placed. In England there is [main public register](#) of Environment Agency where information on environmental permits (issued for industrial enterprises, permits for radioactive substances management and waste disposal, and permits for waste water discharge) is placed. Information which is kept in registers may be provided to interested parties in electronic form or in kind of paper copy in Environment Agency branches. Besides, on web-site of Environment Agency there are environmental maps, specifically license for surface and ground water sources. In Poland information on permits for contaminating substances and dust air emissions, water use, waste water discharge and waste management shall be available on public electronic resources and in registers of environmental data, kept by local governmental authorities.

### **Unified design documents for cluster drilling**

Cluster drilling is often used in unconventional gas production to drill several wells from one design area. Number of such wells can be as much as 12, sometimes up to several tens. To construct every well design documents need to be prepared and approved. At the same time EIA, public discussion and environmental expert review shall be performed for each well also. Several rounds of specified procedures will complicate and extend unconventional gas production projects.

It is proposed to introduce simplified procedure of preparation and approval of design documents for cluster drilling. In compliance with it one package of documents for preparation and approval is anticipated.

### **General conclusions**

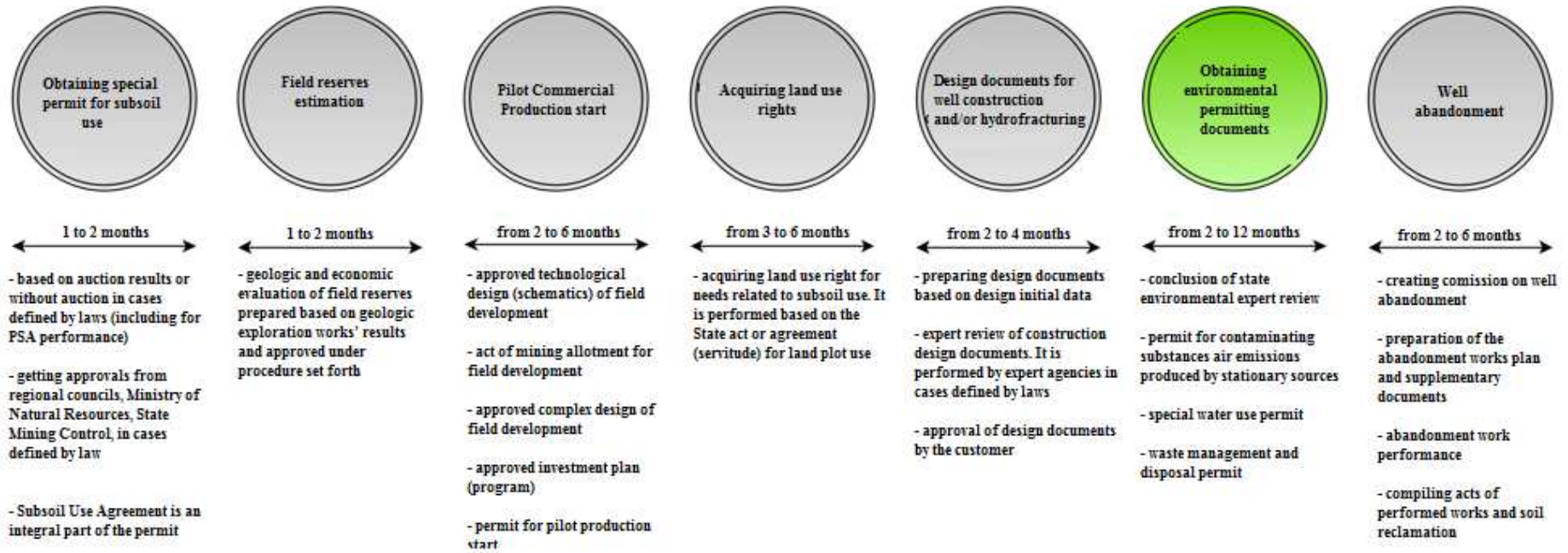
Implementation of proposed measures on permitting procedures improvement in sphere of environment protection (establishing unified permitting body, transfer of responsibility of documents approval top permitting bodies, elimination of discrepancies in legal acts, limiting additional comments providing, introduction of "silent assent" principle, etc.) will allow reducing permit issuance process by at least several months.

Introducing regulations which would account for peculiarities of unconventional hydrocarbon production will allow state more efficient implementation pf environment protection policy and provide community with additional argument on feasibility of domestic production increase by unconventional development.

Enhancement of transparency and availability of information on environmental impacts assessment and hydrofracturing will allow extending opportunities of public participation in decision making, environmental monitoring and ensuring rights of local communities.

All these measures in complex will contribute to dialog between state authorities, hydrocarbon producers and community, stimulate investments into increase of domestic unconventional gas production.

# Annex 1. Approval of design documents and acquisition of permit documents



## Annex 2. Acquisition of environmental permit documents

