Tilburg University

Hydraulic fracturing and environmental concerns

Verschuuren, Jonathan

Published in:
Journal of Environmental Law

DOI:
[doi: 10.1093/jel/eqv007](https://doi.org/10.1093/jel/eqv007)

Publication date:
2015

Document Version
Early version, also known as pre-print

[Link to publication in Tilburg University Research Portal](#)

Citation for published version (APA):
Verschuuren, J. (2015). Hydraulic fracturing and environmental concerns: The role of local government. *Journal of Environmental Law*, 27(3), 431-457. <https://doi.org/doi: 10.1093/jel/eqv007>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Hydraulic fracturing and environmental concerns: The role of local government

Jonathan Verschuuren, professor of International and European Environmental Law, Tilburg University, Netherlands

Abstract

This article discusses how local governments, in three different countries, challenge higher levels of government's decision making that enables hydraulic fracturing, and it explores how these higher levels of government should respond. The article finds that in those countries where at the local level, authorities have regulatory powers in the field of planning and the environment, such as the United States, the United Kingdom and the Netherlands, these powers indeed can and are used to limit or completely ban high volume hydraulic fracturing. In these countries, however, higher levels of government are or have been putting legislation in place taking away or overruling local regulatory powers when these are used to target oil and gas extraction for reasons of national energy security. The article concludes that a) setting and applying effective environmental protection standards, b) involvement of local government, and c) meaningful participation of local communities are key to responsible decision-making on hydraulic fracturing.

Keywords: Unconventional gas, hydraulic fracturing, local government, energy security, environmental impact

1. Introduction

In most countries, unconventional gas production (as is the case with most natural resources) is of national interest. The production of shale gas, tight gas and coal seam gas¹ through hydraulic fracturing is considered an important source of revenue and an important element in the nation's energy policy. The substantial national interests at stake with unconventional gas production put local governments under pressure. Local governments also face pressure from local communities, worried about local environmental impacts. As Wiseman puts it: '(...) local governments experience concentrated costs of oil and gas development, such road damage and localized pollution, while not proportionately sharing in many of the benefits experienced at the state level.'² In several shale gas rich countries around the world, we see attempts by local governments to challenge high volume hydraulic fracturing (or 'fracking', as it now is commonly referred to) using various legal pathways.³

This article discusses how local governments, in three different countries, challenge higher levels of government's decision making that enables hydraulic fracturing, and it explores how these higher levels of government should respond. I will analyse the different legal pathways that are pursued by

¹ In this article, I will mainly refer to shale gas, as the best known form of unconventional gas, but the outcome of this research applies to coal seam gas and tight gas as well.

² Hannah Wiseman, 'Governing Fracking from the Ground Up' (2015) 93 Texas LR 1, 17.

³ This term is used to indicate that litigation plays a regulatory role and forms part of environmental governance, similar to Jacqueline Peel and Hari Osofsky, 'Climate Change Litigation's Regulatory Pathways: A Comparative Analysis of the United States and Australia' (2013) 35 Law & Policy 150, 151.

decentralized governments to challenge national policies aimed at shale gas production through hydraulic fracturing in several countries, particularly the United States, the Netherlands, and the United Kingdom. Similarly to climate change litigation, as described by Peel and Osofsky, local governments apply a range of legal tools with the aim to proactively fill regulatory gaps or to contest existing rules..⁴

The local level plays a pivotal role in shale gas decision-making. I will show that local authorities use their power to regulate local land use with the aim to protect the local environment to challenge hydraulic fracturing. This then prompts higher level governments to apply legislation aimed at restricting the power of local governments on mining related issues. I will then discuss the latter may be deemed unconstitutional for different reasons, or simply unwise. I argue that higher governments should take the local level seriously and that they should avoid getting into a stand-off situation against the local authorities.

The set-up of this article is as follows. I will first, in section 2, briefly introduce the environmental concerns associated with hydraulic fracturing. In section 3, I will discuss the higher level of governments' authority to regulate oil and gas extraction, including the setting of environmental conditions, as part of a broader policy aimed at achieving energy security. My focus is upon the United States, the Netherlands and the United Kingdom. While the legal systems of these jurisdictions are important, I do not intend to give a full account of the positive law that applies in all of these jurisdictions to mining and environmental issues, nor of the constitutional and administrative law background of the debate in each country. This is because this article is using these jurisdictions as the basis for a conceptual analysis of the relationship between local and higher levels of government when both these levels have regulatory powers over the same activity.⁵ The selection of the countries has been motivated by my aim to research, at a conceptual level, how local governments challenge higher levels of government's decision making that enables hydraulic fracturing, taking into account a varying constitutional background. In the United States and the Netherlands, local authorities have constitutionally protected powers, but with a different legal status given their different form of decentralization (federation versus delegation).⁶ In the United Kingdom, the local level does have legal authority in the field of land use, but without a firm constitutional basis like in the United States.⁷ The country selection also takes into account potential differences arising from common law or civil law background. The EU is discussed in this section as well, as most of the existing environmental laws stem from EU law, and because the EU, as indicated above,

⁴ Peel and Osofsky (n. 3).

⁵ For detailed accounts of existing rules and regulations, see, among many others, (for the US) Hannah Wiseman and Francis Gradjan, *Regulation of Shale Gas Development, Including Hydraulic Fracturing* (University of Tulsa Legal Studies Research Paper No. 2011-11, 18, 2012) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1953547> accessed 12 February 2015, and (for the EU) Marta Ballesteros, Florent Pelsy and Leonie Reins, 'Regulatory Provisions Governing Key Aspects of Unconventional Gas Extraction in Selected Member States' (Milieu Ltd 2013), and associated country reports <http://ec.europa.eu/environment/integration/energy/uff_studies_en.htm> accessed 12 February 2015.

⁶ In the United States, local government is recognized in most state constitutions, albeit in many different forms, see Ellis Katz, 'Local Self-Government in the United States' (1999) 4 *Issues of Democracy: Democratic Local Government* 11. In the Netherlands, the national constitution afford local government autonomy to regulate its domestic affairs, see Jaap De Visser, *Developmental Local Government* (Intersentia 2005).

⁷ Colin Turpin and Adam Tomkins, *British Government and the Constitution* (7th edn, CUP 2012) 275.

may further regulate shale gas production in the near future. This section will show that the authority with regard to shale gas exploration and production lies (and should lie) mainly at the higher levels of government in these countries.

In section 4, I will discuss the distribution of legal authority with regard to land use and the local environment and, more generally, the role of local government in the field of environmental protection. This section will show that local authorities, when they have the power to regulate local land use and local environmental impacts, use their regulatory tools to extensively regulate shale gas exploration and production. Section 4 will also examine cases where higher levels of government have intervened to bypass local government regulations so as to foster shale gas production. This will be done through a review of relevant case law and decentralized laws and regulations for the selected countries. Section 5 proposes a more responsible decision-making framework at the higher level, with the aim to do justice to national energy security concerns as well as local environmental concerns, without fully removing the ability of local authority to govern.

2. Environmental concerns

Much has already been published about the potential environmental impacts of shale gas production through hydraulic fracturing ('fracking').⁸ I will, therefore, be brief here. Shale gas is natural gas found in shale formations that can be extracted by inserting high volumes of water mixed with chemicals into the shale rock, causing it to fracture, thus releasing the gas. Hydraulic fracturing has a number of local environmental risks,⁹ which will be discussed below, relying mainly on Broomfield's report for the European Commission, which provides a comprehensive, up-to-date and authoritative overview of these risks.¹⁰

There is a significant risk of impacts on land-take due to the amount of land used in shale gas extraction. Broomfield estimates that 4% of land in Europe, currently occupied by uses such as housing, industry

⁸ 1000 studies are reviewed by Angela Werner, Sue Vink, Kerriane Watt, Paul Jagal, 'Environmental Health Impacts of Unconventional Natural Gas Development: A Review of the Current Strength of Evidence' (2015) 505 *Science of The Total Environment* 1127–1141. A review with a focus on water: R Vidic, S Brantley, J Vandenbossche, D Yoxtheimer, J Abad, 'Impact of Shale Gas Development on Regional Water Quality' (2013) 340 *Science* 6134.

⁹ Positive environmental impacts are attributed to shale gas production as well. The burning of natural gas is much cleaner than the burning of oil or coal, see Glowacki and Henkel (n **Error! Bookmark not defined.**) 2 and John Dernbach and James May, 'Can Shale Gas Help Accelerate the Transition to Sustainability?' (Widener Law School Legal Studies Research Paper Series no. 14-24, 2014) 15. The United States managed to substantially reduce its GHG-emissions largely thanks to switching from coal to natural gas following the shale gas revolution, IPCC Working Group III, Mitigation (IPCC 2014) Chapter 7 at 18. Research also suggests that global GHG-emissions are rising, as the unneeded coal gets cheaper and is then sold and used abroad, David MacKay, Timothy Stone, 'Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use' (Department of Energy and Climate Change 2013), https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf accessed 25 March 2015.

¹⁰ Mark Broomfield, Support to the Identification of Potential Risks for the Environment and Human Health Arising from Hydrocarbons Operations Involving Hydraulic Fracturing in Europe (Harwell 2012) <<http://ec.europa.eu/environment/integration/energy/pdf/fracking%20study.pdf>> accessed 2 February 2015

and transportation, would be needed. As it may not be possible to fully restore sites in sensitive areas following well completion or abandonment, a significant loss or fragmentation of amenities or recreational facilities, valuable farmland or natural habitats is expected.¹¹ Associated with land-take is the visual impact that the use of large well drilling rigs could have. Local people can object to the aesthetic impact of well constructions in the landscape.¹²

There is a high risk of surface and groundwater contamination at various stages of the well-pad construction, hydraulic fracturing and gas production processes, and during well abandonment.¹³ There are several ways in which such contamination can take place, for example: subsurface groundwater contamination arising from aquifer penetration by the well, the flow of fluids into, or from rock formations, or the migration of combustible natural gas to water supplies;¹⁴ aquifer contamination through migration or seepage of the fracturing fluid, which contains chemicals to facilitate the fracking;¹⁵ migration into aquifers of naturally occurring heavy metals, natural gas, naturally occurring radioactive material and technologically enhanced radioactive material from drilling operations.¹⁶ The large quantities of water that are needed pose a risk of significant effects due to water abstraction.¹⁷ Water availability for other purposes, such as public water supply, and conservation of habitats and ecosystems can be reduced. In case the water, after the fracking process, is returned ('flow back water'), there can be pollution of soils and surface waters (when contaminated water is released untreated), changes to water temperature, and erosion.¹⁸

Emissions from numerous well developments in a local area or wider region could have a potentially significant effect on air quality.¹⁹ These impacts, for example, are an increase of ozone levels, with an adverse effect on respiratory health, the emission of diesel fumes from fracturing liquid pumps, emissions of hazardous pollutants from gases and hydraulic fracturing fluids dissolved in waste water, and fugitive emissions of methane, which is a very strong greenhouse gas (GHG), much stronger than carbon dioxide.²⁰

Drilling can also lead to minor seismic events due to the fracturing itself, and to larger earthquakes when drilling takes place in existing geological faults.²¹ Noise pollution exists both in the preparation phase and in the production phase. In the preparation phase, noise from excavation, earth moving, plant construction and vehicle movements has a potential impact on both residents and local wildlife, particularly in sensitive areas.²² Most noise pollution, however is caused during the production phase by

¹¹ *ibid* vii.

¹² *ibid* xi.

¹³ *ibid* viii.

¹⁴ *ibid* ix.

¹⁵ *ibid*.

¹⁶ *ibid*.

¹⁷ *ibid* x.

¹⁸ *ibid*.

¹⁹ *ibid* viii.

²⁰ *ibid*.

²¹ *ibid* xi.

²² *ibid* viii.

well drilling, hydraulic fracturing and flaring of gas. As these activities continue 24 hours a day, local residents and wildlife will be disrupted and disturbed.²³ Biodiversity can be affected by the degradation or complete removal of a natural habitat through excessive water abstraction, surface or groundwater pollution, by habitat fragmentation caused by road construction, fencing, or the construction of the well-pad itself, and by disturbance caused by noise, vehicle movements and site operations.²⁴ The intensive truck traffic to and from wells not only cause air and noise pollution, it also increases the risk of road accidents, congestion, damage to roads, bridges and other infrastructure and an increased risk of spillages and accidents involving hazardous materials.²⁵ Finally, there are safety risks, especially for the workers on the site, connected to potential blow outs (in case high formation pressure is encountered during drilling, leading to an uncontrolled flow of gas, oil or water from a well).²⁶

This summary of potential negative impacts shows that impacts are particularly relevant for the local and regional level. Local residents, local farmers and local entrepreneurs for instance in the recreation sector, will suffer the largest negative consequences of shale gas production. It is this fact that causes local governments to resist hydraulic fracturing through legal means, as I will demonstrate later in this article.

3. Oil and gas extraction and the role of central government

Oil and gas extraction, generally, is considered to be of national interest because of its importance for energy security. This explains the value national governments place on hydraulic fracturing. A steady and affordable supply of energy is essential for the functioning of states. Modern societies are completely dependent on energy, for transportation, communication, production of food, goods and services, heating and cooling, preparation of food, for their national defence, etc. Energy security policy is aimed at achieving an uninterrupted availability of energy sources at an affordable price.²⁷ In recent years, the transition of carbon based energy supply to one based on renewables has emerged as an important new topic in the area of energy security policy, for instance in the EU.²⁸ Energy security can be threatened in various ways, such as political instability in oil and gas producing countries, competition of energy sources, manipulation of energy supply by oil and gas producing countries, terrorism, natural disasters, and accidents.²⁹

Under the non-legally binding European Energy Charter, signed in 1991, states committed to ‘improving security of energy supply and of maximising the efficiency of production, conversion, transport, distribution and use of energy, to enhance safety and to minimise environmental problems, on an

²³ *ibid.*

²⁴ *ibid* x.

²⁵ *ibid* x-xi.

²⁶ *ibid* 109. The definition of a blowout is taken from appendix 1 of this report.

²⁷ International Energy Agency (IEA), ‘Energy Supply Security 2014. Emergency Response of IED Countries’ (IEA 2014) 13.

²⁸ European Commission, ‘Green Paper - A European Strategy for Sustainable, Competitive and Secure Energy’ COM(2006) 105 final.

²⁹ See for example the table of events that caused major oil supply disruptions in the IEA report (n 27) 20.

acceptable economic basis.³⁰ The binding Energy Charter Treaty, of 1994 (hereafter ECT), strongly relies on the principle of sovereignty,³¹ with Article 18 providing that ‘Without affecting the objectives of promoting access to energy resources, and exploration and development thereof on a commercial basis, the Treaty shall in no way prejudice the rules in Contracting Parties governing the system of property ownership of energy resources.’³² The Treaty also stipulates that ‘each state continues to hold in particular the rights to decide the geographical areas within its Area to be made available for exploration and development of its energy resources’ and ‘to regulate the environmental and safety aspects of such exploration, development and reclamation within its Area’.³³ The Treaty explicitly puts all responsibility for meeting these goals at the national level.³⁴ This indicates that national authorities should have the legal mechanisms in place to override local governments in case actions by the latter conflict with the obligations under the Treaty.

The ECT does not ignore environmental problems associated to the development and use of energy sources. Article 19 is wholly dedicated to environmental protection and requires each party ‘to strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area (...) [and states] shall strive to take precautionary measures to prevent or minimize environmental degradation.’³⁵ Although this is a rather broad provision, it does prohibit unregulated shale gas production. The production of shale gas, being a cleaner burning fuel than coal and oil can,³⁶ even be argued to be favoured by the ECT, as the contracting states have to ‘have particular regard (...) to promoting the use of cleaner fuels.’³⁷

The above international legal framework for energy security reflects the three reasons why of hydraulic fracturing is considered important by national governments. First, the state has substantial economic benefits from extracting natural gas deposits, either because a substantial part of revenues directly go to the treasury,³⁸ or because of income through for instance VAT revenues or income taxes associated with

³⁰ The Concluding Document of the Hague Conference on the European Energy Charter, as signed at The Hague on 17 December 1991, Title 1 <<http://www.encharter.org>> accessed 12 February 2015. The United States, the UK and the Netherlands signed the Energy Charter.

³¹ The Energy Charter Treaty of 17 December 1994, (1995) 34 ILM 360, Art. 18(1). Ratified by the UK and the Netherlands. The US did not sign the ECT but has a status as Observer to the Energy Charter Conference.

³² art 18(2).

³³ art 18(3).

³⁴ Art 23.

³⁵ art 19(1). On the environmental law aspects of the Treaty, see extensively Rosemary Lyster and Adrian Bradbrook, *Energy Law and the Environment* (CUP 2006) 58-66.

³⁶ (n 9).

³⁷ art 19(1)(d).

³⁸ In the Netherlands, each year around € 10 billion of natural gas extraction revenues flow into the treasury (since 1959, the year in which a large natural gas deposit was discovered in the north of the country). For the years 2013 and 2014, between 5 and 10% of the entire budget of the state was generated through these revenues. See joint website by government authorities and research institutes on natural gas in the Netherlands <<http://aardgas-in-nederland.nl/nederland-aardgasland/aardgas-en-de-economie>> (in Dutch) accessed 12 February 2015.

jobs in the shale gas industry.³⁹ Second, for shale gas rich states, fracking presents an opportunity to become less dependent on the import of foreign energy sources and thus helps to create energy security. This is relevant both in the United States and in Europe. In the United States, the federal government put much effort into reducing dependency on oil and gas imports.⁴⁰ Shale gas was to have a central role in this effort.⁴¹ The shale gas revolution also led to a drop in energy prices, which is positively impacting on the US economy, with lower production costs and increasing consumer budgets.⁴² In Europe, states want to be less dependent on natural gas imports from Russia.⁴³ The 2014 Crimea crisis, spurred political leaders to call upon shale gas production as a way to become independent from Russian energy imports.⁴⁴ Third, shale gas is considered to be an important step in achieving GHG emission reductions at national level, as shale gas is a cleaner burning fuel than oil or coal.⁴⁵

Central governments have various means to pursue the above energy security goals. The approach differs depending on the legal situation with regard to natural resources in the country. Ownership of underground natural resources usually rests either with the state, or with the surface land owner. The first is true for the Netherlands and the UK. In the Netherlands, the Mining Act states that the land owner has ownership of resources in the upper 100 meters of the soil, whereas the Dutch state owns anything deeper than that (shale formations are around 3 kilometres deep).⁴⁶ The state can issue a license to extract and sell the resources to a third party, such as an oil or gas company, stipulating that a certain percentage of the revenue goes to the state. In the United Kingdom, the Petroleum Act 1998 states: 'Her majesty has the exclusive right of searching and boring for and getting petroleum to which this section applies'.⁴⁷ In these countries, third parties can be granted licenses to exploit a certain oil or gas reserve.⁴⁸ Land owners are legally obliged to tolerate exploration and production activities on their

³⁹ According to ANGA (America's Natural Gas Alliance), an industry lobby group, by 2035, shale gas will add more than \$231 billion to the US national GDP and contribute more than \$57 billion in taxes. See <<http://anga.us/issues-and-policy/jobs/us-shale-gas-benefits>> accessed 12 February 2015.

⁴⁰ National Energy Policy Development Group, 'National Energy Policy' (United States Government 2001) x <<http://www.wtrg.com/EnergyReport/National-Energy-Policy.pdf>> accessed 12 February 2015.

⁴¹ *ibid* 6. See also on the role of central government in the shale gas revolution in the United States, Michael Shellenberger and others, 'Where the Shale Gas Revolution Came From. Government's Role in the Development of Hydraulic Fracturing in Shale' (Breakthrough Institute 2012) <http://thebreakthrough.org/images/main_image/Where_the_Shale_Gas_Revolution_Came_From2.pdf> accessed 12 February 2015.

⁴² Dernbach and May (n 9) 5.

⁴³ Maximilian Kuhn and Frank Umbach, Strategic Perspectives of Unconventional Gas: A Game Changer with Implications for the EU's Energy Security (European Centre for Energy and Resource Security Strategy Paper Vol I 2011) <<http://www.kcl.ac.uk/sspp/departments/warstudies/research/groups/eucers/strategy-paper-1.pdf>> accessed 12 February 2015.

⁴⁴ See eg anonymous, 'EU warms to shale gas in the wake of Crimea crisis', European news website EurActiv.com (26 March 2014), citing the British PM David Cameron <<http://www.euractiv.com/sections/energy/eu-warms-shale-gas-wake-crimea-crisis-301142>> accessed 12 February 2015.

⁴⁵ (n 9).

⁴⁶ Mining Act (*Mijnbouwwet*), art 3.

⁴⁷ Petroleum Act 1998, part 1, § 2(2)

⁴⁸ Both in the UK and in the Netherlands, licences were, for example, issued to Cuadrilla Resources, an Anglo-American-Australian energy multinational.

property, including the construction of installations, pipelines and even roads to these installations.⁴⁹ The landowner does have a right to compensation for losses that occur as a consequence of these activities. In the United States, by contrast, the surface landowner owns all deep soil minerals.⁵⁰ The surface landowner can sever oil and gas rights from his property right and then sell or transfer these rights to others, such as oil or gas companies. The severed mineral estate then cannot be refused access by the surface land owner.⁵¹

Independent of who owns the natural gas, the government has the power to regulate the extraction process, both aimed at achieving an efficient production and at protecting the environment against negative side-effects of production. The way in which these powers have been distributed among the various levels of government varies tremendously as a consequence of constitutional differences with regard to decentralization.⁵² In order to assess the legal powers local authorities have to prevent or regulate hydraulic fracturing, I will now outline in more detail how, for each of the target countries, regulatory powers on natural gas extraction and on environmental protection have been distributed between national and local governments.

United States

In the United States, the federal government has the power to regulate hydraulic fracturing because there is no doubt that shale gas industry has a substantial impact on interstate commerce.⁵³ It, therefore, is covered by the Commerce Clause (Article I, Section 8, Clause 3 of the United States Constitution). Environmental impacts from energy production and facilities are subject to some federal statutes, such as the Clean Air Act, the Endangered Species Act and the Clean Water Act.⁵⁴ These, usually, set minimum standards in a cooperative federalism arrangement.⁵⁵ States, therefore, not only

⁴⁹ eg art 4 (Dutch) Mining Act. In addition, the Minister can declare a safety zone around a mining installation (Art. 43 Mining Act). Trespassing this zone is a criminal offense (art 133 Mining Act).

⁵⁰ Under the common law principle 'Cuius est solum, eius est usque ad coelum et ad inferos', see extensively John Sprankling, 'Owning the Center of the Earth' (2008) 55 UCLA LR 979, 1008.

⁵¹ Alan Collins and Kofi Nkansah, 'Divided Rights, Expanded Conflict: The Impact of Split Estates in Natural Gas Production' (Agricultural & Applied Economics Association Joint Annual Meeting paper 2013) 1 <http://ageconsearch.umn.edu/bitstream/150128/2/Collins_Nkansah_Split%20estate.pdf> accessed 12 February 2015.

⁵² Decentralization can take different forms, ranging from less to more independent from the national level: delegation, devolution, regional autonomy and federation. See Cheryl Saunders, 'Options for Decentralizing Power: Federalism to Decentralization' (Comparative Constitutions Project) <<http://comparativeconstitutionsproject.org/files/federalism.pdf>> (accessed 12 February 2015). See on the constitutional process of granting powers to decentralized levels Erik Wibbels, 'Decentralized Governance, Constitution Formation, and Redistribution' (2005) 16 Constitutional Political Economy 161.

⁵³ David Spence, 'Federalism, Regulatory Lags, and the Political Economy of Energy Production' (2013) 161 Univ of Penn LR 436, 460, and Robin Kundis Craig, 'Hydraulic Fracturing (Fracking), Federalism, and the Water-Energy Nexus' (2013) 49 Idaho LR 241, 261.

⁵⁴ 42 USC § 7401, 16 USC § 1531 and 33 USC §1251 respectively.

⁵⁵ Kundis Craig (n 53) 261.

have the power to regulate all energy aspects that do not have an effect on interstate commerce, such as facility siting, but also to set additional environmental standards.⁵⁶

There is an ongoing debate in the US, whether the federal agencies should use their existing environmental law powers to regulate fracturing and whether Congress should remove certain exemptions of fracking from environmental Acts.⁵⁷ In the absence of such federal rules, at the moment, it is mainly state law that applies to shale gas production, with some minimum standards from federal environmental laws applying as well. Some State legislatures enacted legislation authorizing state regulators, such as the Texas Railroad Commission, to organize production so as to promote efficiency and to protect the environment.⁵⁸ In other states, environmental regulations are set by environmental agencies, such as the New York State Department of Environmental Conservation.⁵⁹ As stated above, Federal environmental legislation, such as the Clean Water Act and the Clean Air Act does apply to fracking, but there are several exemptions. A striking example is the 2005 amendment to the Safe Drinking Water Act (in the Energy Policy Act) exempting fracking from the requirement to apply for a permit under the Safe Drinking Water Act.⁶⁰ Fracking is also exempted from hazardous waste disposal regulations under the Resource Conservation and Recovery Act and from reporting requirements under the Emergency Planning and Community Right to Know Act,⁶¹ while under the Clean Water Act, dumping brine from oil and gas production is allowed west of the 98th meridian.⁶²

What powers local authorities have depends on the relevant state constitution. State constitutions can grant broad powers to local governments basically enabling them to regulate all activities within their boundaries, including mining activities, as long as the state legislature has not preempted this power.⁶³ Although, as just shown, both mining and environmental regulatory powers are primarily at the state level, there are many examples in the United States where local authorities used their local zoning or land use enactments to either regulate hydraulic fracturing or completely ban it. These local efforts are discussed in section 4 below, as are attempts by local governments to challenge state laws in case of preemption.

Netherlands

The Dutch Constitution does not have a clear provision on the distribution of powers between central, provincial and local government. On the one hand it does safeguard the independence of decentralized bodies and grants the decentralized bodies regulatory powers to govern everything that is considered to

⁵⁶ *ibid* 259.

⁵⁷ See extensively on this debate Spence (n 53).

⁵⁸ *ibid* 448. The Texas Railroad Commission was established in the 19th century to regulate the rail industry, but, since then, was also given the responsibility for overseeing oil, gas and mining activities. See the Commission's website <<http://www.rrc.state.tx.us/>> accessed 30 March 2015.

⁵⁹ *ibid* 453-459.

⁶⁰ 42 USC § 300h, see Hannah Wiseman, 'Untested Waters: The Rise of Hydraulic Fracturing in Oil and Gas Production and the Need to Revisit Regulation' (2009) 20 Fordham Env'tl LR 115, 136.

⁶¹ 42 USC § 6901 and 42 USC § 11001 respectively, see Spence (n 53) 450-452.

⁶² Wiseman and Gradjan (n 5).

⁶³ See eg art IX § 2 New York State Constitution.

be in their interest (Article 124).⁶⁴ On the other hand, the national legislature, which always sets the basic rules in formal legislation, ultimately decides which delegated powers it leaves to which decentralized body.⁶⁵ Generally, the implementation of legislation in the field of energy and mining is done at the national level, leaving the implementation of environmental and land use legislation to the provinces and the municipalities. However, the competent authority in the field of energy, also has authority over the environmental aspects of mining.⁶⁶ The Minister of Economic Affairs (energy policy belongs to the responsibility of this Minister), at the national level, has the power to grant exploration permits,⁶⁷ production permits⁶⁸ and environmental permits,⁶⁹ which indicates that the national government wants to be able to control all decision-making on mining. Different from the US, though, all regular environmental standards apply to mining installations in the Netherlands. This, basically, means that installations for the exploration and production of shale gas will only be able to get an environmental permit in case they meet strict conditions aimed at pollution prevention and control. That is why a government funded research report concluded that the environmental risks of shale gas production in the Netherlands are limited.⁷⁰ These conclusions, however, were criticized by many for two reasons.⁷¹ First, the report assumed a strict and proactive application of all relevant rules and regulations, which should not be taken for granted. It was also acknowledged that existing environmental law does not entirely suffice, simply because hydraulic fracturing has some specific characteristics that cannot be catered for under existing law which was drafted with conventional oil and gas production in mind. Second, the report did not take into account local impacts due to specific local circumstances (biodiversity, noise, etc.). This fuelled anger within local communities and local governments, where the impression was rising that the national government pushed hydraulic fracturing without giving due consideration to local environmental concerns. This then lead local governments to take regulatory action against hydraulic fracturing, as will be discussed in section 4 below.

⁶⁴ Visser (n 6).

⁶⁵ Hence it usually being characterized as ‘a decentralised unitary state’, see Theo Toonen, ‘The Netherlands: A Decentralised Unitary State in a Welfare Society’ (1987) 10 West European Politics 108.

⁶⁶ Environment Regulation (*Besluit omgevingsrecht*), art 3.3(1), for instance, states that the Provincial authorities are competent for granting environmental permits to installations, except for mining installations, for which the minister of Economic Affairs is the competent authority (under art 3.3(4)).

⁶⁷ Mining Act, art 6(1)(a).

⁶⁸ Mining Act, art 6(1)(b).

⁶⁹ Mining Act, art 40.

⁷⁰ Report by Witteveen & Bos, Arcadis and Fugro consultancy firms on possible risks and effects of exploration and exploitation of shale gas and coal bed methane in the Netherlands (‘Aanvullend onderzoek naar mogelijke risico’s en gevolgen van de opsporing en winning van schalie- en steenkoolgas in Nederland. Eindrapport onderzoeksvragen A en B’ 2013) (report in Dutch, with summary in English) <<http://www.rijksoverheid.nl/documenten-en-publicaties/rapporten/2013/08/26/bijlagenrapport-onderzoek-schaliegas.html>> accessed 12 February 2015.

⁷¹ A critical review was issued by the Netherlands Commission for Environmental Assessment, which was requested by the Minister of Energy to assess the advisory report mentioned in the previous footnote (‘Beoordeling effectstudie Schaliegaswinning’, Advice 023-114 2013)(in Dutch) <<http://www.commissiener.nl/advisering/afgerondeadviezen/23>> accessed 12 February 2015.

United Kingdom

In the absence of a codified constitution, the distribution of powers between central and local levels in the United Kingdom is largely based upon Acts of Parliament, such as the Local Government Act 2000 and the Localism Act 2011.⁷² The Local Government Act 2000 gives a wide description of the powers local authorities have: 'Every local authority are to have power to do anything which they consider is likely to achieve any one or more of the following objects - (a) the promotion or improvement of the economic well-being of their area, (b) the promotion or improvement of the social well-being of their area, and (c) the promotion or improvement of the environmental well-being of their area.'⁷³ This includes the preparation of a strategy not just aimed at promoting or improving the economic, social and environmental well-being of their area, but also to 'contributing to the achievement of sustainable development in the United Kingdom.'⁷⁴ The Localism Act 2011 was enacted to reverse the trend towards increasing control of central government. This Act, therefore, tries to increase the powers of local authorities as well as local communities, especially also in such areas as local town and country planning and planning for sustainability.⁷⁵ The Act attempts to empower local communities, for instance by granting them a 'right to challenge' and by introducing the instrument of the designation of land of community value.⁷⁶ The Localism Act, however, has met a lot of criticism because '(...) while the Act makes an explicitly political point, its provisions retain considerable national hegemony over local decision making, both in what the Act requires and in those provisions and policies that it leaves untouched.'⁷⁷ As a consequence, '(t)he Localism Act has had little effect on the balance of power between local communities and Whitehall, or on the balance of power between central and local government.'⁷⁸

Local authorities were granted powers in specific land use planning and environmental protection legislation, primarily aimed at town and country planning, for which local authorities have the primary responsibility, and noise and local air pollution and public health.⁷⁹ Decision-making on all oil and gas mining activities has been centralized for a great part, but not entirely. The central license that is needed, to be issued under the Petroleum Act 1998,⁸⁰ mainly focusses on ensuring efficient and safe production. This licence, the Petroleum Exploration and Development Licence, is granted at the central

⁷² Turpin and Tomkins (n 11).

⁷³ S2(1) Local Government Act 2000.

⁷⁴ s 4(1) Local Government Act 2000.

⁷⁵ Part 6 of the Localism Act 2011.

⁷⁶ Part 5 of the Localism Act 2011.

⁷⁷ Antonia Layard, 'The Localism Act 2011 : What is 'Local' and How Do we (Legally) Construct It?' (2012) 14 ELR 134.

⁷⁸ Jules Pipe, 'Two Years On, What Has the Localism Act Achieved?' The Guardian, 2 November 2013 <<http://www.theguardian.com/local-government-network/2013/nov/02/localism-act-devolution-uk-local-authorities>> accessed 12 February 2015.

⁷⁹ Stuart Bell, Donald McGillivray and Ole W Pedersen, *Environmental Law* (8th edn, OUP 2013) 129.

⁸⁰ And associated regulations. This Act applies in England, Wales and Scotland. For Northern Ireland there is separate, comparable, legislation. See extensively, Marta Ballesteros, Florent Pelsy and Leonie Reins, *Regulatory provisions governing key aspects of unconventional gas extraction in United Kingdom* (Milieu Ltd 2013) <http://ec.europa.eu/environment/integration/energy/uff_studies_en.htm> accessed 12 February 2015.

level by the Department of Energy and Climate Change (DECC) for England, Wales and Scotland, and by the Department of Enterprise, Trade and Investment (DETI) in Northern Ireland. At this stage, environmental impacts are assessed at a generic level only,⁸¹ through a Strategic Environmental Assessment for the 14th round of licencing, and,⁸² to a limited extent, through the assessment of the application for a licence, which has to include an Environmental Awareness Statement.⁸³ Such a statement has to show that the applicant understands the UK's relevant environmental legislation and the particular sensitivities of protected areas in the region of operation, as well as information on liability arrangements and details of past performance.⁸⁴ The Petroleum Licensing (Exploration and Production) (Seaward and Landward Areas) Regulations 2004 sets model clauses for the licence, some of which are aimed at avoiding harmful methods of working.⁸⁵ None of these, though, address the specific environmental issues associated with shale gas exploration and production.⁸⁶

An environmental permit, to be issued by the Environment Agency in England and Wales, the Scottish Environment Protection Agency in Scotland, and the Northern Ireland Environment Agency in Northern Ireland, is required when fracking fluids containing chemicals are used in formations that contain groundwater or where the fracturing activity poses a risk of mobilising natural substances that could then cause pollution.⁸⁷ This permit then deals with two major environmental concerns of fracking: groundwater pollution and waste water management (flow-back fluid).⁸⁸ Local authorities are not entirely left out of the picture, as further environmental conditions, aimed at reducing (other) local environmental impacts, are to be set by the local planning authority under Town & Country Planning Act 1990 and associated regulations. It is precisely this regulatory power that is used by local authorities to challenge hydraulic fracturing, as will be shown in section 4 below.

European Union

The EU is an important player in the shale gas debate between local and higher levels of government because of two reasons. First, the EU acknowledges local governments have a role to play in the field of environmental protection. Second, as EU environmental law dominates domestic environmental laws, any gaps and inadequacies in current binding EU environmental law with regard to hydraulic fracturing, will also be present at Member State level. Local governments, therefore, can only partly rely on EU legislation when looking for legal means to challenge hydraulic fracturing.

⁸¹ *ibid* 13.

⁸² Based upon the Environmental Assessment of Plans and Programmes Regulations 2004, SI 2004/1633. Like in the Netherlands, the Environmental Report of December 2013 only assessed the generic impact of shale gas production, not local impacts, see DECC, Strategic Environmental Assessment for Further Onshore Oil and Gas Licensing (2013).

⁸³ This duty does not have a legal basis in the Petroleum Act 1998, but is based upon a guidance to applicants issued by DECC, Ballesteros and others (n 80) 9.

⁸⁴ *ibid*.

⁸⁵ SI 2004/352, Schedule 1 reg 3(2).

⁸⁶ Additional controls to avoid induced seismicity have been announced, *ibid* 26.

⁸⁷ Under the Environmental Permitting (England and Wales) Regulations (2010), the Water Environment (Controlled Activities)(Scotland) Regulations 2011 and the Water (Northern Ireland) Order 1999.

⁸⁸ See extensively Ballesteros and others (n 80) 31-37.

The environmental laws of the EU Member States, including the Netherlands and the United Kingdom, are dominated by requirements that stem from EU environmental law, hence in thinking about the powers of central government there is the need to also review the applicable EU environmental law.⁸⁹ Within the EU, environmental law has been largely harmonized, not just with regard to transboundary environmental issues, but also with respect to purely local environmental problems, such as noise.⁹⁰ It should be noted that the EU does not deal with the internal organisation of government within the Member States. It is left entirely to the Member State to decide which level of government is made responsible for the implementation of EU environmental law.⁹¹ Should, at the domestic level, sub-national authorities be empowered to exercise regulatory powers, then EU law envisages them to be as autonomous a regulator as the State is.⁹² The EU, therefore, allows environmental regulatory power to be granted to the local level. At the EU level, there is increasing attention for the role of local governments too.⁹³ The powers of the Committee of the Regions (CoR) have gradually increased since its establishment in 1994.⁹⁴ In the field of energy and the environment, the CoR are involved throughout the EU legislative process, through mandatory consultation. The CoR has the right to bring an action before the Court of Justice if their consultation is ignored or in case of infringement on the principle of subsidiarity.⁹⁵ The principle of subsidiarity not only applies to the division of powers between the EU and its Member States, but also within Member States.⁹⁶ There is a clear preference to regulate at the lowest possible level (see further section 4) but ultimately, it is only the national state that can be held responsible for not having achieved the goals of EU law, for instance when decentralized bodies fail to implement EU law.⁹⁷

In January 2014, the European Commission, through publishing its non-legally binding Recommendation on Minimum Principles for the Exploration and Production of Hydrocarbons Using High-volume Hydraulic Fracturing, tried to fill these gaps, without, however, even mentioning the role of local

⁸⁹ Maria Lee, *EU Environmental Law, Governance and Decision-Making* (Hart Publishing 2014).

⁹⁰ Josephine van Zeven, 'Subsidiarity in European Environmental Law: A Competence Allocation Approach' (2014) 38 *HELR* 415, 419.

⁹¹ art 4(2) Treaty on European Union (TEU) reads: 'The Union shall respect the equality of Member States before the Treaties as well as their national identities, inherent in their fundamental structures, political and constitutional, inclusive of regional and local self-government (...).' Consolidated version of the Treaty on European Union [2012] OJ C326/13.

⁹² Michèle Finck, 'Above and Below the Surface: The Status of Sub-National Authorities in EU Climate Change Regulation' (2014) 26 *JEL* 443, 471.

⁹³ See extensively Carlo Panara and Michael Varney (eds), *Local Government in Europe: The 'Fourth Level' in the EU Multi-Layered System of Governance* (Routledge 2013).

⁹⁴ The CoR is an assembly with 353 regional and locally elected representatives from the 28 EU member states. It has an advisory role, see art 13(4) TEU.

⁹⁵ art 8 Protocol (No 2) TEU.

⁹⁶ art 5 TEU: 'Under the principle of subsidiarity, in areas which do not fall within its exclusive competence, the Union shall act only if and in so far as the objectives of the proposed action cannot be sufficiently achieved by the Member States, either at central level or at regional and local level, but can rather, by reason of the scale or effects of the proposed action, be better achieved at Union level.'

⁹⁷ art 260 Treaty on the Functioning of the European Union (TFEU), Consolidated version of the Treaty on the Functioning of the European Union [2012] OJ C326/47.

governments.⁹⁸ In 2015, the European Commission will assess whether existing EU environmental law and the Recommendation together offer sufficient environmental protection against the impact of fracking, or whether specific EU legislation is needed.⁹⁹ Apart from this non-legally binding Recommendation, the EU does not have specific, binding, environmental Directives or Regulations in place that explicitly regulate the impact of hydraulic fracturing on the environment. A myriad of environmental Directives and Regulations apply or may apply to various aspects of shale gas production. Obvious examples are the Directives on Environmental Impact Assessment¹⁰⁰ and Strategic Environmental Assessment,¹⁰¹ the Industrial Emissions Directive,¹⁰² the Water Framework and Groundwater Directives,¹⁰³ and various Waste Directives,¹⁰⁴ but also the REACH Regulation,¹⁰⁵ and, depending on the location of the drilling site, the Wild Birds and Habitats Directives.¹⁰⁶ It is uncertain, however, whether these instrument offer sufficient protection to the environment and can, thus, be relied upon by the local authorities. The Industrial Emissions Directive, for example, which is the main command-and-control type instrument in EU environmental law and which requires an integrated environmental permit for certain industrial activities based on best available techniques, may be applicable to hydraulic fracturing installations, depending on the hazardous character of fracturing fluids.¹⁰⁷ The EIA Directive does not automatically apply as individual installations will not produce the amount of gas mentioned in Annex I (> 500,000 m³ per day).¹⁰⁸ Similar potential regulatory gaps and legal uncertainties were found at the domestic level in various EU Member States.¹⁰⁹ Despite these gaps, inadequacies and uncertainties, there was not sufficient political support at the EU level for creating a binding regulatory framework specifically aimed at hydraulic fracturing.¹¹⁰ Instead, as was mentioned

⁹⁸ Commission Recommendation 2014/70/EU of 22 January 2014 on minimum principles for the exploration and production of hydrocarbons (such as shale gas) using high-volume hydraulic fracturing [2014] OJ L39/72.

⁹⁹ *ibid* 16.3.

¹⁰⁰ Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment [2012] OJ L 26/1, as amended by Directive 2014/52/EU [2014] OJ L 124/1.

¹⁰¹ Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment [2001] OJ L 197/30.

¹⁰² Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control) [2010] OJ L334/17.

¹⁰³ Directive 2000/60/EC establishing a framework for Community action in the field of water policy [2000] OJ L327/1, and Directive 2006/118/EC on the protection of groundwater against pollution and deterioration [2006] OJ L372/19.

¹⁰⁴ Directive 2006/21/EC on the management of waste from extractive industries [2006] OJ L102/15; Directive 2008/98/EC on waste [2008] OJ L312/3; Directive 91/271/EEC concerning urban waste-water treatment [1991] OJ L135/40.

¹⁰⁵ Regulation 1907/2006/EC concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) [2006] OJ L396/1.

¹⁰⁶ Directive 2009/147/EC on the conservation of wild birds [2010] OJ L20/7; Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7.

¹⁰⁷ Broomfield (n 14) xiii-xiv.

¹⁰⁸ *ibid* 80-81.

¹⁰⁹ Ballesteros and others (n 5). The report also found that several Member States are in the process of drafting new legal texts or reviewing existing legislation to address the environmental and health impacts of unconventional gas activities, and that domestic law sometimes comes up with good solutions of existing inadequacies, for instance with regard to the management of induced seismicity, *ibid* 7.

¹¹⁰ Cándido García Molyneux and Jean De Ruyt, 'The Upcoming European Commission's Recommendation on Shale Gas: A Transitional Political Compromise?' 17 January 2014

above, the European Commission adopted a Recommendation, which recommends the Member State to impose the necessary rules at the domestic level.¹¹¹ Only when an assessment (to be carried out mid 2015) shows that the Recommendation was not effective, the European Commission will decide whether it is necessary to put forward binding legislative proposals.¹¹² According to the Recommendation, Member States should, for example, ascertain that a strategic environmental assessment is carried out prior to granting licenses for hydrocarbon exploration and/or production, which are expected to lead to operations involving high-volume hydraulic fracturing in order to analyse and plan how to prevent, manage and mitigate cumulative impacts, possible conflicts with other uses of natural resources or the underground.¹¹³ They should also ensure that an EIA on the basis of the EIA-Directive is carried out,¹¹⁴ as well as a site specific risk characterisation and assessment, related to both the underground and the surface, to determine whether an area is suitable for safe and secure exploration or production of hydrocarbons involving high volume hydraulic fracturing (including the identification of risks of underground exposure pathways such as induced fractures, existing faults or abandoned wells).¹¹⁵ Other recommendations include, for example, baseline reporting (e.g. of water, air, seismicity), to provide a reference for subsequent monitoring or in case of an incident;¹¹⁶ ensuring that operators use the best available techniques;¹¹⁷ ensuring that operators limit venting (release of gases into the atmosphere) to most exceptional operational safety cases only, minimise flaring (controlled burning of gases), and capture of gas for its subsequent use (e.g. on-site or through pipelines);¹¹⁸ informing the public of the composition of the fluid used for hydraulic fracturing on a well by well basis as well as on waste water composition, baseline data and monitoring results.¹¹⁹

4. Local authorities try to intervene

As we saw in the last section, what regulatory pathways local authorities have at their disposal to protect the local environment differs for each country, as this depends on the way in which powers are distributed among the various levels of government in a country. In theory, two models are distinguished: either local authorities ‘only’ implement national policies and laws, and are dependent on the central authorities, or they are largely autonomous organizations that develop their own policies,

<<http://www.insideenergyandenvironment.com/2014/01/the-upcoming-european-commissions-recommendation-on-shale-gas-a-transitional-political-compromise/>> accessed 12 February 2015.

¹¹¹ (n **Error! Bookmark not defined.**).

¹¹² Recommendation (n **Error! Bookmark not defined.**) point 16. Notwithstanding the non-legally binding character of the Recommendation, individual Member States may use the Recommendation as a source of inspiration to introduce binding legal rules. In the same vein, domestic courts may refer to Recommendation to interpret an operator’s duty of care. See Cándido García Molyneux and Luca Tosoni, ‘What’s in a Name? Legal Implications of the EU Recommendation on Shale Gas’ (2014) 44 ELR 10351.

¹¹³ Recommendation (n **Error! Bookmark not defined.**) no 3.1.

¹¹⁴ *ibid* no 3.3.

¹¹⁵ *ibid* no 5.

¹¹⁶ *ibid* no 6.

¹¹⁷ *ibid* no 9.1.

¹¹⁸ *ibid* no 9.2(c).

¹¹⁹ *ibid* no 15.

but remain under the ultimate control of the central authorities.¹²⁰ In practice, and this is true for all three countries studied here, it is a mix of these two models that is applied, as I will show below.¹²¹ It should also be noted that ‘the’ local level often does not exist: through regional and functional decentralization authorities are functioning on different spatial scales (boroughs, communes, municipalities, regions, provinces, etc.) and on specific topics (water districts, environment agencies, etc.).

The idea that governance is done at the level that is best suited given the goal pursued, and preferably as close as possible to those affected by the respective policies and rules is broadly accepted. As a consequence, the primary responsibility and decision-making power should rest with the lowest possible level of authority within the political hierarchy.¹²² This is particularly relevant for environmental law, as environmental problems occur on all levels, from local to global. Hence, in the field of environmental law there always exists a rather complex system of multilevel governance, in which there is a polycentric government and, increasingly, non-state actors play an increasing role.¹²³ Generally, a devolvement of decision-making from the state to lower levels of governance including local authorities but also local communities, local NGOs and local businesses can be witnessed today.¹²⁴

Since 1992, it has been internationally widely accepted that local authorities play an important role in the pursuit of sustainable development. Chapter 28 of Agenda 21, the non-legally binding plan of action to achieve a sustainable development adopted at the UN Conference on Environment and Development in Rio de Janeiro in 1992, states that ‘the participation and cooperation of local authorities will be a determining factor’ in fulfilling the objectives of Agenda 21.¹²⁵ After Rio, many local initiatives were adopted across the world, usually coined ‘Local Agenda 21’ or ‘Local Action 21’. Having some sort of local policy aimed at sustainable development has become a normal element of local policy making. Local authorities also joined forces under the ICLEI - Local Governments for Sustainability association, an international organization of local governments that have made a commitment to sustainable development, which has well over a 1,000 local government members around the world.¹²⁶

This section will show that local authorities, when they have the power to regulate local land use and environmental impacts to protect the local environment, use their regulatory tools to extensively regulate shale gas exploration and production. It will also discuss the interventions, if any, from higher levels of government with the aim to bypass local government regulations so as to foster shale gas production. This will be done through a review of relevant case law and decentralized laws and

¹²⁰ Yves Mény and Andrew Knapp, *Governments and Politics in Western Europe* (3rd edn, OUP 1998) 270.

¹²¹ *ibid.*

¹²² Richard Macrory, *Regulation, Enforcement and Governance in Environmental Law* (2nd edn, Hart Publishing 2014) 505.

¹²³ Neil Gunningham, ‘Environment Law, Regulation and Governance: Shifting Architectures’ (2009) 21 JEL 181.

¹²⁴ Neil Gunningham, ‘The New Collaborative Environmental Governance: The Localization of Regulation’ (2009) 36 JLS 163.

¹²⁵ [1993] UNCED Report, A/CONF 151/26/Rev 1 (vol I).

¹²⁶ See the ICLEI <<http://www.iclei.org>> accessed 13 February 2015. According to Wikipedia, ‘ICLEI includes 1,227 local government members worldwide in 70 countries, with more than 600 in the United States’ <<http://en.wikipedia.org/wiki/ICLEI>> accessed 13 February 2015.

regulations for the selected countries. The aim of this section is to demonstrate how the legal battle between the local and the higher level of government currently plays out.

United States

In the United States, different legal pathways are pursued by local authorities depending on whether there exists state statutory pre-emption or not.¹²⁷ When States do not pre-empt local authority over hydraulic fracturing, local governments can use the power sometimes granted to them by state constitutions or statutes to regulate or ban mining in general, or shale gas production in particular.¹²⁸ This is rare. Usually, states delegate land use authority to local governments, and local governments then use this authority to regulate fracking. Santa Fe County in New Mexico, for example, used its 'independent (...) police, zoning, planning and public nuisance powers for health, safety and general welfare of the County' to put extremely strict mining controls in place, with the ultimate aim 'to protect and promote the health, safety and general welfare of present and future residents of the County'.¹²⁹ Section 5 of the Santa Fe County Oil and Gas Amendment to the Santa Fe County Land Development Code stipulates that no oil or gas facility is permitted in the County.¹³⁰ Approval for oil and gas extraction can only be granted after many conditions are met, all aimed at assessing and limiting local impacts (such as impacts on wildlife and vegetation, natural habitats and corridors, air and water pollution, traffic safety, historical and cultural values, open space and scenic vistas), and even some not so local impacts (global warming and excessive energy consumption).¹³¹

There are other examples. In the state of New York, local communities and municipalities adopted a range of legal instruments to restrict hydraulic fracturing, mainly through local zoning law.¹³² One of these is the town of Dryden, which, in 2011, amended its zoning ordinance to ban all activities related to exploration, production or storage of natural gas. In 2013, the New York Supreme Court Appellate Division for the Third Judicial Department found the ban to not infringe the New York Oil, Gas, and Solution Mining Law because it does not have an unambiguous preemption clause.¹³³ In 2014, the New York Court of Appeals upheld two appeals that sought to overturn two Third Department rulings rejecting challenges to the towns of Dryden and Middlefield zoning enactments which banned hydraulic

¹²⁷ As explained in section 3, see there for references.

¹²⁸ (n 63).

¹²⁹ Santa Fe County Oil and Gas Amendment to the Santa Fe County Land Development Code, Ordinance 2008-19, S2, S5 <http://www.santafecountynm.gov/userfiles/SFCOrdinance2008_19.pdf> accessed 13 February 2015.

¹³⁰ *ibid.*

¹³¹ *ibid.*

¹³² Roderick Hills, 'Hydrofracking and Home Rule: Defending and Defining an Anti-Preemption Canon of Statutory Construction in New York' (2014) 77 Albany LR 647. In February 2013, 296 communities in the state of New York either issued or drafted legislation and zoning ordinances aimed at banning or restricting hydrofracking. Joseph Hoff, 'Hydrofracking Decision Is For Future Generations' *Democrat and Chronicle* (Rochester, NY), 21 February 2013 <<http://newny23rd.com/2013/02/23/hydrofracking-decision-is-for-future-generations-2>> accessed 30 March 2015.

¹³³ *Norse Energy Corp USA v Town of Dryden* 43 ELR 20099, No. 515227, (N.Y. App. Div. 2013).

fracturing.¹³⁴ The Court nicely shows that local zoning laws can only be used to ban fracking as long as the state legislature does not clearly pre-empt this power:

We are asked in these two appeals whether towns may ban oil and gas production activities, including hydrofracking, within municipal boundaries through the adoption of local zoning laws. We conclude that they may because the supersession clause in the statewide Oil, Gas and Solution Mining Law (OGSML) does not preempt the home rule authority vested in municipalities to regulate land use. (...)

At the heart of these cases lies the relationship between the State and its local government subdivisions, and their respective exercise of legislative power. These appeals are not about whether hydrofracking is beneficial or detrimental to the economy, environment or energy needs of New York, and we pass no judgment on its merits. These are major policy questions for the coordinate branches of government to resolve. (...) we cannot say that the supersession clause—added long before the current debate over high-volume hydrofracking and horizontal drilling ignited—evinces a clear expression of preemptive intent. The zoning laws of Dryden and Middlefield are therefore valid.¹³⁵

This quote clearly indicates that if local government possesses the legal power to regulate activities in order to protect the local environment, they can apply these regardless of energy security interests or any other overriding higher public interest. Should policymakers feel that the latter prevail, then state legislation has to effectively take away this regulatory power from local government.

In cases where state legislation effectively took away regulatory power from local regulators, challenging state legislation that restricts local environmental and zoning law authority is the only option left for local communities. This route was successfully pursued in Pennsylvania.¹³⁶ In 2012, state legislation (“Act 13”) was put in place to facilitate the production of shale gas by simply regulating that state environmental laws occupy the entire field of oil and gas regulation to the exclusion of all local ordinances, pre-empting and superseding all local regulation of oil and gas operations,¹³⁷ and that all local ordinances have to allow for the reasonable development of oil and gas resources; uniform rules are imposed, and local governments are prohibited to establish more stringent rules.¹³⁸ The state’s

¹³⁴ Maureen Liccione, Sarah Adams-Schoen, ‘Land Use Law Update: The Court of Appeals Issues a Victory for Home rule in *Wallach v Town of Dryden* and *Cooperstown Holstein Corp v Town of Middlefield*’ (2014) 28 NYSBA Municipal Lawyer 42.

¹³⁵ *Wallach as Chapter 7 Trustee for Norse Energy Corp USA v Town of Dryden et al*, and *Cooperstown Holstein Corporation v Town of Middlefield* 16 N.E.3d 1188 (N.Y. 2014), (2015) 128 Harv. L. Rev. 1542..

¹³⁶ For a comprehensive overview, see Barry Rabe and Christopher Borick, ‘Conventional Politics of Unconventional Drilling? Lessons from Pennsylvania’s Early Move into Fracking Policy Development’ (2013) 30 Rev Pol Res 321, 330-332, and John Dernbach, James May, Kenneth Kristl, ‘Robinson Township v. Commonwealth of Pennsylvania: examination and implications’ (Widener Law School Legal Studies Research Paper Series no 14-10, 2014) 3-4 <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2412657> accessed 13 February 2015.

¹³⁷ Act 13 S3303.

¹³⁸ Act 13 S3304.

mining authority (Department of Environmental Protection) was allowed to waive the prohibition to drill or disturb areas near certain streams and wetlands if the applicant submits additional measures, facilities or practices that it will employ to protect these waters.¹³⁹

Seven municipalities challenged these provisions as infringing the Pennsylvania Constitution, more specifically Article I, Section 27, which states:

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

In 2013, the Pennsylvania Supreme Court not only granted the municipalities standing, because the protection of the environment is a key role of the local government, it also declared all the provisions limiting local government's authority as unconstitutional because these infringe Article I, Section 27 since shale gas exploitation 'will produce a detrimental effect on the environment, on the people, their children, and future generations'.¹⁴⁰ This decision is considered a landmark decision as it may pave the way for courts in other states to adopt similar approaches.¹⁴¹ A recent case study on Colorado shows similar opportunities for local governments, particularly if they aim to regulate the socio-economic impacts of fracking on the local community.¹⁴²

These examples show that decentralized authorities use their powers in their attempt to legally restrict or ban hydraulic fracturing. In case central government tries to take away regulatory power from local government with the aim to enable shale gas production the latter, in some cases, were able to rely on constitutional protection.

Netherlands

Local zoning laws are often invoked to ban all mining or a specific form of mining, such as hydraulic fracturing, from the area covered by a local zoning plan. Several Dutch municipalities, for instance, regulated in their local zoning plans that exploring for or producing shale gas is prohibited for the entire area covered by the zoning plan.¹⁴³ In the municipality of Boxtel, the authorities at first cooperated with the national authorities when these national authorities issued an exploration permit for test drillings in

¹³⁹ Act 13 S3215(b)(4).

¹⁴⁰ *Robinson Township v Commonwealth of Pennsylvania* [2013] Pa Sup Ct No. J-127A-D-2012, 43 ELR 20276.

¹⁴¹ Dernbach (n 136) 15-16 and Erin Daly & James May, 'Robinson Township: A Model for Environmental Constitutionalism' (Widener Law School Legal Studies Research Paper Series no 14-19, 2014) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2442367> accessed 13 February 2015.

¹⁴² Joel Minor, 'Local Government Fracking Regulations: A Colorado Case Study' (2014) 33 Stanford ELJ 122. It should be noted, though, that similar developments are certainly not taking place at a wide scale throughout the United States, as is noted by Dernbach (n 141) 10.

¹⁴³ eg art 36 of the regulations with the zoning plan of Mill en Sint Hubert (*Bestemmingsplan buitengebied*).

2009 to Cuadrilla.¹⁴⁴ However, after considerable opposition from the local population, the municipal authorities changed their position from cooperative to resistant.¹⁴⁵ The municipality declared itself 'shale gas free', and, in 2013, like other municipalities, included provisions in its zoning plan prohibiting shale gas exploration and production.¹⁴⁶ As a consequence of these provisions, all applications related to shale gas activities that need any decision which, according to environmental or planning law, has to be tested against the zoning plan, will have to be rejected.

At a slightly higher level of government, the provincial level, authorities also use their powers to try to prevent shale gas exploration and production. In the Netherlands, provinces have regulatory authority in the field of land use planning and environmental protection.¹⁴⁷ In the area of land use planning, provinces have substantial regulatory powers, because there are only limited, national policies in place, and provinces have the authority to set conditions within which municipalities have to stay when drafting local zoning plans. They do so in the provincial Spatial Ordinance.¹⁴⁸ In the area of environmental protection, there is less room for manoeuvre for the provinces: only when specifically regulated at national level, do they have the power to set standards. These standards have to be set in the Provincial Environmental Ordinance.¹⁴⁹ An example of the latter is ground water protection,¹⁵⁰ which is highly relevant in the case of shale gas production.

In the Dutch province of North-Brabant, a provincial environmental ordinance was amended so as to prohibit shale gas activities.¹⁵¹ In 2015, following many public protests against shale gas, the provincial authorities declared the entire part of the province with fresh groundwater resources a groundwater protection zone, and subsequently banned shale gas production.¹⁵² Another example is the province of Overijssel, which declared itself shale gas free in 2013, and, in June 2014, lodged a formal complaint against the central government's decision to prepare a national spatial policy plan on shale gas exploration and production in the Netherlands.¹⁵³ By November 2014, ten Dutch provinces and 223

¹⁴⁴ R Fleming, 'Shale Gas – a Comparison of European Moratoria' (2013) 22 EEELR 12, 25; Tamara Metze 'Fracking the Debate: Frame Shifts and Boundary Work in Dutch Decision Making on Shale Gas' (2014) JEPP online DOI:10.1080/1523908X.2014.941462 1, 6.

¹⁴⁵ For a fascinating account of the local unrest and subsequent political decision-making in this small town, see Tamara Metze, 'What the Frack? Development of a Controversy about Hydraulic Fracking for Shale Gas in the Netherlands' (Paper for IPA Conference 2013) <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2285995> accessed 23 February 2015.

¹⁴⁶ art 30.1 of the regulations with the zoning plan of Boxtel (*Bestemminsplan buitengebied – Ontwikkelplan*).

¹⁴⁷ EA Alkema, 'Constitutional Law' in Jeroen Chorus, Piet-Hein Gerver, Ewoud Hondius (eds), *Introduction to Dutch Law* (4th edn, Kluwer Law International 2006) 301, 339.

¹⁴⁸ This ordinance (*Verordening Ruimte*) is based upon Art 4.1 of the Spatial Planning Act (*Wet ruimtelijke ordening*).

¹⁴⁹ This ordinance (*Provinciale milieuverordening*) is based upon Art 1.2 Environment Act (*Wet milieubeheer*).

¹⁵⁰ Environment Act, art 1.2(2)(a).

¹⁵¹ Sixth amendment to the Provincial Environmental Ordinance, adopted in February 2015, and entered into force on 1 March 2015, (2015) *Provinciaal Blad* 10.

¹⁵² art 5.5.3 and annex 9.

¹⁵³ As reported on the website of the provincial authorities <http://www.overijssel.nl/vergaderingen_crw/@G-2/kamp-ziet/> accessed 30 March 2015.

Dutch municipalities had declared themselves ‘shale gas free’ and are coordinating their efforts, with the help of an environmental NGO to block shale gas activities within their territory.¹⁵⁴

It remains to be seen whether these attempts to block shale gas activities through the adoption of legal instruments at local levels will be successful in the long run. In the Netherlands, the Minister of Economic Affairs (and Energy), at the national level, has the power to a) take decision on behalf of the provincial or local authorities, or b) propose the Cabinet to set aside local and provincial rules and regulations. The Spatial Planning Act provides for a so called National Coordination Regulation (NCR), which gives the Cabinet of Ministers of the central government far reaching powers, ultimately even the power to aside binding laws issued by decentralized authorities.¹⁵⁵ The Mining Act states that the NCR applies to *certain* mining activities,¹⁵⁶ but it gives the Minister discretion as to the use of the NCR.¹⁵⁷ As a consequence, the Minister has the power to issue environmental licenses that normally would have been granted by the provincial authorities, even when these licenses infringe on the provincial environmental ordinance.¹⁵⁸ He even has the power to draft a plan that replaces the local zoning plan,¹⁵⁹ and to require all cooperation from all other authorities involved and take all other decisions that are necessary in case the local authorities do not cooperate.¹⁶⁰

In addition, the Cabinet can, more generally, decide to apply the NCR in case this is deemed necessary in the interest of ‘national spatial policy’. Once the decision-making process of the locations at which the exploration and production of shale gas is integrated into the wider national spatial policy, these powers can be used as well.¹⁶¹ It should be noted, though, that this needs to be a decision that has the support of the entire Cabinet, including the Minister for the Environment.¹⁶²

Finally, it should be noted that, normally, the provincial authorities use their authority to issue permits under nature conservation law (implementing the EU’s Wild Birds and Habitats Directives¹⁶³ aimed at establishing the Natura 2000 network of protected areas across Europe) to test planned activities against their environmental impacts. In the province of North Brabant, most of the locations where drillings are foreseen, are within or near Natura 2000 sites. Hence, the permitting process under nature conservation law could have provided the provincial authorities with an opportunity to scrutinize hydraulic fracturing, as many activities associated to fracking are considered to negatively impact on

¹⁵⁴ As reported by the Dutch branch of Friend of the Earth at <<https://milieudefensie.nl/publicaties/factsheets/factsheet-schaliegasvrije-gemeenten/view>> accessed 30 March 2015.

¹⁵⁵ Spatial Planning Act, art 3.35.

¹⁵⁶ In case mining takes place within protected areas under EU law (Natura 2000 sites, see further below), mining installations for the storage of waste, and pipelines.

¹⁵⁷ Mining Act, art 141a.

¹⁵⁸ Spatial Planning Act, art 3.35.

¹⁵⁹ Spatial Planning Act, art 3.35(1)(a) and 3.28.

¹⁶⁰ Spatial Planning Act, art 3.35(3).

¹⁶¹ Spatial Planning Act, art 3.35(1).

¹⁶² *ibid.*

¹⁶³ (n 106).

species and habitats within these protected areas.¹⁶⁴ However, Dutch nature conservation legislation puts the permitting authority for all mining activities in the hands of the Minister who, at the national level, is responsible for nature conservation.¹⁶⁵ Currently, nature conservation falls under the authority of the Minister of Economic Affairs, who, as indicated above, also is responsible for energy. As a consequence, the competent Minister under the Mining Act, will also issue permits under nature conservation law. We can conclude, therefore, that the legislature has effectively taken away regulatory power from the provincial level and put all power in the hand of the national level. It should be noted, though, that the applicable legal framework has its origin in binding EU law (the EU's Wild Birds and Habitat Directives), the Minister cannot deviate from these rules.

United Kingdom

Like in the Netherlands, local planning permission needs to be obtained in the UK as well, under Town & Country Planning Act 1990 and associated regulations.¹⁶⁶ Unlike in the Netherlands, though, these local permissions also focus on environmental issues.¹⁶⁷ Local planning authorities (or local mineral planning authorities) can require an EIA, when they deem the project likely to have a significant impact on the environment,¹⁶⁸ and set a broad range of environmental standards covering such issues as groundwater pollution, noise and local air quality. In a planning guidance document, the central government advises local planning authorities to focus on the specific local impacts of shale gas exploration and production rather than on the more generic concerns such as potential pollution leakage from wells and risk of earthquake from fracking.¹⁶⁹ Local landowners play an important role as their consent has to be obtained before a licensee can access the land.¹⁷⁰ The UK Supreme Court has ruled that subsurface activities, such as drilling for gas, is considered to be trespass, irrespective of the depth of these activities.¹⁷¹ Permit holders, therefore, have to engage in negotiations with each landowner to discuss compensation.¹⁷² Should a landowner refuse to grant access, then the permit holder can request the court to apply a statutory provision on compulsory purchase of access rights. In the Infrastructure Act 2015, however, new rules were introduced to facilitate exploration and production of shale gas in the United Kingdom. One of the elements of the Act is to extend the permit holder's right of use of deep

¹⁶⁴ Section 2 above.

¹⁶⁵ Decree on Licenses under the Nature Conservation Act 1998 (*Besluit vergunningen Natuurbeschermingswet 1998*), art 2(k).

¹⁶⁶ Balesteros (n 80) 13. For England and Wales. Separate legislation exists in Scotland and Northern Ireland.

¹⁶⁷ *ibid* 13-16.

¹⁶⁸ On the basis of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011.

¹⁶⁹ Department for Communities and Local Government, *Planning Practice Guidance for Onshore Oil and Gas* (2013)

<https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224238/Planning_practice_guidance_for_onshore_oil_and_gas.pdf> accessed 23 February 2015.

¹⁷⁰ Balesteros (n 80) 10.

¹⁷¹ *Star Energy UK Onshore Ltd v Bocardo SA* [2010] UKSC 35.

¹⁷² The Bocardo case made it clear that such compensation is just a token award of damages, not a percentage of the revenue generated by the permit holder.

level land enabling them to use land below 300m for petroleum exploration and extraction purposes, thus effectively diminishing landowners' rights to keep energy companies from their lands.¹⁷³

In England, local politicians have announced they will have a close and critical look at all fracking initiatives.¹⁷⁴ It is expected that local planning consents will become a major battleground for shale gas operations.¹⁷⁵ One London Borough Council, for instance, is reported to seek to impose a blanket ban on fracking across its area.¹⁷⁶ It is not just through law that resistance against shale gas exploration emerges. In the summer of 2013, Balcombe, West Sussex, saw weeks of protests. Thousands of people blocked roads and tried to prevent the shale gas company Cuadrilla from moving in, which led to clashes with a large police force. Dozens of people were arrested, including a local MP.¹⁷⁷ A few months later, Cuadrilla announced it would drop the plans to use this site because of seismic risks.¹⁷⁸ Reducing the rights of landowners in order to facilitate access to lands by energy companies, as was done through the Infrastructure Act 2015, may just add fuel to the fire that is burning at the local level.

The above analysis of local government interventions in three countries shows that local government uses its regulatory powers to protect the local environment. These powers can be very far-reaching, even rendering the use of a production permit entirely impossible. Should, for instance, a local zoning plan prohibit mining activities at a certain location, or prohibit the issuing of a construction licence to mining constructions on that location, then no mining can take place there, even after the competent authority for the mining operations granted all necessary permits. The comparative analysis also shows that higher levels of government intervened by taking away local regulatory powers and/or by limiting the rights of landowners. The question arises whether such regulatory interventions do justice to genuine environmental concerns at the local level. It is now broadly acknowledged that the local level has an important role to play in protecting the environment, as a consequence of the idea, reflected in the principle of subsidiarity, that matters are best handled as close as possible to those affected by the respective policies. At the international level, the Local Agenda 21 programme strengthens this view in the domain of the environmental policy. In the next section, I will propose a more responsible decision-making framework at the higher level, with the aim to do justice to national energy security concerns as well as local environmental concerns, without fully removing local authority to govern.

¹⁷³ Infrastructure Act 2015, s 43-38.

¹⁷⁴ Anonymous, 'Local Politicians Question Feasibility of Shale Gas in the UK' (Natural Gas Europe, 29 August 2013) <<http://www.naturalgaseurope.com/local-politicians-question-feasibility-of-shale-gas-in-the-uk>> accessed 23 February 2015.

¹⁷⁵ Doug Bryden, James Nierinck and Romola Parish, 'UK Shale Gas: Mapping the Current Regulation and Legal Landscape' (2014) 1 *Env Liability* 28, 35.

¹⁷⁶ Nigel Howorth, James Shepherd and Michael Coxall, 'Consenting UK Shale Gas Projects: Risks for Investors' (2013/14) *Practical Law* 3.

¹⁷⁷ See the dedicated Wikipedia page on the protests <http://en.wikipedia.org/wiki/Balcombe_drilling_protest> accessed 23 February 2015. Increasingly, in the UK, criminal and civil proceedings against the protesters are being considered, see Lucy Finchett-Maddock, 'Responding to the Private Regulation of Dissent: Climate Change Action, Popular Justice and the Right to Protest' (2013) 25 *JEL* 293.

¹⁷⁸ Fiona Harvey, 'Cuadrilla Scraps Plan to Frack at Balcombe site' *The Guardian* (London, 23 January 2014) <<http://www.theguardian.com/environment/2014/jan/23/fracking-balcombe-site-cuadrilla>> accessed 23 February 2015.

5. Towards a reconciliation of energy security and local environment concerns

As was just shown with examples from the three countries included in this study, central governments, concerned with energy security, have legislated in order to have the regulatory tools to intervene in local decision-making, when needed, to ensure that hydraulic fracturing goes ahead. At the same time, local governments and local communities pursue different legal pathways to block or at least hinder shale gas operations as much as they can. The Pennsylvania case laid bare that higher government interventions, aimed at overruling local decision-making may infringe on the constitutional right to a clean environment and the public trust doctrine, also laid down in the constitution, according to which governments have to protect the environment for present and future generations. In the Netherlands, instruments to overrule local decision-making in the field of environmental protection and spatial planning are in place, but have not been applied yet. Should national authorities override rules set by decentralized authorities, it is likely to be argued that this is unconstitutional, not just because of the alleged infringement of the right to a healthy environment (somewhat similar to Pennsylvania, laid down in the constitution in the form of a basic duty for the government),¹⁷⁹ but also because of the principle of decentralized governance and the principle of subsidiarity that form the basis of the Dutch public governance system.¹⁸⁰ Parliament will scrutinize any attempt by the Cabinet to overrule local rules and regulations as this will be considered to undermine future collaborations with local authorities on which the central government in almost every policy field depends for the execution of their policies. In a previous attempt to impose national decision-making upon an unwilling municipality (the selection of a location for an onshore carbon capture and storage demonstration project), huge public uprising occurred, ultimately leading to the abandonment of the project.¹⁸¹ In the United Kingdom, local authorities remain in possession of their powers under planning law, but the rights of local landowners have been substantially reduced by the Infrastructure Act 2015. Vehement local protests, including clashes with the police, seem to have had a negative impact on public opinion on fracking,¹⁸² but did not stop the central government from supporting shale gas exploration and production.

It is clear that the clash of different perspectives on hydraulic fracturing, the clash of local versus national interests, has to be addressed in order to avoid endless legal battles and possible violent public uprising. I will now present some elements of a policy aimed at reconciliation rather than at conflict: a

¹⁷⁹ Positioned in Chapter 1 of the Netherlands Constitution on 'Fundamental Rights', Article 21 reads: 'It shall be the concern of the authorities to keep the country habitable and to protect and improve the environment.'

¹⁸⁰ Netherlands Constitution (*Grondwet*), art 124. It remains to be seen whether such reasoning is going to be successful, as the Netherlands does not have constitutional courts, nor the possibility to have legislative acts of the national legislature tested against the constitution, as Article 120 states: 'The constitutionality of Acts of Parliament and treaties shall not be reviewed by the courts.' See further: Alkema (n 153) 333.

¹⁸¹ In fact, the whole plan of having CCS in the Netherlands has been abandoned as a consequence of the unrest ignited by this first attempt. See in detail CFJ Feenstra, T Mikunda, S Brunsting, *What Happened in Barendrecht? Case study on the planned onshore carbon dioxide storage in Barendrecht, the Netherlands* (ECN 2010) <<http://www.globalccsinstitute.com/publications/what-happened-barendrecht>> accessed 23 February 2015; Suzanne Brunsting, Marjolein de Best-Waldhober, CFJ Feenstra, Tom Mikunda, 'Stakeholder Participation Practices and Onshore CCS: Lessons from the Dutch CCS Case Barendrecht' (2011) 4 *Energy Procedia* 6376.

¹⁸² Sarah O'Hara, Mathew Humphrey, Rusi Jaspal, Brigitte Nerlich and Will Knight, *Public Perception of Shale Gas Extraction in the UK: The Impact of the Balcombe Protests in July-August 2013* (University of Nottingham 2013).

more responsible decision-making at the higher level, with the aim to do justice to national energy security concerns as well as local environmental concerns, without fully removing local authority to govern.

Protection of the local environment has to be key in decision-making. As far as the EU Member States are concerned, central government intervention in the pursuit of granting access to and development of energy resources in compliance with the European Energy Charter and the Energy Charter Treaty, has to be consistent with the environmental standards laid down in the various EU environmental Directives and Regulations that apply to the extraction of shale gas. The latter is not contrary to the international energy law requirements, as both documents recognize the need to apply environmental standards and procedural safeguards, such as the precautionary principle and the duty to carry out an EIA.¹⁸³ This certainly reduces the environmental impacts and puts a foundation of minimum requirements under any decision-making process on shale gas in Europe.

Reliable and effective environmental laws form the basis of meaningful participation as local governments and local communities know that they can rely on environmental protection measures being imposed on energy companies. It is important, therefore, that the regulatory gaps that were identified in existing EU environmental law, are closed, not through the soft law instrument of the Recommendation, but through binding amendments to the relevant Directives and Regulations.¹⁸⁴ Serious involvement of local government in decision-making is the second element of a policy aimed at achieving reconciliation between local environmental interests and national energy security interests. Local government should be able to govern the local environment pursuant to the principle of subsidiarity and/or constitutional provisions, and perhaps even have the duty to do so. Dernbach and others conclude from the court decision in the Pennsylvania shale gas case: ‘municipalities have responsibilities that they may not have recognized or fully appreciated before the decision’.¹⁸⁵ This probably is true for other countries where there exists a constitutional obligation to protect the environment. The abovementioned Article 21 of the Dutch constitution, for instance, is aimed at all levels of government, including the local level.

The third element focuses on the involvement of local communities: normal application of the procedural rights laid down in the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters should be pursued.¹⁸⁶ Together with the EU’s undisputable environmental *acquis*, this Convention forms the basis for meaningful collaborative decision-making on the environment. Although defensible on the basis of Article 23 of the Energy Charter Treaty, applying legal instruments aimed at overruling local rulemaking and at denying participation rights, not just infringes fundamental rights. Overruling local communities may have a severe political backlash as well. The conclusions from an assessment report of the debacle concerning

¹⁸³ As discussed in section 3 above.

¹⁸⁴ See section 3 above.

¹⁸⁵ Dernbach (n 141) 11.

¹⁸⁶ Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus 28 June 1998, (1999) 38 ILM 527.

the carbon capture and storage demonstration project in the Netherlands mentioned above, are indicative of what is needed:

The most important lesson learned from the [CCS] project is that it is important to create mutual trust between stakeholders and commitment to each other and to the project. This can be done by including all stakeholders in the project process at an early stage and communicating about the project and its process to the community. During this process the demands, needs, values and interests of the different stakeholders should be defined, discussed and integrated into the project design. The project process should be open and transparent to the participants, the community and other stakeholders.¹⁸⁷

The International Energy Agency (IEA) gives similar advice to decision-makers when considering shale gas. The IEA states that numerous hurdles need to be overcome, especially social and environmental concerns associated with the extraction of unconventional gas.¹⁸⁸ The IEA 'underlines that full transparency, measuring and monitoring of environmental impacts and engagement with local communities are critical to addressing public concerns.'¹⁸⁹

6. Conclusion

This article discussed how local governments, in three different countries, challenge higher levels of government's decision making that enables hydraulic fracturing, and it explores how these higher levels of government should respond. I have shown that in those countries where at the local level, authorities have regulatory powers in the field of zoning and the environment, these powers indeed can and are used to limit or ban hydraulic fracturing. This is particularly true for the United States, the United Kingdom and the Netherlands, three countries that were used as examples in this article. In these countries, however, higher levels of government have put legislation in place taking away or overruling local regulatory powers when these are used to target oil and gas production.

The above assessment of the role of local governments in the debate on high volume hydraulic fracturing shows that the local level plays an important role. Simply ignoring or legislating local governments and local communities out of the picture will be counterproductive, as the local level has legal and political cards to play out, and, constitutionally, perhaps even has to play out these legal cards to better protect the environment for present and future generations. It seems, therefore, that local government and local communities determine the success of unconventional gas development and should be taken seriously by central governments that plan to support hydraulic fracturing as part of a wider energy security policy. Such a policy should, therefore, include the setting and application of effective environmental protection standards, the involvement of local government, and a meaningful participation of local communities, allowing for any kind of outcome, including the outcome of a moratorium or ban. Strangely enough, the Commission Recommendation 2014/70/EU does not refer at all to the role of local communities, nor to public participation or access to justice for individuals and

¹⁸⁷ Feenstra (n 181) 6.

¹⁸⁸ IEA, *Golden Rules for a Golden Age of Gas. World Energy Outlook Special Report on Unconventional Gas* (OECD/IEA 2012) 9.

¹⁸⁹ *ibid* 10.

NGOs, thus sadly overlooking the Aarhus Convention which has to be considered as a foundational piece of environmental law in Europe. Hopefully, the upcoming assessment of this Recommendation¹⁹⁰ will draw lessons from the experiences in the United States,¹⁹¹ and pay duly attention to such important procedural issues, which may then perhaps end up in a new EU regulatory framework for hydraulic fracturing.

Acknowledgements

I am grateful to Liz Fisher and the two anonymous reviewers for their helpful comments and suggestions.

¹⁹⁰ Ibid n 106

¹⁹¹ See in this vein Joanna Glowacki and Christoph Henkel, 'Hydraulic Fracturing in the European Union: Leveraging the US Experience in Shale Gas Exploration and Production' (2014) 24 *Indiana Intl and Comp L Rev* 1.