1 *Introduction*

Shale Gas, Energy Security and Comparative Public Policy

1.1 The Eastern European Shale Gas Puzzle

Dan Yergin, the energy historian, once called hydraulic fracturing – or 'fracking' – 'the most important, and the biggest, energy innovation of this century' (New York Times 2013).[1] At least for the United States, this statement holds quite some value. Starting from low production levels in the early years of the twenty-first century, unconventional gas became 'the new conventional' (Trammel 2015) within less than a decade. Soaring domestic gas production from the Permian, Eagle Ford, Barnett, Marcellus and Haynesville shale 'plays' set the country on a firm path towards 'energy independence'. The USA is set to be a net exporter of natural gas this side of 2020 (EIA 2017a). The country now enjoys a significant economic boon, substantially lower carbon emissions (thanks to gas crowding out much dirtier coal) and a national security premium – all of which gives America an 'energy edge' (Blackwill and O'Sullivan 2014).

Unsurprisingly, shale gas has therefore been described as a 'game changer' (Medlock 2009) in global energy, and hydraulic fracturing as a technology that will 'rock the world' (Jaffe 2010). The American 'shale revolution' (Financial Times 2015b) is seen as a role model for import-dependent nations wishing to improve their supply portfolio through domestically available reserves. Globalizing gas markets, in turn, will experience a boost thanks to additional supply. Shale might therefore also fundamentally change the geopolitics of natural gas. Indeed, once the hydraulic fracturing method had matured in the United States, its country of origin, debates emerged over whether the technology might 'go global'. Canada started to produce shale gas, as

[1] Hydraulic fracturing is an extraction technique in which deep rock formations are fractured through high-pressure injection of a 'fracking fluid' and proppants to release the hydrocarbons therein. Coupled with horizontal drilling, fracking is used to exploit unconventional hydrocarbon reserves.

did China and Argentina. Others could follow: according to a widely cited Energy Information Agency (EIA) study, shale reserves are available across the globe (EIA/ARI 2013).

The US shale gas story was observed particularly carefully in Europe. The EU's lopsided import structure has long been an issue of concern: as a bloc, the EU imports some 37 per cent of its gas from Russia (Eurostat 2016). While there exists a longstanding – and, indeed, mostly frictionless – energy relationship between Europe and Russia, dating back to the Soviet Union and the Cold War, the EU's high import dependence on one supplier became a liability in the context of the Ukrainian–Russian gas crises of 2006 and 2009. In the winter of 2009, a complete Russian cut-off left countries in Eastern and South Eastern Europe without gas supplies and tuned import dependence into a security issue in both the Eastern European region and the EU as a whole. What's more, in the wake of the 2008 financial crisis and the resulting economic slope, European industry would clearly benefit from a stimulus similar to the one the US economy had seen thanks to shale.

And yet, despite China and Argentina aspiring to follow in America's footsteps, fracking technology seems to have problems leaving North America, which so far makes the USA and Canada the world's only significant production centres of shale gas (EIA 2015a, 2017b). Particularly in Europe, the technology finds it hard to take hold. Shale gas policies vary significantly across Europe, with some countries pushing ahead and others rejecting fracking altogether. While England and Poland remain committed to their developing shale gas reserves, France, the Netherlands, Scotland, Germany and Bulgaria have enacted bans or de facto moratoria on unconventional gas production. More strikingly, shale gas policies diverge significantly even in Central Eastern Europe (CEE), a region holding promising reserves. CEE countries are mostly dependent on one single supplier – Russia – and against the backdrop of the region's more recent history, energy policy tends to be cast in hard security terms. Yet, Bulgaria has banned shale gas exploration and production (E&P); Poland remains firmly committed to fostering it despite its drawbacks; and exploration in Romania has stalled as attention has shifted to offshore exploration.

This policy divergence is even more puzzling as all these countries share a common regulatory past in Communism, whose legacies are still visible in national energy governance, and in regulatory regimes more generally. Many Eastern European nations also have a historical

track record in oil, gas or coal production, as well as in gold and copper mining. In other words, extractive industries are not new to them, and there exists a regulatory apparatus designed to govern hydrocarbon production. What's more, all countries in the region have benefited from the US Unconventional Gas Technical Engagement Program, a policy initiative established under Hillary Clinton's term as Secretary of State. Initially termed the 'Shale Gas Initiative', its aim was to foster the global diffusion of hydraulic fracturing, both to improve the energy security of US allies and to underpin American technology leadership in unconventional gas (Sakmar 2011). Further, as members of the EU, Eastern European countries are subject to an identical supranational regulatory environment in natural gas. EU environmental legislation and three sets of comprehensive 'Energy Packages' define the broader framework in which national energy policy choices happen. Gas market patterns are very similar across the region, too. Incumbent long-term contracts (LTCs) still tend to form the basis of gas trade with key suppliers such as Russia, and the prevalent oil-price peg – in some instances, even outright state price regulation – is only slowly giving way to more competitive pricing arrangements. Finally, national income in all countries in the region remains below the EU average. Put differently, all Eastern European nations have an incentive to foster domestic industry, jobs and tax income by way of nurturing nascent industries such as unconventional energy.

So, what makes some Eastern European countries embrace fracking and others reject it? Standard explanations for a Western European context can by and large be dismissed in the case of CEE. Green parties, for instance, are hardly part of the Eastern European shale conundrum. In none of the CEE member states were the Greens in government when pertinent decisions on fracking were taken, and because they were represented only in some countries' parliaments, their involvement in the political deliberations on energy and shale gas policy has remained limited. Moreover, while environmental movements exist, they tend to be less organized and less powerful compared to Western European member states (Fagan and Carmin 2011). To be sure, as will be discussed later, environmental concerns do play a prominent role in shaping public debates surrounding shale gas, even in Eastern Europe – including the much-debated impact that fracking fluids could have on groundwater safety and habitat – but this does not necessarily translate into well-organized interests on the national level. Party orientation does

not seem to make a difference, either. In Poland, it was Donald Tusk's centrist government that pushed shale; in Bulgaria, it was the conservative Boyko Borisov; and in Romania, it was Viktor Ponta, a Socialist. Despite clear commitment from the political leadership, it was only Poland that ended up passing a pro-shale law, whereas Bulgaria eventually banned fracking and Romania remained in a legal halfway house. In short, the explanation for the Eastern European shale gas puzzle needs to lie elsewhere.

As this book will show, it is the distinct way governments interact with private and social actors, and how these interactions are structured through institutional settings and processes, that makes the difference. An important additional factor is the existence of a convincing policy narrative (and whether it is 'taken up' by non-state actors). All three elements determine the degree to which key stakeholders eventually buy into and support shale gas policies as put forward by their governments. With this, the book argues that the causal factors lie in ideas, interests and institutions, rather than in normative motivations or party politics.

1.2 The Comparative Public Policy of Shale Gas

The CEE shale gas puzzle goes right to the heart of comparative public policy: why, despite similar conditions, do national governments end up taking different policy choices (Engeli and Rothmayr Allison 2014; Gupta 2012; Howlett, Ramesh and Perl 2009; Schmitt 2013)? When answering this question, this book not only takes a deep dive into CEE energy policies, but does so from an analytically distinct angle. More to the point, in order to disentangle the complexities characterizing the comparative public policy of Eastern European shale gas, this study builds on the concept of policy regimes. In the broadest sense, policy regimes consist of a power arrangement, a policy paradigm and an organizational arrangement (Wilson 2000) existing around a given policy issue. The power arrangement refers to political and socio-economic actors, while the policy paradigm frames the problem, and hence also its potential solutions. The organizational arrangement is about institutions and processes in policy formulation and implementation. With this, policy regimes consist of a 'set of ideas, interests, and institutions that structures governmental activity in a particular issue area' (McGuinn 2006).

To be sure, and as we will lay out in more detail in Chapter 3, policy regimes are conceptually heterogeneous. In order to carve out the main analytical argument, the book will therefore primarily rely on the approach taken by May et al. in some of their pertinent recent works (Jochim and May 2010; May and Jochim 2013; May, Jochim and Sapotichne 2011). When disentangling ideas, interests and institutions as the 'governing arrangements for addressing policy problems' (May and Jochim 2013, 429), focus is placed on investigating the role played by domestic (incumbent) actors, the (regulatory) framework they act in and the ideational drivers guiding national policy discourse and action. More to the point, the book suggests that it is the strength of the policy regime that makes the difference and explains divergent national shale gas policy choices. Regimes that align pivotal actors as part of the power arrangement, that do so under a shared vision (the policy paradigm) and that engage key stakeholders in participatory organizational arrangements are more likely to create 'buy-in' opportunities and lend legitimacy to policy goals and processes. Put differently, Eastern European governments were successful in implementing their shale policy agendas in countries where strong policy regimes were in place. Where policy regimes were weak, by contrast, policy agendas failed.

It is important to note that this analysis is particularly interested in the *output* of the policy process; that is, the legal and regulatory frameworks enabling or blocking shale gas development. It is less interested in its *outcome* (notably, whether an unconventional gas industry is about to scale up, or the volumes of natural gas eventually produced) or its *effect* (that is, how policies as adopted might reshape subsequent policy processes). This is for both conceptual and empirical reasons. Conceptually, the material outcomes of a given policy are by and large a question of design (and non-design) (Howlett 2009; Howlett and Mukherjee 2014). A policy's effect is highly contingent not only on the 'rationality' of the policy process but also on external factors that often are outside governmental control. An example here is the international pricing environment, which, in the energy sector, strongly influences investment decisions, independently from domestic regulatory contexts. As a corollary, the question of whether shale gas policies are 'optimal' in terms of achieving a desired end is also not the focus of this study. 'Feed-forward' policy effects, in turn, may become obvious only after some time, are often indirect and may have

unintended effects (Jordan and Matt 2014; Schneider and Ingram 2009). Debates about shale in Europe started less than a decade ago; compare that to the twenty-five years it took the unconventional gas sector in the USA to scale up and mature. Moreover, pertinent policies in Poland, Bulgaria and Romania were adopted early in the 2010s; arguably, this was too short a period to allow consistent policy feedback loops to materialize.

Empirically, shale gas exploration in Eastern Europe has by and large been put on hold since 2015, when Chevron, the US energy major, left Romania, marking the end of an exodus of foreign companies that had flocked into the region about half a decade earlier. In other words, in terms of actual production, there simply is not much going on. Reasons lie in so far disappointing geology, adverse policy environments in reserve-holding countries (as discussed later) and, notably, a depressed international market environment. With gas markets going soft (see Chapter 2), Eastern European shale would arguably face an uphill battle even in a more favourable domestic context: if prices are not right, and costs are too high, exploration does not happen. In turn, different price signals, advances in technology and a learning curve from emerging shale industries closer to home (such as in parts of the UK, going forward) might brighten the prospects of unconventional gas in Eastern Europe once more. This implies that a research focus on the policy outcome would be ill advised (as would be writing off commercial shale production in Poland and elsewhere – even if it eventually comes to fruition at a smaller scale than some governments had hoped for). Production levels are a moving target, and are contingent on many factors, including changing external market environments. What matters, instead, is whether pertinent domestic frameworks are in place, or not – the policy *output*. In short, the study object needs to be the national-level policies defining the conditions under which shale E&P may potentially happen, and the contestation around them.

With this, the comparative public policy of shale gas is about the choice of the regulatory frameworks governing shale, and how they are set in place. These frameworks may be favourable to shale development, for instance by way of putting in place incentives to foster E&P, or at least by levelling the playing field. Poland's 2014 Act on a Special Hydrocarbon Tax, for instance, regulates shale gas licensing and taxation, and exempts exploration from tax payments until 2020. Legal frameworks may also be hostile to shale, such as in Bulgaria, where

fracking has been banned by an Act of Parliament since 2012. They may even reflect non-choices, such as in the case of Romania, where no decision was taken on fracking, and an initial ban expired without being renewed. As this book will detail, the choice (or non-choice) of shale gas frameworks is a function of the policy regime surrounding unconventional hydrocarbons and the fracking technology. In other words, it is the specific national setting, defined by actor involvement (interests), policy narrative (ideas) and the underpinning procedures (institutions), which determines whether societies take one choice or the other, or none at all.

As a corollary, investigating shale gas is also about the comparative public policy of creating a 'social licence' for fracking.[2] Originating from the literature on environmental protection, the concept of a social licence to operate (SLO) became prominent in works on mining and the extractive industries. In essence, a social licence 'governs the extent to which a corporation is constrained to meet societal expectations and avoid activities that societies (or influential elements within them) deem unacceptable, whether or not those expectations are embodied in law' (Gunningham, Kagan and Thornton 2004, 307). Prno and Slocombe (2012) suggest that a social licence can be considered to exist when extractive operations are met with approval and broad acceptance within a society. It has therefore been likened to a social contract (Giurco et al. 2014).[3] Hydraulic fracturing is not only an extractive technique, it is also highly contested, due to its potential impact on the environment. It can therefore be argued that fracking requires such a social contract to be operated. More fundamentally, it is the creation of pertinent legal frameworks that warrants societal support. For such legal frameworks, a social licence was evidently generated in some countries – the ones embracing the fracking technology – while

[2] I owe this aspect of my argument to the participants of the World Bank Institute Learning Symposium on 'Governance of Unconventional Gas: Exploring How to Deliver Transparent Benefits in Non-OECD Countries', Washington DC, 2–3 June 2014, organized by Philip Andrews-Speed. See also the resulting special issue of *OGEL* on 'The Governance of Unconventional Gas Development Outside the United States of America' (Andrews-Speed 2014).

[3] Despite an emerging literature on the SLO, the concept remains in its infancy, and it is only recently that it has been applied to shale gas (House 2013; Smith and Richards 2015). The literature so far primarily focuses on company-level activities aimed at meeting social and environmental obligations within communities (Owen and Kemp 2013).

in others it was not. As this book argues, policy regimes are key in this context, as they determine whether a proposed (shale) policy is considered legitimate among key stakeholders, whether processes are trusted and whether the stated policy goal and its implementation are credible (Thomson and Boutilier 2011).

1.3 Why Study Shale Gas (in Eastern Europe)?

Shale gas has attracted significant scholarly attention. Because of the highly politicized nature of natural gas, the bulk of the works on shale tends to centre on national and international security aspects, and the implications of a changing natural gas landscape. Shale gas has been subject to investigations in geopolitics (Blackwill and O'Sullivan 2014; Jong, Auping and Govers 2014; Kaplan 2012; Kim and Blank 2014; Kuhn and Umbach 2011; Umbach 2013), national security (Medlock, Jaffe and Hartley 2011) and geoeconomics (Blackwill and Harris 2016; Bros 2012; Haug 2012). These works stand in the tradition of thinking about energy as a means or end of grand strategy, and add to a large set of literature on the nexus of energy, war and peace (Colgan 2013; Kalicki and Goldwyn 2005; Klare 2001, 2009; Shaffer 2009). Reflecting realist or neo-realist approaches to international politics, they hardly open the backbox of (national) energy policy-making, and treat shale gas as an asset in the global competition for influence and supremacy.

The international security lens also dominates works on Eastern European natural gas. Reflecting the fact that energy security features prominently on policy agendas in the region, analyses tend to focus on Russian gas import dependence and energy security concerns (see also Chapter 2). Natural gas is discussed in the context of Russian imperialism (Baev 2008; Orban 2008), Europe's supply challenge (Aalto 2007; Bilgin 2009; Correlje and van der Linde 2006; Finon and Locatelli 2008; Youngs 2009) and pipeline geopolitics (Bahgat 2003; Johnson and Derrick 2012; Stulberg 2012). Many of these works implicitly or explicitly also explore what could be done to counter Russian dominance in CEE gas markets, e.g. by diversifying supply through indigenous sources such as shale. Few studies go beyond the over-dominant security discourse (for an exception, see Kuzemko et al. 2012). Building on the diversification agenda, works also seek to explore whether the US shale gas story could be replicated in a European context and

beyond (Boersma and Johnson 2012; Grafton, Cronshaw and Moore 2017; LaBelle and Goldthau 2014a; Nülle 2015).

Leaving the confines of international security, a growing literature starts to address shale gas as a policy phenomenon. Investigations focus on public perceptions of and attitudes towards shale (Alcorn, Rupp and Graham 2017; Boudet et al. 2014; Kriesky et al. 2013; Wolske, Hoffman and Strickland 2013), including risk perception (Graham, Rupp and Schenk 2015; Schafft, Borlu and Glenna 2013); the public discourse and media coverage (Bomberg 2015; Jaspal and Nerlich 2014; Jaspal, Nerlich and Lemańcyzk 2014; Jaspal, Turner and Nerlich 2014); social representation in unconventional energy development (Evensen, Clarke and Stedman 2014; Upham et al. 2015); and the ethics of shale gas policies (Evensen 2016; de Melo-Martín, Hays and Finkel 2014). Many works also investigate policy frames surrounding shale gas and fracking, both for the USA (Lachapelle, Montpetit and Gauvin 2014) and Europe (Cotton, Rattle and Van Alstine 2014; Goldthau 2016c; Metze 2017; Williams et al. 2015), and from a comparative transatlantic perspective (Bomberg 2017). Unpacking the detailed policy dynamics of shale, scholars address unconventional gas in the context of multilayered governance arrangements, notably US federalism (Arnold and Holahan 2014; Burger 2013; Davis and Hoffer 2012; Lin 2014); investigate the regulatory politics of fracking (Davis 2012, 2014; Spence 2013; Warner and Shapiro 2013) and the role of advocacy coalitions (Weible et al. 2016); examine the role of local communities (Neville and Weinthal 2016; Smith and Ferguson 2013); and explore the management of potential risks (Jacquet 2014; North et al. 2014).

Although this brief review remains far from being comprehensive, several patterns emerge from the existing literature.[4] First, there are only a few book-length treatises on shale gas. Available works tend to address the general-interest audience, offering a broad overview of the chances and pitfalls of the industry (Graves 2012), telling the first-level story of the pioneering wildcat 'frackers' and how their energy innovation turned the energy world upside down (Gold 2014; Zuckerman 2013) or adopting an activist stance against the technology (Bamberger and Oswald 2015). A limited number of studies offers more scholarly analyses. While rich in empirical detail, focus here tends to be placed on

[4] For more comprehensive reviews, see Neville et al. (2017) and Sovacool (2014a).

the state- and community-level impact of shale (Gullion 2015; Wilber 2012).

Second, analysis of fracking and shale to date almost exclusively centres on the US experience. This somewhat lopsided focus obviously is a function of America representing the 'motherland' of fracking, and a vast data set being available after some twenty years of consecutive technology deployment across the country. Europe, by contrast, is strongly underrepresented still. Leaving aside the geopolitics literature on shale, available studies primarily cover the UK and Western Europe. The few exceptions include Van de Graaf et al. (2017), who adopt a comparative perspective on European shale policy, and Reins (2017), who offers an EU-level regulatory perspective on new technologies such as fracking. Eastern Europe is almost entirely overlooked in the literature on shale gas policy, with some select works investigating Poland, Bulgaria and Ukraine (Georgiev 2016; Goldthau and LaBelle 2016; Jaspal, Nerlich and Lemańcyzk 2014; LaBelle 2016, 2017; LaBelle and Goldthau 2014b; Lis and Stankiewicz 2016). Although the region features prominently in debates on energy security and Russian geopolitics, surprisingly few scholars go to the trouble of opening the black box and unpacking national-level shale gas politics.

Finally, the comparative public policy literature on energy seems to have a blind spot when it comes to fossil fuel energy technology. To be sure, public policy research abounds on oil, gas, nuclear and renewables, and it would be beyond the scope of this proposal to give comprehensive credit to the available literature on US or EU energy policy, their impact on the share of fossil or renewable fuels in the energy mix and the politics shaping national energy priorities.[5] Recent volumes exploring the technology–public policy nexus, including Grubler and Wilson's (2013) work on energy technology innovation, Ulli-Beer's (2013) study on the governance of energy technology change and Murphy's (2007) investigation into sustainable technology governance, reveal a strong bias towards low-carbon transition. (A clear exception is Smil's (2010) work on energy transitions, whose focus on fossil fuel technology can be explained by the historical perspective it adopts.) What's more, it is particularly the literature building on the various strands of the regime concept – the central analytical

[5] For an assessment of fifteen years of energy scholarship, see Sovacool (2014b).