



Global controversies in local settings: anti-fracking activism in the era of Web 2.0

Agata Stasik

To cite this article: Agata Stasik (2017): Global controversies in local settings: anti-fracking activism in the era of Web 2.0, Journal of Risk Research, DOI: [10.1080/13669877.2017.1313759](https://doi.org/10.1080/13669877.2017.1313759)

To link to this article: <http://dx.doi.org/10.1080/13669877.2017.1313759>



Published online: 13 Apr 2017.



Submit your article to this journal [↗](#)



Article views: 45



View related articles [↗](#)



View Crossmark data [↗](#)

Global controversies in local settings: anti-fracking activism in the era of Web 2.0

Agata Stasik*

Department of International Management, Koźmiński University, Warszawa, Poland

(Received 25 November 2014; final version received 25 March 2017)

In this era of global challenges in energy policy, the importance of siting of facilities connected to development of energy system is greater than ever. At the same time, spreading of these facilities has often been controversial in surrounding communities. This article advances the debate on this phenomenon by focusing on an aspect of siting controversies that has become a game changer in recent years but has received remarkably little attention: the role of Web 2.0 in siting conflicts. To explore the impact of Web 2.0, the paper uses a case study approach, examining the influence of access to the Internet in two siting conflicts associated with shale gas prospecting in Poland in the period from 2012 to 2014. The possibilities that Web 2.0 offers to residents and other local actors in siting conflicts – access to knowledge, the ability to reframe the local debate using international resources, and mobilization of a network of support by sharing their version of the story – influence the dynamics of risk communication during siting controversies.

Keywords: siting controversy; Web 2.0; fracking; shale gas; risk communication

1. Introduction

Developing energy systems almost inevitably results in conflicts over the siting of relevant large-scale infrastructure (Lidskog 2005, 190). These conflicts occur in the case of energy technologies as varied as nuclear, coal-based, and renewable (e.g. Baxter, Morzaria, and Hirsch 2013; Elam and Sundqvist 2009; Van der Horst 2007); that is, in the location of, among others, nuclear waste disposal sites, coal mines, oil pipelines, wind power plants, or hydroelectric dams. In last years, conflicts have emerged worldwide in reaction to plans of shale gas prospecting and production (Buttny 2015; Mazur 2014; Molinatti and Simonneau 2015; Williams et al. 2015). Advocates present shale gas as an opportunity for widespread access to cheap and clean energy which sustains economic growth (e.g. Jacoby, O’Sullivan, and Paltsev 2012). However, potential social resistance threatens the industry’s development (Control Risks Group 2012; Hu and Xu 2013, 24). Opposition stems often from the conviction that shale gas extraction, especially the process of hydraulic fracturing called often ‘fracking,’ bears unnecessary and unacceptable risk to the environment.

What seems to distinguish the dispute surrounding shale gas development from the past siting controversies is the proliferation of the discussion on ‘fracking controversy’ on the Internet. That is, the online content distribution directed the

*Email: astasik@kozminski.edu.pl

spreading of global debates on the long-term impact of shale gas exploration in an unprecedented manner (Hopke 2015; Hopke and Simis 2015; Mazur 2014; Vasi et al. 2015). Due to the proliferation of information, participants discussed the issues in political cabinets and media salons as well as at town hall meetings and family dinners, often taking inspiration from online distributed materials. That makes the case of ‘fracking’ controversy especially relevant to the theoretical discussion on the influence of Web 2.0 on siting conflicts. However, literature on siting controversies has not yet fully acknowledged the crucial factors in the dynamics of risk communication in local settings: that is, the role of widespread Internet access and the accompanying mode of web-content creation, often described as Web 2.0.

The so-called Web 2.0 offers the users previously unknown possibilities of modifying, translating, discussing, and sharing ‘one’s own version of the story’ with global audiences (Castells 2012; Fuchs 2014; O’Reilly 2005; Sykora 2011); consider the potential offered by such platforms as YouTube, Facebook, Twitter, or Wikipedia. New circumstances have dramatically increased the number of people able to actively participate in the debate on risks and benefits of the new mining technologies. This vast virtual agora is open to everyone with basic technology literacy and access to the necessary infrastructure. This change has been unfolding in the last decade, and its impact is not limited to the shale gas-related technologies discussed in the paper; rather, in the predictable future, it remains a crucial factor in the battles around technology acceptance, risk acceptance, and public participation in technology governance.

To fill the gap in scholarship, this paper offers an analysis based on qualitative case studies conducted in Poland. The study focuses on local residents’ actions and their own accounts of Web 2.0 usage to gain knowledge about the impact of new mining technologies, establish networks, and mobilize support. The author analyzes their actions against the background of Polish public policy toward shale gas development and the attitude of the general public in Poland. While examining the use of the Internet as part of local struggles for meaning and power (Boholm and Löfstedt 2004), the article stresses that Web 2.0 may be interpreted not as a placeless, disembodied space, but rather as further layer of local realities.

The paper consists of five parts, including this introduction. In the following section, the core concepts of siting controversies and Web 2.0 are examined. This section also provides background on the global controversy over ‘fracking’ and shale gas development in Poland. The third section explains the rationale for the case selection and the approach employed to data collection and analysis. The next section examines the courses of action and the consequences of Internet usage strategies in two selected local cases. The final section offers concluding discussion regarding the role of opportunities opened by the development of Web 2.0 for the dynamics of risk communication during siting conflicts.

2. Fracking controversies in the era of Web 2.0

2.1. Siting controversies: struggle for knowledge and legitimacy

Siting controversies often emerge as an unwanted byproduct of large-scale infrastructure projects. These conflicts may be interpreted as an expression of the tension between the necessity to meet the needs of complex modern societies – provide energy and infrastructure for transportation and communication – and the right of local communities to decide their own fate (Edelstein 2004; Lidskog 2005).

While controversial facilities provide useful services for society, they may decrease the quality of life in neighboring communities, change the character of the region, pose unwanted risks, and threaten the environment. According to the common NIMBY (Not-In-My-Backyard) interpretation of siting conflicts, the unwillingness to accept the fact that a price for development must be paid is read as local residents' proof of selfishness. That is, everyone wants to use energy; however, no one is willing to live in the neighborhood of a power plant (Dear 1992; for discussion, see, e.g. Sjöberg and Drottz-Sjöberg 2001; Wolsink 2007). However, what challenges this interpretation is the view that a given facility may not be necessary for a 'good society' to work. In fact, the controversy often moves toward a struggle of particular political visions. Protestors from local communities may not limit their goals to protecting the local environment and quality of life but may also raise issues valid for the general public and question the direction of a chosen policy (Owens 2004). For example, a community may prefer renewable energy sources to fossil fuels, opposing government policy. Hence, siting controversies feature the presence of 'competing interpretations as to the utility of the project, its legitimacy and impacts' (Boholm and Löfstedt 2004, xiii; Corvellec 2001). Thus, siting conflicts, like other controversies around technological options, have the potential to develop into broader, intertwined disputes about the deserved sociotechnological future and the model of democracy and participation (Callon, Lascoumes, and Barthe 2009, 107–152; Klein 2014, 293–336).

Moreover, there is disagreement regarding the possible side effects, existing risks, and the institutions' ability to prevent or control them. Access to reliable sources of knowledge plays a crucial role alongside the very ability to negotiate which sources of knowledge should be treated as reliable in the public debate (Jasanoff 2005). This access is especially important in the case of new technologies' implementation, when the issue of uncertainty poses a great challenge to regulators and decision-makers (Van Asselt and Vos 2008).

Furthermore, behind many siting conflicts, one may easily find contradicting claims concerning the activities of public institutions. That is, when the skeptical public questions the ability of responsible agencies to effectively impose necessary safety measures, technology's proponents ensure that regulations will be strictly obeyed. When choosing what to believe, both sides act as 'naïve sociologists' (Wynne 1998). Even though trust is often presented as a beneficial and socially desirable attitude, there is no reason to assume that a 'trust-assuming approach' is universally more rational than distrust. Local protesters often apply this skepticism to private companies. When companies' representatives present themselves as 'good neighbors,' some residents fear that corporations will not hesitate to use their advantage to privatize benefits and externalize costs over local communities. Thus, siting conflicts are not limited to 'technological issues' but almost inevitably evoke a debate about the actual and the desirable relations between the state, society, and the private sector. Such debates have recently been amplified with the proliferation of Web 2.0 solutions.

2.2. *Web 2.0: between wide participation and quality control*

The term Web 2.0 describes the mode of communication on the Internet that enables users to create, upload, share, and modify content (Betsch and Sachse 2012). The term introduced Tim O'Reilly in his influential blog post (2005). Today, more than

ten years later, Web 2.0 is no longer regarded as a new phenomenon but rather has become a default mode of communication for growing numbers of users around the world.

The concept of Web 2.0 embraces blog platforms, video clips, social networking services, and an endless number of Wiki pages formed by communities of hobbyists and professionals. Due to these tools, the Internet of today offers opportunities to collaboratively develop content on a scale unknown in previous regimes of knowledge creation. That is, there is a shared space where everyone may participate but there is no ‘central authority controlling access or information’ (Lo and Parham 2010, 18). Consequently, the roles of multiple publics interested in content creation increase relatively to the role of ‘experts’ in previous regimes of knowledge creation. These new possibilities of knowledge creation influence almost all fields of social interaction (cf. McNutt 2014, 49; Thomas and Sheth 2011). How does this fundamental change manifest in the field of risk communication?

There are two possible approaches to this new situation: caution and appreciation. The caution approach dominates, e.g. health-related matters. *Vaccine* devoted the entire special issue (2012, vol. 30) to the role of the Internet in vaccination decisions, since anti-vaccination campaigns pose a threat to public health. Researchers argue that a growing number of people seeking health advice online have equal access to both high-quality information and misinformation, making it harder for professionals to ensure the supremacy of expert knowledge over lay knowledge (Betsch and Sachse 2012, 3725; Betsch and Wicker 2012). Therefore, experts should redouble efforts to provide high-quality information to combat the Internet’s power to distort traditional knowledge regimes.

Jemielniak (2014) argues instead for an open, non-exclusive mode of knowledge co-production resulting from a merger of new technologies and institutionalized rules; e.g. the high-quality information provided by Wiki projects. In this approach, it is possible to treat the possibilities offered by Web 2.0 as a more appropriate tool for facing contemporary challenges of knowledge production and for transgressing its obsolete, exclusive and expert-based, model (cf. Ravetz 2004).

Both discussed approaches evaluate the costs and benefits of Web 2.0 by the quality and relevance of the spread of information, overlooking the social dynamic created by the very fact of broad participation. Social movement researchers have focused on this aspect, showing how activists used websites to transmit their messages (Castells 2012; Earl and Kimport 2011; Landzelius 2006; Petray 2011) and thus how the use of technology allowed ‘those on the political periphery [to] easily access the political core’ (Moe 2010; Petray 2011, 924). Health care specialists emphasize that Web 2.0 is unpredictable and hard to control; however, this very fact makes it potentially valuable for groups on the margins. Despite the growing awareness that Internet communication is also easily monitored by state agencies and corporate actors (Fuches et al. 2012), the Internet still allows the coordination of actions, development of networks, and contestation of dominant narratives. It may lead to the tactic that Petray (2011) called ‘Protest 2.0,’ used most effectively alongside traditional forms of activism.

2.3. *Shale gas controversy: global discussion*

Shale gas is unconventional gas trapped in shale formations of low permeability that was long considered too expensive to extract (Hu and Xu 2013; Vasi et al. 2015).

Due to the application of new drilling techniques at the beginning of the twenty-first century, shale gas exploration on industrial scale has become economically viable (IEA 2012). This enabled the USA to increase natural gas production despite the decline of conventional resources, which influenced the significant decline of gas prices (Rahm 2011, 2976). Its impact on energy prices and geopolitical relations made many perceive shale gas to be the ‘game changer’ in the energy market (Barteau and Kota 2014; PWC 2013).

Despite fast large-scale induction, the environmental impact of shale gas production remains the subject of ongoing debate even in the USA (Buttny 2015; Mazur 2014), which led to, e.g. a state-level moratorium in New York and local bans in more than 250 cities in the Marcellus Shale region (Vasi et al. 2015, 942). Opponents of shale gas exploration claim that its impact on the environment and human health is not fully understood and call for the use of precautionary logic. Activists use the Internet to make information on environmental risks easily accessible.

With the help of Web 2.0, one source in particular has reached wide audiences, including local communities, and greatly influenced the debate: the documentary *Gasland* by Josh Fox from 2010 (Mazur 2014, 8–9). The potential of movies has already been recognized in the context of risk perception by Ferreira (2004), however, the Internet has simplified the global transfer and the usage of cultural artifacts. Analyzing the history of Google queries, ‘The Global Anti-Fracking Movement’ report states that *Gasland* made shale gas exploration controversial ‘almost single-handedly’ (Control Risks Group 2012, 2). Based on a large data-set, Vasi and colleagues (2015, 939) proved that screenings of *Gasland* in local communities in the USA correlated in the short term with an increase in anti-fracking events.

Others studied the impact of Twitter discussions about fracking controversy (Hopke 2015; Hopke and Simis 2015). Hence, Hopke (2015, 2) argues that Twitter is a new tool of social movements which offers a ‘performative, identity-building space.’ For instance, Global Frackdown movement used Twitter to build international solidarity around local concerns. However, Hopke’s study does not allow us to understand how social media changes risk communication on the very site of local struggles, in local communities. In this context, a question appears, examined closely in part four: How the inhabitants of a small Polish village could overnight become ‘anti-fracking activist’?

2.4. Shale gas controversy: polish public and Web 2.0

In contrast to many other European countries, the Polish Government’s attitude toward shale gas development has been very supportive from the beginning (Jaspal, Nerlich, and Lemańczyk 2014; Johnson and Boersma 2013; Lis and Stankiewicz 2016; Wagner 2014). State authorities claimed that the technology was safe and that shale gas exploration was the state’s strategic goal. First drills started in 2010 but the public debate began only with the release of the Energy Information Administration report on worldwide shale gas deposits (EIA April 2011), in which Poland’s were estimated to be the largest in Europe.

According to data published by the Polish Ministry of Environment, gas and oil companies performed 71 prospecting drills until January 2016. Most intensive work happened in 2012, with 24 drills, dropping to only 4 in 2015. This dynamic stems from the influence of low oil prices on the strategies of global gas and oil companies and from the disappointing results of local geological surveys.

Press discourse concerning shale gas in Poland focused on potential economic and geopolitical benefits regarding energy security and independence from foreign suppliers (Jaspal, Nerlich, and Lemańczyk 2014; Johnson and Boersma 2013). At the same time, local actors and civil society groups proposed a frame noting environmental risk but the media marginalized it as resulting from ignorance (Lis and Stankiewicz 2016). Nevertheless, shale gas prospecting led to a few protests among local communities in Poland, although in the minority of locations.

Public opinion surveys testify to the popular support of the attitude presented by the political and media elite. According to the last available public opinion poll from December 2013, 80% of Poles supported and 10% opposed the exploration and the possible production of shale gas (Stasik and Stankiewicz 2014).¹ Support for exploitation in the immediate vicinity was still relatively high (66%). Asked an open question about prospective profits, respondents first noted energy independence (37%) and, second, lower energy prices (31%). As for the risks, the largest group mentioned the safety of the natural environment (28%). However, more than half of the respondents claimed that either they had no knowledge of possible risks (38%) or that there was no risk at all (15%).

In the context of the impact of the Internet-mediated information, the important fact is that the survey also explored the sources of information, which the respondents used to make up their minds about shale gas development. The largest group of respondents noted television as their most important source of knowledge (70%), with the Internet second (44%), followed by the press (27%), the radio (17%), and other sources, such as public meetings or conversations with friends, family members, and colleagues. However, the Internet had more importance than television for the younger respondents (18–34 years old). Respondents with higher education most extensively diversified their sources of information, using the Internet (62%) almost as often as television (70%). Most importantly, the group of respondents that claimed to seek knowledge regarding shale gas on their own (14%) most often selected the Internet as their source of information (82%). That is, the general public preferred television to the Internet but siting area residents inclined to the latter, especially if they sought knowledge individually.

To summarize part two, the most crucial factors of siting controversies are knowledge access, debate reframing, legitimization of resistance, and the potential to mobilize allies. Completely separately, many other recent studies recognize the rising relevance of Web 2.0 to public perception of shale gas development and, therefore, foreground online communication as part of the broad public sphere. However, their focus on the Internet remains detached from the reflection on the crucial factors of siting controversies, which leaves the following question unanswered: How has the local resident's usage of the possibilities of Web 2.0 changed the dynamics of siting controversies?

3. Research approach, method, and case selection

To answer this question, this study adopts an approach based on qualitative analysis of the investor–local community interactions, offering comparative case studies based on the reconstruction of the courses of action in two locations in different regions of Poland. The case study approach enables a deeply descriptive–interpretative account of the processes occurring without (significant) interference from the researcher (Blatter 2008). As Flick noted (2002, 62; cf. Merkens 2004, 165),

there is a number of stages when a researcher makes decisions about the selection of material: during data collection, interpretation, and presentation of results. Prior to the field research, the two cases below were identified as extreme cases (Flyvbjerg 2006), basing on the systematic review of local press conducted between January and May 2012. Unlike the majority of investor–local community interactions, conflicts in these sites were popular subject in local and even international media.

The first investigated village is in northern Poland, relatively close to the main city in the region. To ensure the confidentiality guaranteed to the informants during the short-field research conducted by the author (week-long stay in August 2012), the true name of the village is undisclosed and coded as Holiday Resort (HR). The code was chosen because it has a long tradition as a place of leisure and tourism. The study started with the gathering of primary data from the information issued in local press and the Internet platform concerned with local affairs (residents run information portals and websites, also with open discussion forums). The official minutes from the discussion held during the meetings of municipality's local council were also collected and coded using computer-assisted qualitative data analysis software (CAQDAS), in order to identify the range of attitudes presented by the council's members. These materials allowed to reconstruct the main facts and actors and served as basis for the creation of the scenarios of semi-structured on-site interviews conducted at the next stage.

The interview phase began with meeting with the local journalist who had covered the shale gas story and, later, with the village mayor. Afterwards, the interviewer reached participants (four residents active during the events) with the use of snowball sampling technique. The researcher conducted additional interviews with the appropriate representative of the regional government (Voivodship) and an expert in risk communication engaged in the process. The interviews had two main stages. In the first one, interviewer asked research participants to present their own version of the local events connected to the planned shale gas development. If answers were insufficient, the second stage ensued, during which the researcher asked additional questions regarding interviewees' motivations, strategies, and forms of cooperation they engaged in as well as the stages of gathering knowledge about different aspects of shale gas extraction. The interviews lasted from 45 min to 1 h and 45 min. Unfortunately, most interviewees did not agree to be recorded as they were in the middle of a conflict and they perceived the situation to be sensitive, which made further analysis is based on the extensive notes taken during the interviews. During the interviews, participants decided to share many valuable materials: copies of official letters sent by residents to different public and non-public institutions to clarify the environmental and legal aspects of shale gas exploration as well as video and audio recording of the information meeting. The researcher transcribed and analyzed the latter with the use of CAQDAS. In this paper, the case is an example of grassroots, local-scale, de-escalating conflict about a siting issue, in which local activists used online resources to build their knowledge and, mainly during the initial phase, mobilize support.

The second case represents the best-known and the longest protest in Poland provoked by plans of shale gas prospecting; that is, the Occupy Chevron! action in the eastern Polish municipality of Grabowiec, in the village of Żurawlow.² The municipality lies in an agricultural region with fertile soil, where most of the residents and protesters are farmers. The local protest in the form of a blockade lasted from June 2013 to July 2014 and its participants called it 'the longest occupational protest in

Poland.’ The reconstruction of events presented below is based primarily on rich data made available on the Internet by different actors engaged in the issue (photographs, blog posts, copies of official documents, video streaming). These materials are essential, as the analysis concerns the activists’ use of Web 2.0 tools. Additionally, in April 2015, a member of the research team conducted two semi-structured interviews on site with the most active protest participants and two interviews with activists from the environmental NGOs who supported the protesters. Interview scenarios followed the pattern from the first presented case. Interviews lasted from 1 h and 15 min to 4 h. The researcher transcribed and coded all interviews in CAQDAS. Finally, the author visited the site for short participant observation during an open event organized by the activist to celebrate the anniversary of the victory over the gas and oil company. The case stands as an example of grassroots, escalating conflict, in which activists succeeded to achieve nation-wide and international visibility through intensive use of the Internet.

In both cases, data collection has not focused exclusively on the role of the Internet during siting conflicts but rather was guided by the broader question of knowledge production in shale gas conflicts. The diversity of gathered materials enable the researcher to build an account of events confirmed by data triangulation (Flick 2004, 178), which serves as a starting point for the presentation of the actors’ interpretations based on their own statements, both public and given during research interviews.

The results firstly present a brief reconstruction of events by focusing on how the residents’ usage of Internet-mediated channels influenced the dynamics of risk communication. Secondly, special attention goes to different strategies employed by protesters to use Web 2.0 to strengthen their position in local conflicts by building knowledge, legitimacy and networks.

The adopted research approach differs from majority of the studies on online activism in the anti-fracking movement, because it focuses mostly on the analysis of online interactions. Since events and interactions in the physical space are the starting point of the analysis, it follows Internet usage as part of a broader network of interactions at the given physical site. Thus, instead of focusing on the content of endless websites, pages, photographs, and films accessible on the Internet, the article examines how leaders and concerned members of the local public decided to adopt certain strategies of Internet usage and ignore other options; hence, Web-related activity is investigated only in the context of needs and actions taken in the very ‘material’ place.

4. Results

4.1. Shale gas in polish neighborhood

In the Holiday Resort, as in many Polish municipalities, the ‘story of fracking’ began for residents with seismic research, an initial phase of exploration conducted with the use of specialized heavy trucks. According to the interviewees and local media reports, despite the fact that an agreement on land use must be signed before seismic research can occur, some property owners did not feel adequately informed about the actual goal of the investigation. As a result, a number of inhabitants who considered themselves vulnerable because they were situated close to the possible area of further work did not feel that their interests were protected. In such

circumstances, they decided to seek information on their own, fearing that ‘their lifetime property was in danger’ [activist 1]:

After the seismic research, we started to be more interested in the topic ... There was no information, so we had to dig for it on our own on the Internet.³ [activist 2, research interview]

To influence the course of action, a group of inhabitants organized a series of meetings for people from the neighborhood. Those who took the lead at this stage of the process had both equipment and knowledge required to download information from the Internet to present to other participants; the above-mentioned documentary *Gasland* was part of the kit. The materials were focused primarily on potentially negative aspects of the investment, neglected by the investor and omitted by the dominant discourse in Poland:

We don’t want to say that gas is evil and that we have to block the routes ... We want everyone to form his or her own opinion. They accused us of presenting only nasty aspects of fracking, but the investor takes care of presenting benefits! In one of the meetings we even presented movies defending shale gas, but people only took them as expensive propaganda [activist 2, research interview]

In response to these actions and to ease the growing tension, the village mayor invited representatives of the companies responsible for the seismic research and for possible future shale gas exploitation to take part in an open meeting with the residents. The companies’ representatives presented information about the geology of shale formation and basic facts about the process of exploration and production. The meeting participants probably varied with regard to knowledge on the issue; however, at least some of the most active participants in previous gatherings found the generic information to be useless due to their earlier research:

As for the information you presented ... I feel that we lost almost two hours. Because we already had this information! We found that by ourselves! We didn’t hear anything new from you. Were you unable to prepare yourself for this meeting?

You took our time, but did not present anything new ... I can find everything you said on the Internet. Maybe not everyone has the Internet access, but for me everything was already known. [comments during the public meeting]

The preceding questions showed that the information provided did not meet the expectations of the meeting participants. Instead of accepting that they had been adequately informed, people demanded that the company’s representatives take a position toward internationally discussed controversial aspects of the technological process in regards to the highly specific drill in their neighborhood. The public asked detailed questions not about the technology in general but about the details of local actions, e.g. about the source and treatment of water used during the process and the chemicals used for hydraulic fracturing.

After this public meeting, the conflict escalated for some time. A group of inhabitants organized a short roadblock during renovation work that they suspected could be the first stage of shale gas extraction. However, their attitude evolved with time and activists decided to first use possible legal measures to stop or – if impossible – supervise the extraction. They presented a list of detailed questions and remarks in official letters to the Regional Environmental Protection Agency, local authorities, and the investor. To prepare these documents, they had to broaden their knowledge

and expand their networks of allies – working on the assumption that ‘If you want to take part in the public life, you have to learn a lot about technical details’ [activist 1]. At this stage, the Internet served as a tool to establish relations. Contacts with activists or experts trained in relevant academic disciplines (such as environmental protection or hydrogeology) helped select knowledge claims from the Internet that may have been considered valid by other stakeholders. As a resident who happened to have professional knowledge of environmental protection stated: ‘They didn’t know anything a year ago, and now they have learned. On the Web, you may find anything and you will find what you want.’ [resident 1]

Local activists also created a Facebook page followed by both locals and others also interested in stopping shale gas development in Poland, on which they shared materials concerning risks connected to shale gas production, progress of the anti-fracking movement and legislation, and reported local events.

Finally, the licensed company performed the exploratory drill for shale gas in the middle of 2014 – two years after the events described in this article. However, no further work ensued.

In the case of the Żurawłów protest, as in the situation described above, local residents’ unrest about the project started after seismic research conducted in 2011. Local press and national television reported residents’ resistance to the project. Concerned residents organized a series of discussions and contacted environmental organizations as well as other social movements. The local informational meeting held in January 2012 with the participation of company representatives and other stakeholders, like representatives of geological administration, did not de-escalate the conflict. The company’s top representatives accepted neither the presence of environmental activists and anti-fracking experts invited by the residents from beyond the municipality nor the presence of television reporters during what they intended to be a local meeting. Their choice to leave the meeting evoked further mistrust among residents.

At the initial stage, local activists managed to stop the works for some time, claiming that there is the lack of complete documentation. However, when the company denied these charges and decided to continue the work, a group of residents began occupying the area to stop them, again claiming that the company had not met all the legal requirements. During a yearlong protest, an important part of everyday actions was self-education on the wide range of issues connected to fracking, often mediated through Web 2.0 resources: from water contamination to unethical conduct by global gas and oil corporations to land-grabbing debates. Unlike activists in the previous case, the protesters and their supporters in Żurawłów were not only recipients but also produced their own rich documentation of their daily protests available on Web 2.0 platforms:

- the protesters were accompanied by the documentary director Lech Kowalski, who came to the site with another project in mind but finally decided to make a documentary about the anti-fracking protest. The film ‘Drill, baby, drill,’ available in English on the Internet, made the Żurawłów story one of the landmarks of dispersed anti-fracking action around the world.
- with support from international activists, the protestors created a blog containing the history of the local conflict, demands, and a call for support and documentation; versions are available in English, French, and Spanish [<http://occupychevron.tumblr.com/>; last accessed: 01 October 2016].

- the protestors created a regularly updated Facebook page where they shared anti-fracking documents, posted updates on their current situation, and called for support.
- the protestors started a YouTube channel with a number of video materials and also materials concerning fracking posted by other users.
- the protestors circulated a petition urging the company to withdraw, disseminated through a specialized online platform of global range.

The protestors foregrounded the legal basis for their actions. In their account, the company did not possess all the required documents and, thus, had no right to proceed with work; the company denied these charges. Secondly, the protestors were concerned for the environment, on which their agricultural activity depends. Elements known from the global anti-fracking narrative, such as the threat of drinking water pollution and fear of ‘greedy corporations,’ interwove with references to the local identity of farmers living in the area for generations, closely connected and dependent on nature, and with traditional Polish symbols (national flags and Catholic Mass celebrated in the fields). The very label ‘Occupy,’ with a clear reference to international, leftist social movements, worked in surprising harmony with the traditional identity manifested by the protestors.

With time, the local activists from Żurawłów started to cooperate with activists from other parts of Poland, interested in environmental issues and/or with anti-neoliberal agenda. They also obtained symbolic support and media coverage from abroad. Finally, after more than a year, the investor decided to withdraw from the site, which the activists presented as their success. However, it is difficult to assess whether the protest influenced this decision or was it solely an effect of the change in the strategy of the global company, disappointed with the results of geological investigations (Reed 2015).

4.2. Strategies of Web 2.0 usage: knowledge, legitimacy, networks

The residents’ access to the Internet significantly altered the course of action in the two villages and the dynamics of the relations between the investors and the representatives of the communities. The latter became both recipients and content-creators of Web 2.0 platforms, which enabled them to establish networks with helpful professionals and social movements.

HR residents used the Internet first to access knowledge ‘on their own terms’ and, thus, seize the opportunity to shape the debate on what should be considered a valid argument. Internet information appeared at the moment of uncertainty or ‘information deficit’; the residents did not know how the seismic research they observed might influence the future of their community and their individual well-being. While the investor seems to have operated under the assumption that it had been for him to decide the appropriate moment to share more detailed information with the local community, the residents proved him wrong by finding numerous resources easily accessible online whenever needed. The fact that not everyone in the village had the necessary skills and infrastructure to find information on their own only amplified the effect. In fact, Internet-savvy members of the community presented Web resources during traditional ‘village meetings,’ so that people living nearby had a chance to meet and discuss the possible consequences of industry development. These resources had a stronger effect on the process of capacity

building than in hypothetical situations when everyone accessed the information on their own with no need to share findings with people outside of the household. The Internet resources created a basis for a shared understanding of the problem among the participants as they watched and discussed them together.

The investor's lack of understanding of the consequences of the community's Internet usage was one of the reasons why the 'informational meetings' failed. The investors' representatives assumed that they should focus on general information, already basic for the active members of the community, who were also more likely to attend the meeting. Rooted in internationally debated concerns, the residents' expectations differed: they wanted to know the answers to precise questions concerning the work planned in their location. The residents referred to practices and controversies from foreign countries, such as an investigation conducted by the Environmental Protection Agency (EPA) in the USA. As a result, motivated by Internet findings, some participants challenged the framing of the meeting assumed by the companies' representatives on two levels. First, the participants disagreed with the companies' vision of technology as absolutely safe. Second, the participants rejected the 'educational and informational' goal of the meeting, focused on transmitting the most basic facts chosen by the experts as appropriate. Instead, the participants demanded answers to very specific questions that they perceived as necessary for proper risk evaluation.

In the next stage of the conflict, the most engaged activists continued to use the Internet as a learning tool. They did not stop on films and blog posts but also explored resources produced by experts from authoritative institutions, often omitted in the Polish public discourse. In effect, the investors' narrative that 'no reasonable person may find shale gas exploration risky in any way' collided with the activists' 'local knowledge,' rooted in a global expert debate rather than in the intimate knowledge of local conditions. This knowledge and access to global networks enabled the residents to resist shale development in a legitimate and rational manner; for instance, when formulating official complaints to the authorities.

At the same time, the leaders of the HR activists decided not to join regional or nation-wide anti-fracking movements and framed the issue as one that should be resolved between the local stakeholders. Consequently, they did not attempt to mobilize wider support through the Web – they limited their presence in social media to one Facebook page used primarily to share information from around the world. In summary, the activists from HR used the Web to obtain knowledge, challenge investor's frameworks, subvert the dominant discourse, bring global doubts to their local setting, and facilitate contacts both in the municipality and with external experts. Most of these actions would have been extremely costly or practically impossible without access to the Internet.

On the other hand, Żurawlów residents used the Internet not only as a source of knowledge or a network-facilitating tool but also as a device to make their story part of a global narrative about resistance to international gas and oil corporations. They documented and shared their activities in detail using blog posts and Facebook pages. Their strong virtual presence helped them gain relatively effective coverage from traditional media, which further enabled them to collect signatures of support for their protests. The activists achieved such success partly because they cooperated with people and groups more experienced in activism, such as the documentary director, Lech Kowalski.

In the case of Żurawłów, the protesters not only used the narrative proposed by the global anti-fracking movement, as envisaged in the film *Gasland*, but also decided to enrich it with their own experience. Furthermore, the international and Polish support proved extremely helpful in maintaining their protest until its successful end. Thus, the protesters from Żurawłów successfully employed a number of tools offered by Web 2.0 to present a compelling account of their actions to a broader audience.

5. Concluding discussion

Previous studies have focused on online communication as part of the broad public sphere, but not as a resource for residents in their local struggles. This study fills this gap by employing a case study approach and in-depth qualitative analysis. It sheds light on the impact of Web 2.0 on the dynamic of local conflicts over technology acceptance and infrastructure development by demonstrating how the proliferation of Web 2.0 creates new possibilities to increase local stakeholders' capacity for effective action. The tools offered by Web 2.0 are of vital importance to groups with limited resources. Those tools enable them to shape power relations, shift the boundary between lay and expert knowledge, and change the link between 'local' and 'global' in risk communication.

In the analyzed cases, widespread Internet usage allowed relatively disadvantaged groups to take part in decentralized knowledge production, which enabled them to form networks, gain support, and propose their own narratives (cf. Meraz and Papacharissi 2013). Internet access allows residents to seek information on their own at minimal cost and to formulate their concerns as legitimate, empowered by the reservations signaled by other groups from around the world. Thus, Web 2.0 is 'a game changer' in the dynamics of siting controversies and may be perceived as a challenge from the perspective of the technology's proponents. These factors were particularly important in Poland, where they allowed protesters to reach materials with narratives divergent from the dominant attitude presented by the national media.

This study finds that, from among all energy siting controversies, Web 2.0 has a particularly strong impact on the issues surrounding shale gas production. There are two main reasons for this. First, the online distribution of compelling anti-fracking narratives such as *Gasland*. Second, the access to authorized expert documents.

That is, the effect of Web 2.0 on local protest may be stronger if the issue under dispute receives a significant symbolic representation, coupled with a persuasive narration and call for action. However, local activists have now access not only to persuasive resources but also to expert knowledge. What further enables the fracking controversy to feed on the Internet is the lack of consensus between experts and regulatory agencies from around the world. Unlike in the vaccination controversy, Polish opponents of the dominant view did not need to reach resources produced outside of mainstream institutions. It was enough that they had access to the official resources from other European countries, where regulatory agencies and mass media focused more on the uncertainties than assumed profits of shale gas prospecting.

In other words, activists' widespread Internet usage rendered visible the fact that safety standards are products of particular political cultures and institutional settings (Jasanoff 1986, 2005). With the popularization of this insight from the field of risk studies, it is now much more difficult for the representatives of public institutions

and private corporations to present their risk assessment as a universal and final voice of science (cf. Latour 1998). This change has practical implications: local discussions can no longer proceed without reference to the global debate. That is, experts should not be surprised when a resident from a small village in the East of Poland demands that they take into account a recent scandal from Pennsylvania or the skepticism of German state agencies. With the rise of Web 2.0, local conflicts can now easily join international debates on unprecedented scale. In these circumstances, it is almost impossible to maintain the image of fracking technology as absolutely free of any uncertainty about long-time impacts of large-scale use. Upholding the view about its complete safety evokes further mistrust in those who need to be convinced and becomes counterproductive.

Local activists' knowledge stems from the international debate, which embraces risks resulting from both polluted water and government corruption. However, these global symbolic resources are not simply copied. In fact, local needs transform the facts and narratives produced globally. Thanks to low entry costs, activists are furthermore capable of enriching and shaping the global debate, as was the case of the Żurawłów protestors, who made their struggle into one of the landmarks of the 'global' movement. That is, activists have now more opportunities to gain global support than ever before.

The impact of widespread Internet access on siting conflicts does not end with shale gas-related technologies. Rather, in the predictable future, Web 2.0 will remain a crucial factor in the struggles over technology acceptance, risk acceptance, and public participation in technology governance. The study above informs a conclusion that the potential impact of globally accessible information is stronger when rooted in both a compelling narrative and diverse expert analyses from respectable institutions. As the former motivate people to engage with the problem, the latter enables them to participate in debates with the industry or the public institutions. Thus, access to these resources changes the dynamic of encounters between technology proponents and local residents: it arms potential opponents with new arguments. Nevertheless, Web 2.0 does not create protests on its own but only adds to a number of local factors, ranging from institutional setting through cultural resources to local traditions of resistance. That is, the Internet usage itself does not determine the course of action but is a potent tool for the protestors to include in future strategies in siting controversies.

Acknowledgments

The author is grateful to Marjolein van Asselt, Marijke Hermans and Mark Elam for their comments on an earlier draft and to Ekaterina Tarasova, Aleksandra Lis and Piotr Stankiewicz for further discussions. I am also grateful to the anonymous reviewers for helpful comments and suggestions and to Mikołaj Golubiewski for his invaluable assistance with final editing.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by the National Science Center [grant number DEC-2011/03/B/HS6/04032], [grant number DEC-2013/11/D/HS6/04715].

Notes

1. $N = 1002$, CATI, representative sample of Poles over 18, 6-10.12.13, conducted for the Polish Geological Institute.
2. I disclosed the municipality's name, because my analysis is based mainly on publicly available documentation posted voluntarily by the engaged activist.
3. All interviews and other presented materials were created in Polish and translated by the author of the article.

References

- Barteau, M., and S. Kota. 2014. *Shale Gas: A Game-changer for U.S. Manufacturing*. Ann Arbor: The University of Michigan.
- Baxter, J., R. Morzaria, and R. Hirsch. 2013. "A Case-control Study of Support/Opposition to Wind Turbines: Perceptions of Health Risk, Economic Benefits, and Community Conflict." *Energy Policy* 61: 931–943. doi:10.1016/j.enpol.2013.06.050.
- Betsch, C., and K. Sachse. 2012. "Dr. Jekyll or Mr. Hyde How the Internet Influences Vaccination Decisions." *Vaccine* 30: 3723–3726.
- Betsch, C., and S. Wicker. 2012. "E-Health Use, Vaccination Knowledge and Perception of Own Risk: Drivers of Vaccination Uptake in Medical Students." *Vaccine* 30: 1143–1148.
- Blatter, J. K. 2008. "Case Study." In *The Sage Encyclopedia of Qualitative Research Methods*, edited by L. M. Given, 68–71. Los Angeles, CA: Sage.
- Boholm, Å., and R. Löfstedt, eds. 2004. *Facility Siting, Risk, Power and Identity in Land Use Planning*. London: Earthscan.
- Buttny, R. 2015. "Contesting Hydrofracking during an Inter-Governmental Hearing: Accounting by Reworking or Challenging the Question." *Discourse&Communication* 9 (4): 423–440. doi:10.1177/1750481315576842.
- Callon, M., P. Lascoumes, and Y. Barthe. 2009. *Acting in an Uncertain World: An Essay on Technical Democracy*. Cambridge, MA: The MIT Press.
- Castells, M. 2012. *Networks of Outrage and Hope: Social Movements in the Internet Age*. Malden, MA: Polity Press.
- Control Risks Group. 2012. *The Global Anti-Fracking Movement. What It Wants, How It Operates and What's Next*. London: Control Risk.
- Corvellec, H. 2001. "Talks on Tracks: Debating Urban Infrastructure Projects." *Studies in Cultures, Organisations and Societies* 7: 25–53.
- Dear, M. 1992. "Understanding and Overcoming the NIMBY Syndrome." *Journal of the American Planning Association* 58 (3): 288–300. doi:10.1080/01944369208975808.
- Earl, J., and K. Kimport. 2011. *Digitally Enabled Social Change: Activism in the Internet Age*. Cambridge, MA: The MIT Press.
- Edelstein, M. R. 2004. "Sustainable Innovation and the Siting Dilemma: Thoughts on the Stigmatization of Projects and Proponents, Good and Bad." *Journal of Risk Research* 7 (2): 233–250. doi:10.1080/1366987042000158730.
- Elam, M., and G. Sundqvist. 2009. "The Swedish KBS Project: A Last Word in Nuclear Fuel Safety Prepares to Conquer the World?" *Journal of Risk Research* 12 (7–8): 969–988.
- Ferreira, C. 2004. "Risk, Transparency and Cover up: Media Narratives and Cultural Resonance." *Journal of Risk Research* 7 (2): 199–211. doi:10.1080/1366987042000171294.
- Flick, U. 2002. *An Introduction to Qualitative Research*. Thousand Oaks, CA: Sage.
- Flick, U. 2004. "Triangulation in Qualitative Research." In *A Companion to Qualitative Research*, edited by U. Flick, E. von Kardorff, and I. Steinke, 178–183. London: Sage.
- Flyvbjerg, B. 2006. "Five Misunderstandings about Case-study Research." *Qualitative Inquiry* 12 (2): 219–245.
- Fuches, Ch., K. Boersma, A. Albrechtslund, and M. Sandoval, eds. 2012. *Internet and Surveillance: The Challenges of Web 2.0 and Social Media*. London: Routledge.
- Fuchs, Ch. 2014. *Social Media: A Critical Introduction*. London: Sage.
- Hopke, J. E. 2015. "Hashtagging Politics: Transnational Anti-Fracking Movement Twitter Practices." *Social Media + Society* 1 (2): 1–12. doi:10.1177/2056305115605521.

- Hopke, J. E., and M. Simis. 2015. "Discourse Over a Contested Technology on Twitter: A Case Study of Hydraulic Fracturing." *Public Understanding of Science*: 1–16. doi:10.1177/0963662515607725.
- Hu, D., and S. Xu. 2013. "Opportunity, Challenges and Policy Choices for China on the Development of Shale Gas." *Energy Policy* 60: 21–26.
- IEA (International Energy Agency). 2012. *Golden Rules for a Golden Age of Gas. World Energy Outlook. Special Report on Unconventional Gas*. Paris: International Energy Agency.
- Jacoby, H. D., F. M. O'Sullivan, and S. Paltsev. 2012. "The Influence of Shale Gas on US Energy and Environmental Policy." *Economics of Energy and Environmental Policy* 1: 37–51.
- Jasanoff, S. 1986. *Risk Management and Political Culture*. New York: Russell Sage Foundation.
- Jasanoff, S. 2005. *Designs on Nature: Science and Democracy in Europe and the United States*. Princeton: Princeton University Press.
- Jaspal, R., B. Nerlich, and Sz. Lemańczyk. 2014. "Fracking in the Polish Press: Geopolitics and National Identity." *Energy Policy* 74 (November): 253–261. doi:10.1016/j.enpol.2014.09.007.
- Jemielniak, D. 2014. *Common Knowledge? An Ethnography of Wikipedia*. Stanford: Stanford University Press.
- Johnson, C., and T. Boersma. 2013. "Energy (in)Security in Poland the Case of Shale Gas." *Energy Policy* 53: 389–399. doi:10.1016/j.enpol.2012.10.068.
- Klein, Naomi. 2014. *This Changes Everything. Capitalism vs. the Climate*. New York: Simon&Schuster Paperbacks.
- Landzelius, K. 2006. "The Meta-native and the Militant Activist: Virtually Saving the Rainforest." In *Native on the Net: Indigenous and Diasporic Peoples in the Virtual Age*, edited by K. Landzelius, 112–131. New York: Routledge.
- Latour, B. 1998. "From the World of Science to the World of Research?" *Science* 280 (5361): 208–209.
- Lidskog, R. 2005. "Siting Conflicts – Democratic Perspectives and Political Implications." *Journal of Risk Research* 8 (3): 187–206. doi:10.1080/1366987042000175489.
- Lis, A., and P. Stankiewicz. 2016. "Framing Shale Gas for Policy Making in Poland." *Journal of Environmental Policy & Planning*: 53–71. doi:10.1080/1523908X.2016.1143355.
- Lo, B., and L. Parham. 2010. "The Impact of Web 2.0 on the Doctor-Patient Relationship." *Journal of Law, Medicine and Ethics* 38 (1): 17–26.
- Mazur, A. 2014. "How Did the Fracking Controversy Emerge in the Period 2010–2012?" *Public Understanding of Science* 25 (2): 207–222. doi:10.1177/0963662514545311.
- McNutt, K. 2014. "Public Engagement in the Web 2.0 Era." *Canadian Public Administration* 57 (1): 49–70.
- Meraz, S., and Z. Papacharissi. 2013. "Networked Gatekeeping and Networked Framing on #Egypt." *The International Journal of Press/Politics* 18 (2): 138–166.
- Merkens, H. 2004. "Selection Procedures, Sampling, Case Construction." In *A Companion to Qualitative Research*, edited by U. Flick, E. von Kardorff, and I. Steinke, 165–172. London: Sage.
- Moe, H. 2010. "Everyone a Pamphleteer? Reconsidering Comparisons of Mediated Public Participation in the Print Age and the Digital Era." *Media, Culture & Society* 32 (4): 691–700.
- Molinatti, G., and L. Simonneau. 2015. "A Socioenvironmental Shale Gas Controversy: Scientists' Public Communications, Social Responsibility and Collective versus Individual Positions." *Science Communication* 37 (2): 190–216. doi:10.1177/1075547014560827.
- O'Reilly, Tim. 2005, October 30. What is Web 2.0. O'Reilly Network. Accessed July 31, 2010. <http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html>
- Owens, S. 2004. "Siting, Sustainable Development and Social Priorities." *Journal of Risk Research* 7 (2): 101–114.
- Petray, T. L. 2011. "Protest 2.0: Online Interactions and Aboriginal Activists." *Media, Culture and Society* 33 (6): 923–940.
- PWC (PricewaterhouseCoopers) 2013. *Shale Energy: A Potential Game-changer. Implications for the US Transportation & Logistics Industry*. New York: PricewaterhouseCoopers.

- Rahm, D. 2011. "Regulating Hydraulic Fracturing in Shale Gas Plays: The Case of Texas." *Energy Policy* 39: 2974–2981.
- Ravetz, J. 2004. "The Post-Normal Science of Precaution." *Futures* 36 (3): 347–357. doi:10.1016/S0016-3287(03)00160-5.
- Reed, S. 2015. "Chevron to Abandon Shale Natural Gas Venture in Poland." *The New York Times*, January 30. Accessed May 5, 2015. <http://www.nytimes.com/2015/01/31/business/international/chevron-to-abandon-shale-venture-in-poland-a-setback-to-fracking-europe.html>
- Sjöberg, L., and B.-M. Drottz-Sjöberg. 2001. "Fairness, Risk and Risk Tolerance in the Siting of Nuclear Waste Repository." *Journal of Risk Research* 4 (1): 75–101.
- Stasik, A., and P. Stankiewicz. 2014. *Raport: poszukiwanie i wydobywanie gazu łupkowego w polsce – wiedza, opinie, oceny*. [Report: Exploration and Exploitation of Shale Gas in Poland – Knowledge and Opinions.] Warszawa: Państwowy Instytut Geologiczny. Accessed August 13, 2014. http://infolupki.pgi.gov.pl/sites/default/files/czytelnia_pliki/1/sondaz_pig_raport_gaz_lupkowy.pdf
- Sykora, M. 2011. "Web 2.0 Common Uses and Potential Applications an Interdisciplinary Study of Social Media with Case Studies of Applications and Some Methodology Improvements." *The International Journal of Interdisciplinary Social Science* 5 (10): 411–450.
- Thomas, Ch., and A. Sheth. 2011. "Web Wisdom: An Essay on How Web 2.0 and Semantic Web can Foster a Global Knowledge Society." *Computers in Human Behavior* 27 (4): 1285–1293.
- U.S. Energy Information Administration (EIA). 2011. *World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States*. Washington: U.S. Department of Energy.
- Van Asselt, M. B. A., and E. Vos. 2008. "Wrestling with Uncertain Risks: EU Regulation of GMOs and the Uncertainty Paradox." *Journal of Risk Research* 11 (1–2): 281–300. doi:10.1080/13669870801990806.
- Van der Horst, D. 2007. "NIMBY or Not? Exploring the Relevance of Location and the Politics of Voiced Opinions in Renewable Energy Siting Controversies." *Energy Policy* 35 (5): 2705–2714. doi:10.1016/j.enpol.2006.12.012.
- Vasi, I. B., E. T. Walker, J. S. Johnson, and H. Fen. 2015. "'No Fracking Way!' Documentary Film, Discursive Opportunity, and Local Opposition against Hydraulic Fracturing in the United States, 2010 to 2013." *American Sociological Review* 80 (5): 934–959. doi:10.1177/0003122415598534.
- Wagner, A. 2014. "Shale Gas: Energy Innovation in a (Non-)Knowledge Society: A Press Discourse Analysis." *Science and Public Policy* 42 (2): 273–286. doi: 10.1093/scipol/scu050
- Williams, L., P. Macnaghten, R. Davis, and S. Curtis. 2015. "Framing 'Fracking': Exploring Public Perceptions of Hydraulic Fracturing in the United Kingdom." *Public Understanding of Science* 26 (1): 89–104. doi:10.1177/0963662515595159.
- Wolsink, M. 2007. "Wind Power Implementation: The Nature of Public Attitudes: Equity and Fairness instead of 'Backyard Motives'." *Renewable and Sustainable Energy Reviews* 11 (6): 1188–1207. doi:10.1016/j.rser.2005.10.005.
- Wynne, B. 1998. "May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide." In *Risk, Environment and Modernity: Towards a New Ecology*, edited by S. Lash, B. Szerszynski, and B. Wynne, 44–83. London: Sage.