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## Energy Policy

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# Public opinion on energy development: The interplay of issue framing, top-of-mind associations, and political ideology



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## HIGHLIGHTS

- How an issue is presented (“framed”) influences how people perceive it.
- We applied this premise to oil/gas extraction via hydraulic fracturing (fracking).
- We examined two commonly used frames: *fracking* and *shale oil or gas development*.
- People viewed the former less favorably irrespective of political ideology.
- We discuss implications for communicating about energy development impacts.

## ARTICLE INFO

### Article history:

Received 17 October 2014

Received in revised form

20 January 2015

Accepted 21 February 2015

Available online 5 March 2015

### Keywords:

Energy development

Hydraulic fracturing

Framing

Risk communication

## ABSTRACT

In this article, we examine framing effects regarding unconventional oil and gas extraction using hydraulic fracturing (or fracking): an issue involving considerable controversy over potential impacts as well as terminology used to describe it. Specifically, we explore how two commonly used terms to describe this issue – *fracking* or *shale oil or gas development* – serve as issue frames and influence public opinion. Extending existing research, we suggest that these frames elicit different top-of-mind associations that reflect positive or negative connotations and resonate with people’s political ideology. These associations, in turn, help explain direct and indirect framing effects on support/opposition as well as whether these effects differ by political ideology. Results of a split-ballot, national U.S. survey ( $n=1000$ ) reveal that people are more supportive of the energy extraction process when it is referred to as *shale oil or gas development* versus *fracking*, and this relationship is mediated by greater perceptions of benefit versus risk. Political ideology did not moderate these effects. Further analysis suggests that these findings are partly explained by the tendency to associate *fracking* more with negative thoughts and impacts and *shale oil or gas development* more with positive thoughts and impacts. However, these associations also did not vary by political ideology. We discuss implications for communicating risk regarding energy development.

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## 1. Introduction

Are people more supportive of biofuels or ethanol? Are people more concerned about climate change or global warming? Advocates of contentious issues, as well as scholars studying those issues, have long recognized that (1) how an issue is framed in broader discourse potentially influences how people perceive it; (2) frames may resonate with people’s political ideology; and

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(3) frames may involve words or phrases that carry certain connotations (Cacciatore et al., 2012a; Schuldt et al., 2011). In this article, we investigate how the ways in which unconventional oil and gas extraction using hydraulic fracturing (also known as fracking) is described – as *fracking* and *shale oil or gas development* – may act as issue frames and influence public opinion. We view these phrases as frames because they are present within issue discourse, have come to represent the broader fossil fuel extraction process and help people make sense of an energy topic that has been the subject of considerable controversy over potential impacts and “a linguistic and political debate as controversial as what it defines” (Fahey, 2012).

In a broader sense, this article extends existing research on framing effects regarding contentious issues. Scholars have suggested that effects on support/opposition, risk perception, and other beliefs (see Cacciatore et al., 2012a; Schuldt et al., 2011) are manifestations of the content of issue frames becoming part of audience thoughts on that issue (i.e., audience frames) (Schuldt and Roh, 2014a). Our study, unlike past research, combines framing effects and mechanisms presumed to drive these effects, using unconventional oil and gas extraction as a case example. Specifically, we consider (1) how particular issue frames elicit different audience frames (top-of-mind associations; Boudet et al., 2014) and (2) how these associations, in turn, account for framing effects on audiences' issue opinions. We suggest that *fracking* and *shale oil and gas development*, as issue frames, elicit different top-of-mind associations that reflect positive or negative connotations and resonate with people's ideological dispositions. These associations, in turn, help explain direct and indirect framing effects on support/opposition as well as whether these effects differ by political ideology. We test these propositions using a split-ballot, nationally representative survey experiment in the United States, where unconventional energy extraction has emerged as a controversial issue. Our results have important implications for studying public opinion on – and communicating risk regarding-energy development.

### 1.1. Unconventional oil and gas extraction: background, impacts, and public opinion

Unconventional oil and natural gas reserves – those within rock formations like low-permeability sandstone, shale, and coal seams – are technologically and economically difficult to develop due to geological and other considerations (National Energy Technology Laboratory, 2013). Nonetheless, several factors have led to increased development,<sup>1</sup> including high energy prices, greater interest in domestically-produced fossil fuel energy, and advances in horizontal drilling and hydraulic fracturing technology (Wang and Krupnick, 2013). The latter involves pumping water, sand, and chemicals underground to fracture the rock and release oil and gas.

Unconventional energy extraction involves various potential impacts. Economic issues include job creation in local economies; increased income for private landowners who sign oil or gas

leases; and strains on public services due to increased demand from energy companies (Kay, 2011). There is also the effect on energy prices resulting from increased use of comparatively cheaper natural gas in manufacturing, power generation, and transportation as well as from potentially higher natural gas exports (United States Energy Information Administration, 2014). Moreover, environmental impacts involve land use disturbances from well drilling and operation (Entekin et al., 2011); contamination of ground and surface water via drilling, wastewater disposal, hydraulic fracturing, and other processes (Vengosh et al., 2013); and climate change implications associated with natural gas replacing coal for power generation and other uses (Newell and Raimi, 2014). Furthermore, health risks center on exposure to potentially toxic hydraulic fracturing chemicals (Colborn et al., 2011) and physical and psychological stress associated with living near industrial activity (Adgate et al., 2014). Finally, social impacts involve rapid population growth in communities, community conflict, and perceived changes in quality of life (Jacquet and Stedman, 2013, 2014; Jacquet, 2014).

Numerous public polls have been conducted on unconventional oil and gas extraction, with many asking about hydraulic fracturing or fracking specifically. National polls reveal varying familiarity with the issue and sharply-divided views (Clarke et al., 2013; Pew Center for the People and the Press, 2013). On the state and regional level, especially in areas with active or proposed development, people tend to be more familiar with it and aware of potential risks and benefits (Campbell, 2013). In addition, scholars have examined factors that are associated with these perceptions (Anderson and Theodori, 2009; Boudet et al., 2014; Brasier et al., 2011, 2013; Davis & Fisk, 2014; Theodori, 2009), drawing from studies of other contentious social issues (Besley, 2010; Gupta et al., 2012). Issue framing is one such factor.

### 1.2. Framing overview

Framing has conceptual roots across disciplines. Sociologists have studied how “interpretive packages” are “constructed, tailored, and communicated by a variety of competing social actors” (Druckman and Bolsen, 2011, p. 2; Borah, 2011). Psychologists have examined the strategic selection, emphasis, or omission of information about an issue and subsequent effects on audience perceptions. Within the latter area, there are two broad types. In equivalency framing, information that conveys the same underlying message is presented in different ways, eliciting different responses. For example, people tend to choose riskier options when losses are highlighted but become risk averse when gains are emphasized (Tversky and Kahneman, 1981). In contrast, emphasis framing involves information with different underlying messages. These messages focus on different aspects of the same issue, such as problem definitions, causes, and/or solutions (Entman, 1989). Framing effects occur when individuals use these frames “when constructing meaning, processing information, and making evaluations or decisions” (Nisbet et al., 2013, p. 2; Chong and Druckman, 2007). Emphasis framing may also involve using terms with certain connotations that bring “attention to certain aspects of the issue at the expense of others” (Schuldt et al., 2011, p. 116). In essence, it conveys an issue's central idea, and actors compete to convey desired frames and influence public opinion (Pralle and Boscarino, 2011).

Emphasis framing effects have been studied across a host of contentious issues, including energy development (Cacciatore et al., 2012a) and climate change (Nisbet et al., 2013). For example, although the terms *global warming* and *climate change* are often treated as synonymous within public discourse, research suggests that they may elicit different audience responses (Akerlof and Maibach, 2011; Schuldt et al., 2011). In a recent survey of

<sup>1</sup> Over the next two decades, USEIA (2014) projects a sizable increase in domestic oil and natural gas production from unconventional sources. Shale gas, in particular, is expected to drive much of the 56% increase in domestic natural gas production from 2012 to 2040. In this scenario, shale gas will account for 53% of domestic production by 2040, up from 40% in 2012. Moreover, unconventional sources such as shale now account for 35% of domestic crude oil production as of 2012 and is expected to reach 50% by 2019 (United States Energy Information Administration, 2014). During this time, total U.S. oil production is expected to reach 9.6 million barrels/day in 2019, up from 6.5 million barrels/day in 2012. However, the magnitude of these increases – and their effects – could vary considerably based on resource recovery, available technology, production costs, policy, consumption patterns, and other factors.

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