EARNING COMMUNITY ACCEPTANCE

A literature review of citizen engagement in energy infrastructure planning

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ABSTRACT

This paper provides general recommendations for energy infrastructure proponents implementing citizen engagement during planning. Twenty-three documents, each containing a citizen engagement case study/studies in energy infrastructure planning, were analysed and compared. Together the documents comprise a variety of energy infrastructure types (wind farms, carbon capture storage, etc.). In comparing documents across types, the review helped to identify strategies that improve citizen engagement. Content from each document was summarized into main points, and each main point was classified into one of four broad topics that emerged: communication, mechanisms, conditions and planning process. Communication was about how to effectively communicate project details to citizens, with main points suggesting that communication strategies express local rather than global benefits to the community. Main points also mentioned mechanisms - specific measures proponents can implement to improve the process. For instance, impartial experts can be utilized to build trust and fairness in the community. Conditions was a topic mostly about addressing opposition networks that form during planning. Lastly, with respect to the planning process in general, the value of collaboration and an early start to the process was explored.

INTRODUCTION

According to a 2015 annual report produced by the United States Environmental Protection Agency, the electricity sector that year was the greatest contributor of greenhouse gas emissions in the United States ("Sources of," 2017). Therefore, a transition from unsustainable to sustainable energy systems is imperative for mitigating climate change. In response to this needed transition, energy systems that do not emit carbon like wind or solar energy have been implemented around the world. Newer technologies have been devised to solve the intermittency of sustainable energy, and their integration into the system may soon be commonplace. Clearly, the technical aspects of integrating these technologies requires deep consideration, but implementation also involves citizen engagement or public participation. Citizen engagement is how communities are consulted during the planning phase of infrastructure development. The nature of this consultation will directly influence community acceptance – one of the three dimensions of social acceptance of renewable energy technologies (Wüstenhagen, Wolsink & Bürer, 2007).

Prior to the 1960s, the planning model functioned on the premise that planners are experts, and that little to no consultation with the community was necessary (Filion, 1999). Today, citizen engagement is considered an important determinant of community acceptance and project proponents are required to implement community consultation in places like North America and Europe. However, a lot of the instruction is largely discretionary and while some proponents take the mandate seriously, others elect to implement a perfunctory process. Not only will superficial consultation preclude community acceptance, but even those with genuine intentions are vulnerable to opposition if they execute weak strategy. How then should proponents of energy infrastructure development engage citizens during planning?

This paper will address this question through a literature review of studies that analyse the citizen engagement process of energy infrastructure development. General patterns existing across energy infrastructure types were identified and analysed with the idea that these findings would provide future proponents

with useful information about the current state of citizen engagement in energy infrastructure planning, successful and failed strategies, as well as recommendations for improving the engagement process. The review was inclusive to all energy infrastructure types, since excluding any one type restricts the ability to acquire a holistic review. A holistic review is informative to all proponents regardless of the energy infrastructure type they are implementing.

The next section will discuss the necessity for this investigation in more detail, and will explain why a literature review offers the best approach as a form of analysis. The methodology used for both obtaining documents and analysing their details is described in the section following. Next, tables are featured that summarize descriptive statistics from the documents. A discussion section analyzes the main content, and in doing so, information for proponents regarding ideal citizen engagement strategies is derived. Finally, the discussion is followed by a conclusion that provides some recommendations for researchers and various stakeholders.

WHY A LITERATURE REVIEW?

The literature review encompasses 23 energy infrastructure documents, with each one of those documents containing an analysis of a public participation case study or case studies. A holistic understanding of public participation proceedings in energy infrastructure planning is obtainable by analyzing content from the documents regardless of energy infrastructure type. The objective is to identify a set of recommendations for facilitating public participation in energy infrastructure projects, some of which may be specific to the infrastructure type being planned, others of which may be generally applicable across all infrastructure types. Analyzing the content from every document in this literature review will inform planners, developers and decision makers about the current nature of public participation in energy infrastructure planning. Therefore, it may be particularly informative to the developers of innovative energy infrastructure technologies which have limited implementation, and thus a limited number of experiences developers can reflect upon when planning

successful citizen engagement.

An investigation was conducted using Scopus to determine if a literature review exploring this precise topic had not already been produced. A search query - which was a variation of the query utilized to obtain articles comprising this literature review - returned 26 documents, but zero contained a literature review exploring the same subject in a similar manner.

The search for documents in this literature review will reveal the extent to which researchers have conducted public participation case studies in energy infrastructure planning. Not only will it reveal the quantity of documents written on the subject, but it will also identify which authors have written most. Identifying these authors will benefit future researchers or proponents looking for key resources. The review will also reveal how many documents are written about a particular energy infrastructure type. For those interested in obtaining a broad understanding of public participation in energy infrastructure planning, knowing this will help direct future research to energy infrastructure that has not been covered extensively. Recommendations presented in the documents will provide proponents with new ideas for public participation that perhaps they have not yet considered.

Exemplary literature reviews were selected to influence the methodology and subsequent analysis in this work. Bigerna, Bollino & Micheli (2016) conducted a literature review to identify which socio-economic factors are most pertinent in limiting consumer utilization of smart grid technology (SGT). Scopus, among other databases, was used by the authors to acquire papers based on a keyword search. The entirety of each article was then read during the selection process of papers after an initial screening considered titles and abstracts. Then the relevant literature was analyzed, leading to the identification of four chief socio-economic barriers impeding smart grid development: costs, consumer privacy, cyber-security issue and regulatory aspects. Wiersma & Devine-Wright (2014) produced a literature review that investigated both public engagement with offshore renewable energy (ORE) and determinants of public acceptance. The 59 studies comprising their review were analyzed via classification as well. The documents were classified based on three broad strands of research: public debate over ORE developments, personal and socio-psychological factors

linked to public responses, contextual factors. These classes were established by reviewing the research design, methods and findings of each document.

The authors of these articles outlined the benefits associated with conducting their literature reviews. The same benefits are expected by using their approaches as exemplars for this work. Pursuing a literature review of this type will first enable the identification of predominant factors impacting public participation proceedings in energy infrastructure planning. Second, it affords an opportunity to analyze statements in the literature regarding these factors. While these two points represent the core of the literature review, there are other benefits. It will provide insight into the research field for this topic, and in doing so will encourage debates about public participation. Lastly, this review will offer informed recommendations for stakeholders and future research as well.

METHODOLOGY

The documents were obtained from Scopus. According to Elsevier, Scopus is the largest abstract and citation database of peer-reviewed literature. Terms were searched for in titles, abstracts and keywords to return documents about the

Table 1) Search Query Structure

Public AND	**Participation** AND	**Energy** AND	**Infrastructure** AND	**Case Study**
OR	OR		OR	OR
Citizen	Engagement		Project	Case-study
OR	OR		OR	
Community	Consult*		Technology	
	OR			
	Meeting			

public participation process of energy infrastructure development. This search encompassed all document types and every document revealing an analysed

case study in its abstract was considered for inclusion. Words synonymous with public, participation, and infrastructure were incorporated as search terms.

The following was the exact query string entered into Scopus's advance search in January 2017, and this statement is broken down in Table 1(TITLE-ABS-KEY ((public OR citizen OR community)) AND TITLE-ABS-KEY (energy) AND TITLE-ABS-KEY ((infrastructure OR project OR technology)) AND TITLE-ABS-KEY (("case study" OR "case-study")) AND TITLE-ABS-KEY ((participation OR engagement OR consult* OR meeting))).

This search returned 266 documents. A decision was made to review documents published in year 2000 and after only, to increase the chance of relevancy. Limiting the search results to this condition still returned a total of 250 documents. Each abstract was then read carefully to determine if the public participation process of energy infrastructure development was the primary focus. For instance, an abstract containing information about the successful public participation mechanisms used to engage citizens regarding a new transmission line was deemed relevant, whereas abstracts about the benefits of community owned wind farms were rejected. In total, 23 documents were identified as appropriate for inclusion.

The 23 documents were then categorized based on the type of energy infrastructure they featured. This could only be completed by first reading the documents. Seven categories were established: wind energy; carbon capture and storage (CCS); transmission lines; pipelines; low carbon infrastructure (LCI); geothermal energy; and 'other projects'. When the documents were read their recommendations and arguments related to public participation were summarized as main points in a Microsoft Word document. Main

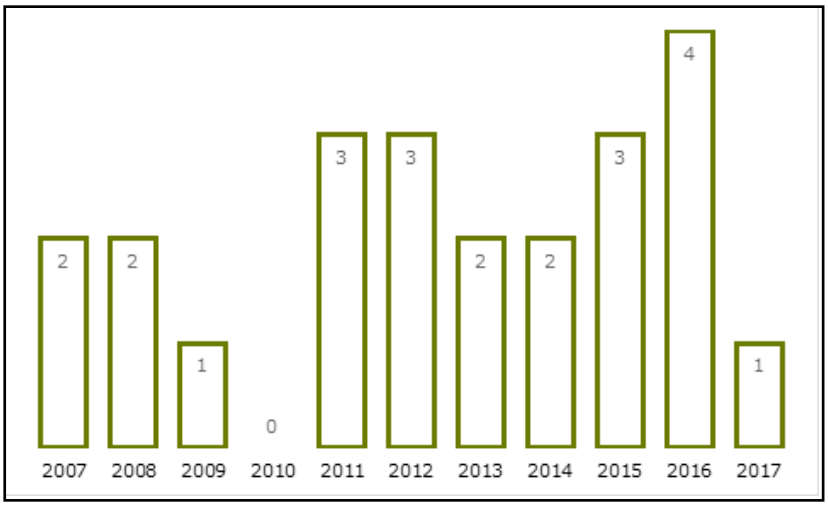

Figure 1) Documents Published by Year

Table 2) The Number of Lead Authors from a Given Country

Country of Lead Author	Frequency
Wales	4
Netherlands	4
Australia	3
Canada	2
England	2
Italy	2
Greece	1
China	1
United States	1
Ireland	1
Spain	1
Germany	1

Table 3) The Number of Case-studies from a Given Country

Country of Case-study	Frequency
Wales	5
Australia	4
England	3
Spain	3
Germany	2
Netherlands	2
Canada	2
Italy	2
Greece	1
France	1
China	1
Scotland	1
United States	1
Denmark	1
Ireland	1

points were listed under subheadings (the title of the document a particular set of main points belong to) and main headings (category). Using different colours to highlight main points, related main points across documents and categories were grouped based on the issue/topic they addressed. All of the main points from one document could have addressed multiple issues or even a single issue. Four broad yet salient topics emerged from the main points: communication; mechanisms; conditions; and planning process. Categorizing documents based on their featured infrastructure was not necessary to derive the four topics, but it was required for analyzing content while simultaneously acknowledging different infrastructure types.

RESULTS

All documents were published from 2007 to 2017. Figure 1) Documents Published by Year is a bar chart displaying how many documents were published in a given year.

The table in the Appendix displays more data about each document, including: lead author, total number of authors, journal, number of citations, keywords, country base of lead author, department of lead author, country/countries of case-study and category. Most documents were journal articles but two conference papers were included in the literature review.

Energy Policy was the most common journal

(5) but overall the review contained a diversity of journals. In fact, the *Journal of Environmental Planning and Management* was the only other journal to contribute more than one article (2). With respect to citations, the average number is 17 and the maximum is 132 (an LCI document by Jan Zoellner). Tables 2 and 3 display the frequency for country of lead author and country/countries of case-study data. Some documents featured multiple case-studies.

As mentioned above, documents were categorized based on their explored energy infrastructure type. The categories and the number of documents in each category are shown in Table 4.

Figure 2) The Distribution of Discipline/ Department among Lead Authors depicts the number of lead authors that work in a particular discipline/department.

Table 4) Number of Documents about a Particular Energy Infrastructure Type

Category	Frequency
Wind Energy	7
Carbon Capture Storage (CCS)	3
Low Carbon Infrastructure (LCI)	3
Transmission Lines	2
Pipelines	2
Geothermal Energy	2
Other	4

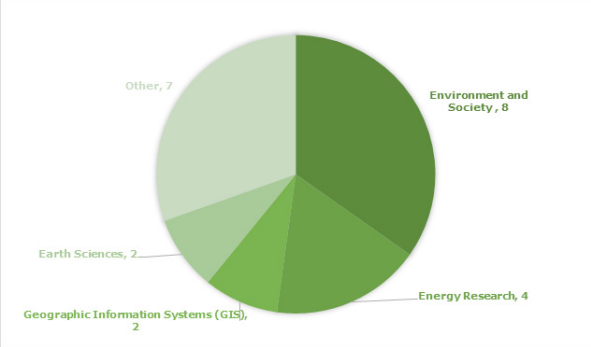

Figure 2) The Distribution of Discipline/ Department among Lead Authors

DISCUSSION

After documents were categorized based on the type of infrastructure featured in their case study, main points about citizen engagement were extracted from each document. Related main points were grouped together based on the broad issue a given point addressed. For example, a main point from a document could be about the perceived unimportance of citizen engagement under governance with less mandated public participation, while another point from a different document – and perhaps a different category – may expose how past relationships between proponents and communities influence proceedings.

Although these are distinct points, both could be categorized into a broad topic concerned with external conditions affecting citizen engagement strategies. Four broad topics emerged from the main points: communication, mechanisms, conditions, planning process. To be clear, issues/topics were not preconceived, instead main points collectively constructed a topic.

COMMUNICATION

There was information about communication from each of the seven categories. This information is generally about how proponents (government, project developers, etc.) successfully or unsuccessfully communicate their projects to the communities' subject to their development. An examination of the main points comprising this topic revealed that community members opposed to a planned development sometimes generate and disseminate information as well, though these accounts are not as common. Information about how to communicate the project to communities was either explicitly stated in the documents, or in exposing other issues authors offered implicit ideas about what constitutes effective communication.

Communities need to be informed of the benefits associated with a project. This may seem obvious but the literature suggests there are certain elements important in effectively communicating benefits. Christoforidis, Chatzisavvas, Papadopoulos & Papagiannis (2012), from the wind energy category, provided numerous suggestions. They recommended proponents develop formal strategies to share benefits with the community, and that they disseminate details regarding benefits through a variety of information channels such as websites, social media, and newsletters. It is important for the strategies to express the local benefits, both environmental and economic, community members will receive directly from the project as opposed to global benefits like climate change mitigation resulting from a transition to renewables. Additionally, the locals from Evans, Parks & Theobald, (2011) stated that when Asda (the proponent) invoked global benefits over specific community benefits they grew suspicious that the wind turbine development was merely proposed to enhance the developer's green image. The overall message in McLaren Loring (2007), a wind energy document, evokes a consequence of failing to sufficiently inform communities about the local benefits – the formation of an opposition group in response. To make

matters worse, in this particular case the discontent group began spreading false information about the project. The notion that communication strategies should emphasize local benefits was not exclusive to the wind energy category. It was also stated in Zoellner, Schweizer-Ries & Wemheuer (2008), a document from the LCI category, whom emphasized that communicating positive economic impacts at the local and regional levels is essential for all LCI developments.

While some main points recommended proponents communicate local benefits to avoid opposition, other main points were about communicating general project details to communities in order to prepare them for the negotiation and collaboration associated with decision making. Jami & Walsh (2014) advised proponents to prepare a communication package containing reports, assessment results and other information. This package would be meaningful to all stakeholders. To achieve this, the proponent constructing the package needs to take the perspectives of identified stakeholders into account. In other words, it is possible the package will need to address scepticism concerning the project, especially if there are many different concerns held by different stakeholders. The perspectives are to be elicited early in the planning of wind energy development.

Reilly, O'Hagan & Dalton (2016) from the LCI category exploring Marine Renewable Energies (MRE), recommend how to share project details with the community. This recommendation is about how to deliver a communication package after it is prepared. The authors suggest proponents adapt their methods of information provision based on community preferences. This recommendation was based on the discovery during research that a small community of fishermen favoured face-to-face meetings with the proponent as a means of receiving information about the project. It is argued that the proponents should pursue this method, but suggestions for adaptation included scheduling face-to-face meetings so they are flexible to the preferences of the community. The fishing community was busy and too many meetings can lead to consultation fatigue.

For unfamiliar types of energy infrastructure, ensuring the public will be able to comprehend information by performing preliminary investigations into the community's current knowledge of the infrastructure was mentioned in Brunsting et al. (2011), a CCS document. The authors analysed multiple CCS case studies and determined that proponents often assume the community

has a higher level of knowledge than is warranted. Information campaigns thus led to misunderstandings. The key message, in the case of CCS and other unfamiliar infrastructure types, is that a range of material will be required to support different levels of understanding. Like CCS, geothermal energy was hardly known to participants of a study in Italy. The authors conducted a survey to gather the opinions citizens have of geothermal energy. They found citizens have little knowledge of geothermal energy, and do not feel competent enough to engage in discussions. A communication strategy that addresses this issue is required if informed public debate is ever to occur. Specifically, communication activities between stakeholders and citizens should incorporate scientific, social and economic aspects of the project. Thus, with respect to CCS and geothermal energy, greater and earlier investments will need to be made for the development of community knowledge before commencing collaboration.

In addition to recommendations, real accounts of failing to sufficiently inform communities oblivious to a type of development appeared in the literature. In Anderson, Schirmer & Abjorensen (2012), the proponent of a CCS development told farmers about seismic surveys that would potentially affect farming operations during construction. The proponent did not fully disclose the scheduling of surveys nor the number of seismic surveys that would be required. Farmers were unprepared for the frequency and sporadic timing of the seismic surveys. Disruption to farming operations exceeded expectations and farmers began to oppose the project – albeit not publicly. Proponents were fortunate that this did not result in project termination – characteristics of this particular community (i.e., an unwillingness to talk to other community members) inhibited the development of an opposition movement that could have blocked the project.

Content from the two transmission line documents, Ciupuliga & Cuppen (2013) and Keir, Watts, & Inwood (2014), solely explore the importance of community access to information. Making reports accessible to the public not only helps them acquire a better understanding of the project, but it demonstrates to them that their role as relevant stakeholders is taken seriously (Ciupuliga & Cuppen, 2013). If it were to become apparent that quality information was concealed, the public may develop the perception that key decisions were made in secret

prior to consultation, and that proponents are uninterested in collaborating with them (Keir, Watts, & Inwood, 2014). Contributing to this discussion on inaccessibility, Groves, Munday & Yakovleva (2013) from the pipeline category analyzed the effects of less regulation governing proponents and concluded that stakeholders seeking some information about a development were denied it based on commercial confidentiality.

These concerns over fairness and trust were also highlighted in Keir et al. (2014) when the public questioned the distributive and procedural justice of the planning process. A lack of information with respect to the role of their opinions, the nature of decision making, profits the utility company would accrue from the transmission line project, and community benefits were all reasons for opposition. Indeed, the nature of decision-making was a topic documents from multiple categories addressed. For instance, Reilly et al. (2016) concluded that channels of information provision ought to be established for the single purpose of updating the community on decision making. Walsh, van der Plank & Behrens (2017), the mineral sands mine document, demonstrate how failing to clearly articulate the agenda-setting process and the purpose of consultation to the community inhibited acceptance. In this study, communication was so limited that stakeholder discontent with the process evolved into apathy, and proponents unaware of their discontent misinterpreted their apathy for indifference or disinterest. The proponents neglected the community on this basis.

In summary, the studies reviewed here suggest that proponents should invest in formal strategies to communicate benefits – specifically local benefits. This notion may have been raised most frequently in wind energy, but documents from the LCI and transmission line categories provide the same recommendation. CCS and geothermal energy documents offered a different suggestion regarding communication. These studies focused on providing communities with a range of material that supports knowledge building for different levels of understanding - increasing the community's capacity to engage in future negotiations. It appears this emphasis is in response to the unfamiliarity of these infrastructure types. The transmission line category reveals that information access engenders community trust, and this goes for access to information about the planning process as well as the project itself. Releasing information to the public about

the planning process and the nature of decision making was not exclusive to the transmission line category as it was expressed in a LCI document and a mining project document as well.

MECHANISMS

Mechanisms are defined here as tools or courses of action proponents can utilize to enhance the public participation process. They are specific and tangible suggestions, more concerned with "how" rather than "what" and "why". A generic suggestion may be to shape communication strategies based on the concerns stakeholders have regarding a project. The mechanism in response may be to afford residents an online 3D simulation of the project's visual impacts.

Two wind energy studies exclusively discussed integrating web based visualisation tools (GIS, 3D simulation, etc.) into the public participation process. Berry & Higgs (2012) conducted a survey asking participants to visit a website where they considered the effectiveness of online GIS maps, 3D visualisations, and 3D simulations as a form of engagement. They discovered that most participants involved in their study had a favourable impression of these tools, which were created to illustrate a wind farm's visual impact, and believed their inclusion in planning would enrich citizen engagement. The authors believe that if these tools, in addition to traditional forms of public participation (leafleting, citizen panels, focus groups and public meetings), were to be provided by proponents early in the consultation/engagement process, then public participation would increase and result in more informed citizens.

Higgs, Berry, Kidner & Langford (2008) suggest that the use of GIS can transcend information provision to promote effective stakeholder collaboration as well. They explored some studies that extended the functionality of GIS to operate based on a set of criteria. These criteria are factors different stakeholders consider to be key in determining the appropriate location of a wind farm – such as its proximity to houses. The notable advantage about this scenario is the ability to alter GIS (change the criteria) in real time to analyse new locations. This cannot be done with static visualisations that are time consuming to prepare.

Documents from categories other than wind energy scarcely discussed the incorporation of web-based tools, except in a few instances. In the citizen

engagement of a transmission line, (Ciupuliga & Cuppen (2013), there was an opportunity for citizens to visualise the development using a sightseeing tool. The digital tool supports situated learning by enabling virtual site-visits. Stakeholders could see the implications of specific options within a specific context. They appreciated the performance of this device and thought highly of the proponent who had made it available to them. Also, they became more content with the overall planning process because the tool demonstrated the proponent's desire for participants to be able to analyse the project and obtain detailed information. Pellizzone, Allansdottir, De Franco, Muttoni, & Manzella (2017) conducted primary research to identify the social acceptance barriers of introducing geothermal energy in Italy. It was determined that the internet would likely be perceived by communities as an independent and multidirectional knowledge centre. Given the distrust of institutions in Italy, the researchers recommend future proponents of geothermal energy rely on the internet for disseminating information.

Like some documents highlighting information technology (IT) tools, stakeholder collaboration was invoked in an offshore wind farm document as well (Todt, González, & Estévez (2011)) but the mechanism was described as a simple forum. The Council of Cadiz organized a forum because of controversy over the project. Although they hoped the forum would influence decision making, the council did not have that authority. Instead decision-making was the responsibility of the Spanish central government. The forum was successful in identifying and bringing together different stakeholders. Each participant was given 15 to 20 minutes to present their point of view followed by a question period. Stakeholders began understanding each other's points of views and the forum facilitated communication between them. In the end the Spanish central government cancelled the project – citing the same problems with the development that the forum identified. These problems included: lack of relevant legislation, uncomprehensive impact assessment and the presence of local opposition. The authors argue that because the forum received a lot of media attention, the Spanish central government was influenced by its proceedings.

In Hacking and Flynn (2017), a setting for collaboration between networks holding different opinions with respect to an energy-from-waste development

was established. The attempt at collaboration failed to produce a consensus and instead served as a platform for mutual insults and denigration. Bringing together different networks - a strong group of individuals with the same opinion - versus different stakeholders is what distinguishes this case study from the offshore wind farm case study in Todt et al., (2011). Its failure does not mean collaborative planning is obsolete, but it demonstrates how difficult it is to build trust, let alone mutual engagement, when opinions diverge greatly on fundamental issues like risk and environmental justice.

Most points pertaining to mechanisms described the use of impartial experts in the planning process. From the wind energy category, McLaren & Loring (2007) advocates proponents use trusted authorities to release information about the project. It is argued that this will prevent opposition groups from ever distributing false material. While impartial experts are used to clarify potential misinterpretations about wind energy, they are mentioned as mechanisms for building trust in CCS documents. For example, Anderson et al. (2012) recommends government acquire and deploy an independent advocate to hold meetings without the proponent, provide communities with a simplified explanation of CCS, and negotiate on behalf of members who are unable to attend meetings with the developer.

The transmission line category focused exclusively on using impartial experts to promote fairness. In Ciupuliga & Cuppen (2013), the proponent formed a monitoring committee to assure stakeholders they would comply with all commitments promised during collaboration. This committee interacted with stakeholders throughout the process so the proponent could meet their demands as much as possible. A monitoring committee demonstrated to the community that their opinions were valued, and proved to them that the proponent would respect commitments. Another transmission line study (Keir, Watts & Inwood (2014)) states that advocacy planners should represent members of directly or indirectly affected communities who experience difficulty participating. The precise use of impartial experts may depend to some degree on the type of development, its stigma and the current level of understanding in the community.

There are unique mechanisms from every category that cannot be consolidated into a theme. It could be that these mechanisms are unique because they

correspond to the nature and specific conditions of their case. In Anderson & Schirmer (2015b), a keen sense of place was present in a community where a gas-fired power station was proposed, and it was recommended that developers investigate the current land use and user groups of the site since it may differ from the site's intended purpose as an industrial zone. Other examples include adequate staffing at public meetings to ensure every attendee has their concerns addressed by a project team member, and the establishment of an informal participation process (workshops, conferences, etc.) that encourages debate for opposition networks which form in response to proposals.

While studies across all four categories explored the use of impartial experts in the process, the precise use of these experts varied and seemed to be somewhat dependent on the type of development. For instance, in the wind energy category, it was claimed that the use of impartial experts or trusted authorities would discourage opposition networks that are attempting to convince the public of their agenda from releasing false information. Perhaps this precise use emerged because clarifying negative perceptions is characteristic of wind energy planning. Conversely, CCS suffers from a lack of any impressions because the technology is largely unknown to the public. Thus, impartial experts are used to provide explanations of CCS and to negotiate on behalf of residents. GIS and 3D simulations were mechanisms virtually exclusive to the wind energy category. This does not come as a surprise since wind energy is usually quite large infrastructure and is infamous for its visual impacts. In fact transmission lines, another example of invasive infrastructure, was the only other category that raised a technological mechanism enabling participants to analyze the project visually. Lastly the literature suggests that the usefulness of forums depends on how they are arranged. A forum that brought together a variety of stakeholders for collaboration in a study from the wind energy category seemed to generally have more success than when obstinate networks were brought together in a forum for an energy-from-waste development.

CONDITIONS

Some studies suggest that identifying conditions specific to the community where a development will occur is imperative so that the participation process can be tailored for successful execution. There is no one-size-fits-all blueprint.

Conditions are external to the planning process but impact its proceedings and include things like community characteristics, relationships among actors, and the form of governance. Appropriate mechanisms and public participation strategies are determined by conditions.

Jami & Walsh (2014) recommend a number of actions for identifying pertinent conditions during wind farm planning. The most notable of these recommendations is a stakeholder analysis that is to be conducted early so that preliminary solutions can be conceived based on the views of main actors and networks in the decision process. In this case study the opposition was never detected by the proponents because the regulatory scheme limited public participation. The development was subject to a time constraint and the opponents were successful in blocking the project. An early stakeholder analysis, in addition to a more collaborative approach, would have identified the opposition network and their concerns (visual pollution, health concerns, loss of bird populations). Those concerns would be added to criteria used for decision-making. It would have been possible to develop a preliminary list of alternative options after reviewing the results from the stakeholder analysis. A CCS study (Brunsting et al. (2011) was not as explicit in its recommendation but made a similar assertion more generally, finding that proponents could engender the trust of local stakeholders by initiating this kind of dialogue.

Evans et al. (2011), describing the case of an urban wind turbine, raise a public perception issue. They state that a discrepancy exists between the public's favourable perceptions of wind energy in general and their typically unfavourable perception of a localized project that directly affects them. Besides visual impact and sound, pre-existing relationships between the developer and the community can contribute to this phenomenon. For instance, in the case described by Evans et al. (2011), the developer had previously removed a building from their own property that served as a sound barrier between their operation and an adjacent community. Local councillors insisted that their support in favour of a proposed wind turbine would depend on the proponent taking action to address this issue – a demand pertaining to an issue irrelevant to the wind turbine development. Ciupuliga & Cuppen (2013) also explore these relationships. RTE (the French Transmission System Operator) was a distrusted proponent due to

prior companies it was amalgamated with. Their attempt to build a transmission line between France and Spain for five years (2003 to 2008) was met with opposition due to lack of transparency. Only when France and Spain asked the European Commission for a coordinator to facilitate the project's proceedings were the requests of local communities considered seriously and transparency improved. From that point on, the project's public participation process evolved successfully. The authors suggest that the project's history and circumstances may have encouraged parties to see the project progress. It is probable that the intervention would not have worked out the same way in 2003.

A variety of documents explained how and why networks form during the planning stages. Anderson & Schirmer (2015a) describe how threats place attachment and democratic values were catalysts to network formation in two cases. A network of resistance can form through collective action in response to these catalysts, and then the networks become fully operationalized when bridging capital (connection to other networks like politicians, decision makers, media, etc.) is successfully established. According to this study, and in regard to a wind farm case study specifically, bridging capital was established by the leader of the opposition network who had the connections necessary to prevent the project from occurring. The project was terminated even though most residents supported the development. Having little bonding capital (the capital needed to develop collective action and thus the formation of a network) those in support were unable to form a strong network to counter the opposition. Given this revelation, the authors infer that bridging capital was the deciding factor due to a lack of social capital (bonding and bridging) among the rural residents. They then suggest that public participation exercises informed by community characteristics build social capital. Furthermore, if the reason for the catalyst is dealt with during public participation, networks of resistance will fail to form in the first place, or dissipate if they already exist. The combination of catalysts and social capital is an indication that a community would be amenable to collaborative planning. Through collaboration that embraces potential differences, proponents will be able to understand why a project may or may not go ahead.

A study containing similar findings is Anderson & Schirmer (2015b), which

recounts the development of networks that had formed in response to a gas-fired power station threatening place attachment. Place attachment is the emotional connection community members have with a specific place (Wolf, Krueger & Flora, 2014). The authors recommend proponents identify important community characteristics like place attachment and guide collaborative planning accordingly. In Anderson et al. (2012), the community subjected to the development passively accepted it even though they had grievances over the frequency of field surveys and other proceedings that were never disclosed to them. Their failure to increase social capital and form an opposition network was a direct consequence of their own social norms – they were unwilling to talk to each other about it because it was a sensitive issue. Similar to recommendations mentioned in previous discussion sections, the proponents simply needed to inform the community about CCS construction so they would have the confidence and negotiation skills to participate.

Geothermal energy and pipeline documents each discuss some of the entrenched institutional conditions that impact public participation. Groves et al. (2013) focus on the influence that less government regulation has on proceedings. Reflecting on the case study, the authors insist that there must be some form of accountability when private organizations inherit public obligations. Here accountability would entail a needs assessment and risk management whenever substantive issues surface during participation. There is also a threat to participatory governance when functioning under this system. For example, private organizations will lobby to streamline the planning process, and restricting the public from information in the name of commercial confidentiality may occur and did occur in this case. Conversely, while Groves et al. (2013) criticize less government regulation, surveys conducted in both geothermal energy studies demonstrate concern over public institutions and the local innovation system in Italy. With respect to geothermal energy technology, people do not feel informed enough to engage as competent participants, and given observed corruption, public institutions are not trusted by the locals to provide the needed information and consultation to fill knowledge gaps.

When it comes to the topic of conditions, the main points are similar regardless of category. LCI, CCS and the 'others category all contain findings that explain

how opposition networks form. First, there is a reason for the catalyst such as a threat to place attachment or democratic values. Resistance forms when there is sufficient bonding capital (capital needed to develop collective action and an opposition network). Once there is strong bridging capital (capital connecting networks to important actors in the process) the network becomes fully operationalized. As was discovered in Anderson & Schirmer (2015a), opposition networks can successfully prevent a project even when most community members support it. Information provision and public participation exercises that address catalysts like threats to place attachment will prevent or dissipate opposition networks. In a sense, even the stakeholder analysis, recommended in wind energy and CCS documents, is about producing preliminary solutions by identifying and addressing the potential catalysts that result in opposition.

PLANNING PROCESS

General recommendations for improving the public participation process were stated frequently across different categories. These main points provide proponents with general guidance when composing the process and are unlike the previous discussion on mechanisms, which recommend specific courses of action. Although the effectiveness of a particular mechanism depends on conditions, the information in this discussion is generalizable across different circumstances.

Urging proponents to start the process early was one of the most noticeable themes emerging from the literature. Main points contributing to this theme were found in the following categories: geothermal energy, wind energy, LCI, and the 'others' group. Christoforidis et al. (2012) is a wind energy document about a project called GP-WIND. The project's goal was to develop a tool kit of best practices, based on case study analysis, for proponents implementing wind energy projects. Upon analyzing the case study, the authors determined that initiating early and honest dialogue with the community is essential for achieving community buy-in. The circumstances that precluded project acceptance clearly demonstrated the proponent had failed to initiate such action. For instance, planning commenced in 2005 but 70% of community members were not informed until after 2010. In addition, one-half of the survey respondents felt the communication campaign failed to notify them of community benefits and

nearly one-half were not satisfied with the transparency of the process. Other wind energy documents arriving at similar conclusions were Jami & Walsh (2014) and McLaren Loring (2007). Amalgamating suggestions from these documents, beginning public participation early in the planning process will afford proponents important local knowledge, an insight into the potential complexities of balancing stakeholder interests, and a head start developing strategies in response to the identification of strong opposition networks.

Reilly et al. (2016) explores the citizen engagement process of MRE case studies and acknowledges early engagement is crucial for establishing trust. It gives fishermen an idea from the outset how much their opinions will influence the project so that they do not feel disenfranchised during decisive stages of the process. This means (Zoellner et al. (2008) raises this point as well) that the influence of public participation in decision making needs to be carefully considered in advance. In pursuing the notion of an early start to the process, Pellizzone et al. (2015) is concerned with a different angle - activating early collaboration between stakeholders in respect to scientific, social and economic aspects of the project.

Indeed, advocacy for collaborative planning was a pervasive theme among main points related to the planning process. Collaboration between proponents and stakeholders, or among stakeholders collectively, was emphasized on several occasions. Content from the wind energy category briefly mentioned collaboration, asserting that two-way communication between proponents and community members from the outset is effective in mitigating misinformation and conflict. Jami & Walsh (2014) recommend using stakeholder collaboration to structure the problem because doing so launches and facilitates an information exchange relationship. A gas-fired power station threatened the place attachment of horse owners desiring the land for their horses in Anderson & Schirmer (2015b), and this threat catalyzed organized opposition. The authors left proponents with a lesson that place attachment and social capital characteristics ought to form the basis of collaborative planning. If the proponents had made a genuine effort to engage the concerned network - with place attachment at the foundation of their collaboration - they would have been provided with information to support the process and would have avoided opposition altogether.

As with the wind energy category, the concept of two-way communication was also explored in the CCS category with one study proposing when it should be implemented. According to Brunsting et al. (2011), communication of this nature needs to be implemented immediately following research into local issues and relevant local factors. The implementation could ultimately lead to the community playing a larger role in decisions that affect them, and if this occurs then public devotion to the process will increase (see also Anderson et al., 2012). Reilly et al. (2016) and Buszynski (2007) also note the importance of a two-way flow of information.

Transmission line studies were rich with information about collaborative planning. Both of the documents comprising the category invoked two dimensions in their discussions – normative and substantive. The normative dimension is concerned with the degree to which communities have access to co-decide on various aspects while the substantive dimension is about the nature of collaboration. In Groves, Munday and Yakovleva (2013), collaboration in the case study was analysed through the lens of these two dimensions. The proponents lead a strong normative dimension as the possibility to co-decide was present. This was evident from the geographic workshops and extensive information provision, including the use of a sightseeing tool. Regarding the substantive dimension, there were conflicting viewpoints among stakeholders but they managed to jointly shape the design of the project. The authors attribute this to the organization of the collaboration, where stakeholders were encouraged and able to come to a consensus regarding specific options even though there was disagreement over general principles. Keir et al. (2014) likewise recommend the inclusion of normative and substantive dimensions and warn that distrust arises when the normative dimension is suppressed. In fact, Zoellner et al. (2008) from the LCI category support this assertion when it states that people who feel left out of the decision making process are more likely to oppose the project.

Many different categories contributed main points to the two discussions: early starts and collaboration. With respect to the former, wind energy studies were primarily concerned with the benefits proponents receive from initiating public participation early. This includes obtaining important local knowledge, and discovering future complexities of balancing different stakeholder interests.

Conversely, the LCI category mentioned the benefits to the community, namely how early engagement establishes trust and provides the community with an understanding of their influence over decision making. Although studies from these categories agree that an early start is important, they highlight different benefits of this recommendation.

Studies discussed how to organize collaboration effectively. Although recommendations differed, none of these recommendations are contradictory. For instance, a study from the 'others' category stressed placing community characteristics like place attachment at the basis of collaborative planning. Such a suggestion makes sense in light of the circumstances surrounding this case - people using the land for their horses where a gas-fired power station was proposed. A document from the transmission line category acknowledged the significance of collaborative planning as well, but had little to say about place attachment. The recommendations were more generalizable as the document focused on including normative and substantive elements in collaborative planning. Though the importance of collaborative planning was recognized across categories, it is clear that the circumstances of a case should dictate the way collaborative planning is executed.

CONCLUSION

The main points from the literature were analysed and four public participation topics emerged from the data: communication, mechanisms, conditions and planning process. There was consensus that communicating localized (rather than global) economic and environmental benefits to communities would be in the best interest of proponents. This suggestion was raised in case studies of different energy infrastructure types. Therefore, it is likely this recommendation is applicable to proponents regardless of their development type. Also, multiple categories had points recommending proponents inform and update the public on decision making. This involves establishing information channels for the singular purpose of updating in addition to clearly articulating the purpose of consultation as well as the agenda setting process. Failure to do so may inhibit

acceptance.

With respect to CCS and geothermal energy studies, providing information about the unfamiliar infrastructure to the community was the primary focus of the main points. Proponents are directed to supply communities with a range of material. Doing so will address knowledge gaps for a variety of individuals in the community and enable them to participate more effectively in citizen engagement. Therefore, this finding may be useful to proponents implementing unfamiliar energy infrastructure. More research is needed to confirm that communities are empowered by information provision. Researchers should also investigate how and when this information should be disseminated.

The second topic was mechanisms or specific measures proponents can implement to improve public participation. In the wind energy category, studies offered an extensive exploration into the utilization of GIS, 3D simulation and other web based visualisation tools. Yet using technological mechanisms to afford community members with visualisations of the project was only found in wind energy and transmission line studies. Given that these are typically large infrastructure projects, notable for their visual impacts, it may be that these mechanisms are exclusively suitable for the public participation processes of invasive energy infrastructure. Research needs to be conducted that either verifies or refutes this point. There were other functions that GIS and 3D simulations provide beyond assessing visual impacts that could be thought of as widely applicable. They include collaboration over site selection, as well as the ability for these technologies to galvanize participation.

The mechanism most commonly invoked in the literature is the deployment of impartial experts. Their precise use seemed to differ on a case by case basis, and appears to be somewhat dependent on the type of infrastructure. In wind energy for instance, it was stated that opposition networks are discouraged from disseminating negative information about the project when trusted individuals release clear and accurate information. Whether this precise use is due to a negative connotation surrounding wind energy or not needs to be explored. In the case of CCS projects, impartial experts give simple explanations to the community about CCS as a trust building mechanism since the community has little to no knowledge of this technology. Proponents of any infrastructure type

should see the value of utilizing impartial experts, but need to determine their most effective role by considering the circumstances of the case.

Another topic was the local conditions impacting public participation proceedings. Studies across categories explored how and why networks of opposition form. A common catalyst to this formation was a threat to place attachment. Other catalysts include a threat to democratic values and undesirable pre-existing relationships between communities and the proponent. Where there is sufficient bonding capital, the catalyst will cause collective action among those opposing the project. When this occurs a network of opposition is formed which becomes operationalized once connections are made to actors who have influence over the project's outcome. In response or as a proactive measure, proponents are advised to implement public participation exercises that are based on community characteristics and address these reasons for opposition. Wind energy and CCS studies recommend a stakeholder analysis to generate preliminary solutions based on the views of different stakeholders. A course of action such as this could reveal relevant conditions and reasons for opposition such as an undesirable pre-existing relationships with the community and place attachment. Going forward, it would be interesting to know the most common catalysts for each infrastructure, and how to identify these reasons for opposition early in the process.

Finally, there was an abundance of recommendations in the literature that provided general guidance for establishing a successful planning process. Initiating the process as early as possible was a repeated theme across categories. The benefits of doing this were different on a case by case basis. Essentially, an early and honest dialogue with the public from the outset will afford proponents important local knowledge, an understanding of potential future complexities balancing stakeholder concerns, and an opportunity to address any opposition networks beginning to emerge. Proponents should also encourage collaborative planning, including both its normative and substantive dimensions, since failing to do so will provoke distrust that leads to opposition.

Community disapproval can delay projects and thus delay the transition to a sustainable future. That is why it is important for proponents to invest in an early and collaborative citizen engagement process that is considerate

of local conditions. Proponents also need to take communication with the public seriously, and devise mechanisms so that they can effectively execute communication and collaboration. In doing so, proponents may decrease the likelihood of community disapproval in respect to their projects. There is rich literature to support this notion. Future researchers interested in conducting a literature review should narrow their research question and methodology to analyse documents that discuss a specific element of citizen engagement - like communicating the project effectively to stakeholders. Now that the general principles of citizen engagement in energy infrastructure planning have been identified and explored, there is an opportunity to investigate each one of these principles in greater detail.

APPENDIX

Lead Author	Total Number of Authors	Journal	Number of Citations	Keywords	Country base of Lead Author	Department of Lead Author	Country/ ies of case-study	Category
Anderson, Carmel (2012)	3	Mitigation and Adaptation Strategies for Global Change	17	Acceptance; Carbon capture and storage; Community; Human capital; Public participation; Social capital	Australia	Fenner School of Environment and Society, College of Medicine, Biology and Environment, The Australian National University	Australia	CCS
Anderson, Carmel (2015)	2	Urban Policy and Research	0	Community resistance; lower-carbon infrastructure; place attachment; public participation; social capital	Australia	Fenner School of Environment and Society, College of Medicine, Biology and Environment, The Australian National University	Australia	Others
Anderson, Carmel (2015)	2	Society and Natural Resources	0	Lower-carbon infrastructure; Resistance; Social capital; Social networks	Australia	Fenner School of Environment and Society, The Australian National University	Australia	LCI
Berry, Robert (2012)	2	Journal of Environmental Planning and Management	4	IT-based tools; public acceptance; public participation; Wales; wind farm planning	Wales	GIS Research Centre and Wales Institute of Social and Economic Research, Data and Methods (WISERD), Faculty of Advanced Technology, University of Glamorgan	Wales	Wind Energy

Brunsting, Suzanne (2011)	7	Energy Procedia	7	Carbon capture; Ccs; Energy; Public opinion; Public perceptions; Risk	Netherlands	Energy Research Centre of Netherlands,	Germany, Netherlands, England, Wales, Spain	CCS
Buszynski, Mario (2007)	1	2006 International Pipeline Conference	1	Topics: Pipelines , Fracture toughness	Canada	Manager of Environmental Assessment and Energy Projects at SENES Consultants	Canada	Pipelines
Christoforidis, Georgios C. (2012)	4	9th International Conference on the European Energy Market, EEM 12	0	Sustainable Development; Technology Social Factors; Wind Energy	Greece	Department of Electrical Engineering, Technological Education Institution of Western Macedonia (TEIWM)	Greece	Wind Energy
Ciupuliga, Ana Roxana (2013)	2	Energy Policy	19	Dialogue; Societal acceptance; Transmission lines	Netherlands	Dept. Electrical Sustainable Energy, Delft University of Technology	France, Spain	Transmission Lines
Ding, Xiaowen (2016)	5	Water Quality Research Journal of Canada	1	Nuclear power plants; Wastewater discharge; Water resources assessment; Water use; Water-draw	China	Key Laboratory of Regional Energy and Environmental Systems Optimization, Ministry of Education, Research Center for Beijing Energy Development, North China Electric Power University	China	Others
Evans, Bob M. (2011)	3	Journal of Environmental Planning and Management	16	Commercial urban wind; Public engagement; Public perceptions; Renewable energy; Social acceptance	England	Sustainable Cities Research Institute, School of the Built Environment, Northumbria University	England, Scotland	Wind Energy

Groves, Christopher (2013)	3	Environment and Planning C: Government and Policy	11	Infrastructure planning; Participatory governance; Pipelines; Planning cascade; Privatisation	Wales	ESRC Centre for Business Relationships, Accountability, Sustainability and Society, Cardiff University	Wales	Pipelines
Top of Form Hacking, Nick (2017)Bottom of Form	2	Progress in Planning	0	Incineration; Networks; Participation; Planning practice; Planning theory; Power; Wales	Wales	Welsh School of Architecture, Cardiff University	Wales	Others
Higgs, Gary (2008)	4	Land Use Policy	45	Geographical Information Systems (GIS); Multi-Criteria Decision Analysis (MCDA); Public participation techniques; Renewable energy; Wind farm planning	Wales	Faculty of Advanced Technology, GIS Research Centre, University of Glamorgan	N/A	Wind Energy
Jami, Anahita A N (2014)	2	Renewable Energy	11	Environmental governance; Participatory model; Public participation; Wind energy	Canada	Yeates School of Graduate Studies, Ryerson University	Canada	Wind Energy
Keir, Laura S. (2014)	3	Community Development	3	energy planning; procedural justice; public participation; transmission lines	United States	Rubenstein School of Environment and Natural Resources, University of Vermont	United States	Transmission Lines
McLaren Loring, Joyce (2007)	1	Energy Policy	102	Network theory; Public participation; Wind energy planning	England	SPRU (Science and Technology Policy Research), University of Sussex	England, Wales, Denmark	Wind Energy

Pellizzone, Anna (2015)	5	Energy Policy	5	Geothermal energy; Italy; Public engagement; Renewable energy; Social acceptance; Trust	Italy	The Department of Earth Sciences, University of Milan	Italy	Geothermal Energy
Pellizzone, Anna (2017)	5	Energy Policy	0	Common goods; Geothermal energy; Italy; Public engagement; Social acceptance; Trust	Italy	The Department of Earth Sciences, University of Milan	Italy	Geothermal Energy
Raven, Rob (2009)	4	Technological Forecasting and Social Change	21	CCS; ESTEEM; Participatory technology assessment; Social acceptance of technology	Netherlands	Energy Research Centre of the Netherlands, Policy Studies Unit	Netherlands	CCS
Reilly, Kieran (2016)	3	Ocean and Coastal Management	0	Commercial fishing; Consultation; Marine renewable energy; Maritime spatial planning; Participation	Ireland	MaREI, Environmental Research Institute, University College Cork	Ireland	LCI
Todt, Oliver (2011)	3	Wind Energy	7	context dependency; offshore wind power; public participation	Spain	University of the Balearic Islands, Department of Philosophy	Spain	Wind Energy
Walsh, Bríd (2017)	3	Resources Policy	0	Community; Consultation; Mining; Perceptions	Netherlands	Leiden University College, Leiden University	Australia	Others

Zoellner, Jan (2008)	3	Energy Policy	132	Environmental psychology; Multi-modal research design; Public acceptance	Germany	Department of Psychology, Otto-von-Guericke-University Magdeburg	Germany	LCI

REFERENCES

Anderson, C., Schirmer, J., & Abjorensen, N. (2012). Exploring CCS community acceptance and public participation from a human and social capital perspective. *Mitigation and Adaptation Strategies for Global Change, 17*(6), 687-706. doi:10.1007/s11027-011-9312-z

Anderson, C., & Schirmer, J. (2015b). Why and how urban residents resisted a proposed gas-fired power station. *Urban Policy and Research, 33*(3), 324-339. doi:10.1080/08111146.2014.982792

Anderson, C., & Schirmer, J. (2015a). An empirical investigation of social capital and networks at local scale through resistance to lower-carbon infrastructure. *Society and Natural Resources, 28*(7), 749-765. doi:10.1080/08941920.2015.1014599

Berry, R., & Higgs, G. (2012). Gauging levels of public acceptance of the use of visualisation tools in promoting public participation; a case study of wind farm planning in south wales, UK. *Journal of Environmental Planning and Management, 55*(2), 229-251. doi:10.1080/09640568.2011.591925

Bigerna, S., Bollino, C. A., & Micheli, S. (2016). Smart grids and consumer attitude toward sustainable development. *Journal of Promotion Management, 22*(4), 573-587. doi:10.1080/10496491.2016.1190551

Brunsting, S., Desbarats, J., De Best-Waldhober, M., Duetschke, E., Oltra, C., Upham, P., & Riesch, H. (2011). The public and CCS: The importance of communication and participation in the context of local realities. Paper presented at the *Energy Procedia, , 4* 6241-6247. doi:10.1016/j.egypro.2011.02.637

Buszynski, M. E. (2007). Securing pipeline approvals in atough regulatory environment. Paper presented at the *Proceedings of the Biennial International Pipeline Conference, IPC, , 1* 425-430. doi:10.1115/IPC2006-10478

Christoforidis, G. C., Chatzisavvas, K. C., Papadopoulos, T. A., & Papagiannis, G. K. (2012). Identifying non-technological barriers to wind power: Local communities. Paper presented at the *9th International Conference on the European Energy Market, EEM 12,* doi:10.1109/EEM.2012.6254674

Ciupuliga, A. R., & Cuppen, E. (2013). The role of dialogue in fostering acceptance of transmission lines: The case of a france-spain interconnection project. *Energy Policy, 60*, 224-233. doi:10.1016/j.enpol.2013.05.028

Ding, X., Wang, W., Huang, G., Chen, Q., & Wei, G. (2016). Management of water resources assessment for nuclear power plants in china. *Water Quality Research Journal of Canada, 51*(3), 282-295. doi:10.2166/wqrjc.2015.023

Evans, B., Parks, J., & Theobald, K. (2011). Urban wind power and the private

sector: Community benefits, social acceptance and public engagement. *Journal of Environmental Planning and Management, 54*(2), 227-244. doi:10.1080/09640568.2010.505829

Filion, P. (1999). Rupture or Continuity? Modern and Postmodern Planning in Toronto. *International Journal of Urban and Regional Research, 23*(3), 421-444. doi:10.1111/1468-2427.00206

Groves, C., Munday, M., & Yakovleva, N. (2013). Fighting the pipe: Neoliberal governance and barriers to effective community participation in energy infrastructure planning. *Environment and Planning C: Government and Policy, 31*(2), 340-3 Hacking, N., & Flynn, A. (2017). Networks, power and knowledge in the planning system: A case study of energy from waste. *Progress in Planning, 113*, 1-37. doi:10.1016/j.progress.2015.12.001

Higgs, G., Berry, R., Kidner, D., & Langford, M. (2008). Using IT approaches to promote public participation in renewable energy planning: Prospects and challenges. *Land use Policy, 25*(4), 596-607. doi:10.1016/j.landusepol.2007.12.001

Jami, A. A. N., & Walsh, P. R. (2014). The role of public participation in identifying stakeholder synergies in wind power project development: The case study of ontario, canada. *Renewable Energy, 68*, 194-202. doi:10.1016/j.renene.2014.02.004

Keir, L., Watts, R., & Inwood, S. (2014). Environmental justice and citizen perceptions of a proposed electric transmission line. *Community Development, 45*(2), 107-120. doi:10.1080/15575330.2014.887130

McLaren Loring, J. (2007). Wind energy planning in England, Wales and Denmark: Factors influencing project success. *Energy Policy, 35*(4), 2648-2660. doi:10.1016/j.enpol.2006.10.008

Pellizzone, A., Allansdottir, A., De Franco, R., Muttoni, G., & Manzella, A. (2015). Exploring public engagement with geothermal energy in southern italy: A case study. *Energy Policy, 85*, 1-11. doi:10.1016/j.enpol.2015.05.002

Pellizzone, A., Allansdottir, A., De Franco, R., Muttoni, G., & Manzella, A. (2017). Geothermal energy and the public: A case study on deliberative citizens' engagement in central italy. *Energy Policy, 101*, 561-570. doi:10.1016/j.enpol.2016.11.013

Raven, R. P. J. M., Jolivet, E., Mourik, R. M., & Feenstra, Y. C. F. J. (2009). ESTEEM: Managing societal acceptance in new energy projects. A toolbox method for project managers. *Technological Forecasting and Social Change, 76*(7), 963-977. doi:10.1016/j.techfore.2009.02.005

Reilly, K., O'Hagan, A. M., & Dalton, G. (2016). Moving from consultation to participation: A case study of the involvement of fishermen in decisions relating to marine renewable energy projects on the island of ireland. *Ocean and Coastal Management, 134*, 30-40. doi:10.1016/j.ocecoaman.2016.09.030

Sources of Greenhouse Gas Emissions. (2017). Retrieved January, 2017, from https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

Todt, O., González, M. I., & Estévez, B. (2011). Conflict in the sea of trafalgar: Offshore wind energy and its context. *Wind Energy, 14*(5), 699-706. doi:10.1002/we.446

Walsh, B., van der Plank, S., & Behrens, P. (2017). The effect of community consultation on perceptions of a proposed mine: A case study from southeast australia. *Resources Policy, 51*, 163-171. doi:10.1016/j.resourpol.2016.12.006

Wiersma, B., & Devine-Wright, P. (2014). Public engagement with offshore renewable energy: A critical review. *Wiley Interdisciplinary Reviews: Climate Change, 5*(4), 493-507. doi:10.1002/wcc.282

Wolf, K.L., Krueger, S., & Flora, K. (2014). Place attachment and meaning – a literature review. Retrieved January, 2017, from https://depts.washington.edu/hhwb/Thm_Place.html

Wüstenhagen, R., Wolsink, M., & Bürer, M. J. (2007). Social acceptance of renewable energy innovation: An introduction to the concept. *Energy Policy, 35*(5), 2683-2691. doi:10.1016/j.enpol.2006.12.001

Zoellner, J., Schweizer-Ries, P., & Wemheuer, C. (2008). Public acceptance of renewable energies: Results from case studies in germany. *Energy Policy, 36*(11), 4136-4141. doi:10.1016/j.enpol.2008.06.026