Acceptance studies in the field of land use—A critical and systematic review to advance the conceptualization of acceptance and acceptability

Maria Busse*, Rosemarie Siebert

Leibniz Centre for Agricultural Landscape Research (ZALF), Eberswalder Str. 84, 15374 Müncheberg, Germany

ABSTRACT

Despite the increasing importance of studies dealing with acceptance in the field of land use, few theoretical-conceptual reflections and reviews have been published. To address this gap, this paper offers a critical and systematic review of recent literature regarding acceptance and land use. Our aim is to synthesise the contributions of these publications in order to advance scientific debate on this topic. The data set consists of 132 peer-reviewed journal articles and book chapters and is dominated by empirical papers (mostly quantitative studies) and European case studies. Renewable energy appears as the most important thematic issue, followed by sustainable land use. In these studies, many researchers did not define acceptance or apply a theory. It seems to be perceived as an everyday term with a clear meaning. However, this review reveals that there is no common understanding of acceptance; instead, the given definitions and characteristics are sometimes even contradictory. Acceptance is often considered a positive and desirable outcome of planning projects. Only a few authors understand acceptance as a complex phenomenon. As a cross-sectoral research topic, it applies theories from different disciplines and research fields (psychology, sociology, and innovation research), even though the use of these theories within disciplines is not consistent. Most empirical studies address influencing factors with the aim of explaining decisions about acceptance. However, the theoretical foundation underlying the selection of factors is often weak. Therefore, we recommend that researchers engage in a thorough reflection of notions and concepts, suitable and sound identification of influencing factors. In concluding with our own theoretical-conceptual reflections, we support the idea that acceptance and acceptability should be distinguished to gain more clarity in the use of terms. Thus, acceptability encompasses actor-based and dynamic decision processes. The decisions are products of interactions among the actors, the object, and the context. They can be assigned to a particular degree (from rejection to acceptance or engagement) and made at the attitude, action, or utilization level. Finally, we believe that further research can benefit from this advanced concept of acceptability.

1. Introduction

When developing a successful planning, decision-making, and implementation process, it seems essential to consider the acceptance of innovations, measures, or projects (e.g., Stigka et al., 2014; Hitzeroth and Megerle, 2013). Consequently, acceptance has recently become an important issue in the research field of land use and sustainability science. The increasing importance of this issue is reflected in the growing number of publications concerning acceptance and land use in recent years. These publications are mainly empirical case studies with different foci covering a broad range of subjects (Schenk et al., 2007). Each publication contributes its specific aspects and perspectives to the application-related debate about acceptance. Only a few theoretical and conceptual reflections and reviews of acceptance have been published. Existing (bibliometric) reviews focus only on energy issues and do not

include other land use issues (e.g., Gaede and Rowlands, 2018; Rand and Hoen, 2017; Fournis and Fortin, 2017, p. 5). Furthermore, the terminological, ontological, and theoretical bases of studies are rarely analysed. To fill this research gap, a comprehensive and broad review of literature related to acceptance and land use is long overdue.

This paper offers a critical reflection on the current state of acceptance studies regarding land use changes that encompass a broad range of topics. It aims to reflect and synthesise publications' contributions to the theoretical-conceptual understanding of acceptance and their relation of those contributions to each other in order to advance the debate on acceptance. Therefore, we systematically reviewed scientific publications that address acceptance issues within the field of land use. We analyse and discuss their research topics and intentions, epistemological and ontological foundations and linkages (definitions, theories, and concepts), applied methods, and the role of factors in acceptance

studies. We conclude with our own theoretical-conceptual reflections about acceptance.

In this review, we include the following questions:

- What are the main research topics and intentions?
- Is there a common understanding of acceptance? What definitions are used in publications?
- How are other frequently used concepts (acceptability, perception, attitudes, etc.) distinguished from the concept of acceptance in the literature?
- In which disciplines are acceptance studies based? Which disciplinary theories have been used to explain acceptance?
- What role do factors play in explaining the acceptance phenomena?

2. Methods

2.1. Systematic literature review

We systematically reviewed the peer-reviewed scientific literature that addresses acceptance issues within the field of land use. Systematic literature reviews seek *"comprehensively identify all relevant studies to answer a particular question, and assesses the validity (or 'soundness') of each study taking this into account when reaching conclusions"* (Petticrew and Roberts, 2006, p. 39). To deliver clear scientific communication and produce valid results, literature reviews must be systematic, explicit, transparent, and reproducible in their methods (Fink, 1998; Booth et al., 2012). Following these core principles, we designed and documented the methodological procedures that were used for this review, which we detail below.

2.2. Literature search and selection, framework for analysis

We performed an online literature search to identify publications on acceptance in the context of land use. First, we used the major digital bibliographic databases Web of Science (formerly ISI), Science Direct, and Springer Link to search for scientific peer-reviewed publications from 1995 to December 2017. We limited the literature search to English-language publications. In an advanced search, we used the following search terms in each database: *"acceptance"* AND *"land use" / "land management" / "sustainable land use."* We checked the relevance of the articles by screening the titles, abstracts, and keywords. The publications identified as relevant were added to an Excel database. The publications were analysed quantitatively in terms of absolute and relative frequencies. They were also analysed qualitatively. The quantitative analysis criteria included the article type, land use type, year of publication, case study area, and frequencies of the use of definitions and theories. Additionally, the content of used definitions, the conceptual characterization of acceptance, the use of theories, and the role of acceptance factors were qualitatively analysed to gain a deeper understanding of the theoretical-conceptual foundation of acceptance studies. When the study began, the analysis criteria were determined to provide an overview of the body of literature. After an initial analysis, the criteria were revised and refined based on the information provided in the articles.

3. Results and discussion

3.1. Description of the data set

The data set consists of 132 publications, including articles in journals and book chapters. The vast majority of them are empirical papers with their own research data (102 papers,). The remaining publications are empirical plus conceptual (9), theoretical plus conceptual or viewpoint papers (short articles on opinions) (11), or thematic reviews regarding meta-studies (10). The results reveal that the field of scientific acceptance publications is strongly dominated by
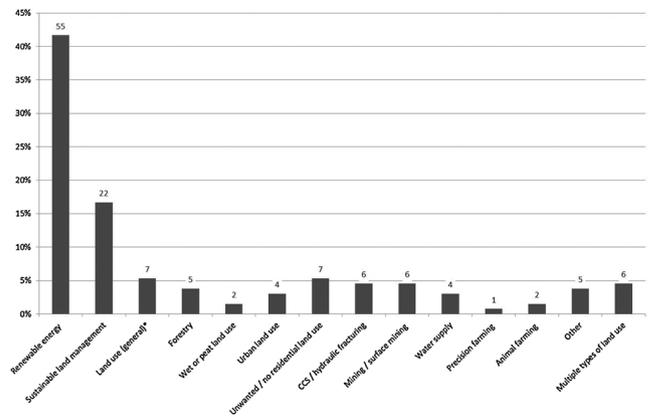

Fig. 1. Publications systemized according to thematic foci (n = 132).
* Land use (general) includes intensively used arable land, agricultural landscapes, land consolidation, and rural landscapes.

empirical studies with quantitative data generation and analysis. More than half (68 papers,) of the empirical papers (111 when the empirical plus conceptual papers are included) used quantitative methods, such as surveys, experiments, and modelling. Only 19 empirical papers () used qualitative methods in terms of interviews and group discussions. In all, 18 papers () applied a mix of qualitative and quantitative methods, and 5 comparative case study analyses were carried out.

Analysing the geographical distribution of the case study areas reveals that most research was conducted in Europe (61 case studies,). Asia (19 case studies,), North America (17 case studies,), and Australia (13 case studies,) have roughly the same number of case studies. Little research data was gathered from Africa (6 case studies) or Latin America (3 case studies). The remaining studies were either intercontinental (6 case studies) or not locatable (7 case studies). We did not consider the geographic distribution of research institutions and authors.

Fig. 1 shows that the thematic focus of these studies is clearly related to renewable energy issues, such as projects wind turbines, bioenergy plantations, biofuel, biogas or geothermal power facilities, waste to energy, and photovoltaics. The second most important issue is sustainable land management, which includes research on landscape and nature conservation measures, the maintenance of ecosystem services (including biodiversity), agri-environmental schemes, soil and water conservation measures, and dry-land farming. Each of the remaining thematic categories only covers a very small number of publications (Fig. 1).

The range of specific issues within these topic categories is broad, but many of them can be subsumed under innovative technologies and land use and management practices. Regarding research intentions and priorities, the majority of publications aim to assess the degree of acceptance and to identify explanations for specific acceptance outcome in terms of fostering and inhibiting factors. These publications also seek to provide recommendations for increasing acceptance outcomes. In addition to these research intentions, some papers deal specifically with trade-offs between different land uses (e.g., Caporale and de Lucia, 2015) and affected actor groups (e.g., Tudor et al., 2015), acceptance type classifications (e.g., Wüstenhagen et al., 2007), specific links between selected acceptance factors (Wolff and Herzog, 2014), and the assessment of acceptance-enhancing measures (Anderson et al., 2012). The result of screening research intentions is congruent with the high number of empirical publications.

In the last 10 years, acceptance has received increasing attention, as depicted in the graph of chronologically ordered publication dates (Fig. 2). The vast majority of papers () have been published since 2010.
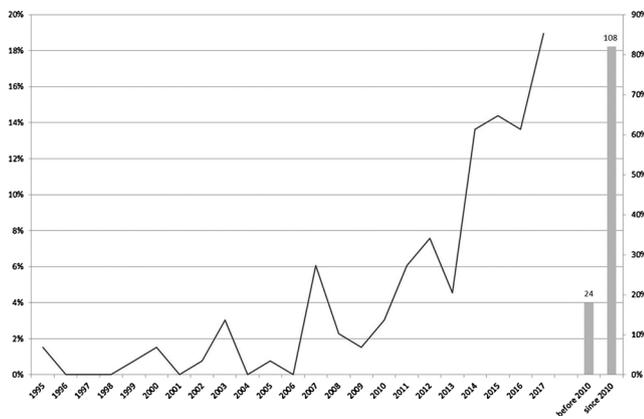
Fig. 2. Accumulated publications on acceptance over time (n = 132).

3.2. Definitions of acceptance and distinction from related terms

More than half of the analysed studies do not offer a definition of acceptance. The observation of Wüstenhagen et al. (2007, p. 2684) that "clear definitions are rarely given" in the "practical policy literature" is still true for the analysed publications in this review. For the authors of those studies, which include researchers, planners, and policy makers, the term acceptance seems to be a practical, everyday term that is commonly understood and does not require any explicit definition (e.g., Lucke, 1995; Wüstenhagen et al., 2007). This review instead reveals that there is no common understanding of acceptance (Wolsink, 2012) but that there is a rather broad diversity of definitions with regard to different dimensions (e.g., public, social), including different aspects and characteristics of acceptance. When compared, the definitions are often inconsistent with each other, and their formulation is sometimes vague. These definitions of acceptance, which sometimes overlap or even contradict each other, are summarized in Table 1 and discussed in Section 3.3. The most cited definition in the reviewed publications is that given by Wüstenhagen et al. (2007). This applies in particular to papers on renewable energy issues (Raven et al., 2009; Huber et al., 2012; Sovacool and Ratan, 2012; Chin et al., 2014; Hammami et al., 2016; Höltinger et al., 2016), as well as other issues such as carbon dioxide capture and storage (CCS) (van Os et al., 2014; Haug and Stigson, 2016) and afforestation (Williams, 2014). The definition of Wüstenhagen et al. (2007) contributes to the classification of different types of acceptance rather than to the characterization of the phenomena. These types, including socio-political acceptance, community acceptance, and market acceptance, are further explained in Subsection 3.3.2.

In our opinion, presenting one generalized and integrative definition of acceptance is challenging. The intention and usage of a concept depends on its thematic and disciplinary context. Acceptance as research area has various disciplinary relations (see also Subsection 3.4). However, we are convinced that defining the key terms and concepts is generally necessary to make one's own work comprehensible to others, to provide guidance for the logical structure of the paper and to reflect on one's own understanding of a concept. Definitions are also an elementary component of theories (Turner, 1991) and therefore a principle of good scientific practice, especially in an interdisciplinary or transdisciplinary context.

Furthermore, defining acceptance helps to distinguish acceptance from related terms and concepts. In this review, we identify and analyse the most frequently used terms and concepts related to acceptance, such as *acceptability, legitimacy, attitudes,* and *perception*.

The term *acceptability* is mentioned in only some publications (e.g., Easterling and Kunreuther et al., 1995; Fournis and Fortin, 2017; Shindler et al., 2002; Williams, 2014). By focussing on renewable energy projects, Fournis and Fortin (2017, pp. 5) offer an elaborate and comprehensive definition of *acceptability* and underscore the multifarious processes of interactions between technology and social actors on different spatial scales. They distinguish between micro-social, meso-political, and macro-economic levels. Similarly, Shindler et al. (2002) define *social acceptability* as a process recognizing its socio-political dimension. Additionally, they highlight the existence of different degrees of *acceptability*. In both publications, *acceptability* is contrasted with *social acceptance*, and the latter is seen as a positive degree of *acceptability* and a desirable outcome for planning projects. Heldt et al. (2016) understand *acceptability* as a property of an object to be accepted and *acceptance* as a result that is influenced by several factors. Dzidic and Green (2012), Easterling and Kunreuther et al. (1995), Lee et al. (2017), and Strazzera and Statzu (2017) use *acceptance* and *acceptability* for similar meanings without providing a definition of either term.

The term *legitimacy* only appears in Gross (2007) and has the same meaning as acceptance.

The term *attitude* is often used in the context of acceptance studies. Several publications explain attitudes as one aspect of acceptance without specifying this link in detail (Mann and Kögl, 2003; Gross, 2007; Mante and Gerowitt, 2007; Leitinger et al., 2010; Suškevičs and Külvik, 2010; Williams, 2011, 2014; Emmann et al., 2013; Liu et al., 2013; Stigka et al., 2014; van Os et al., 2014; Tohidyan Far and Rezaei-Moghaddam, 2017). In two of the analysed publications, public acceptance has the same meaning as public attitudes (Hitzeroth and Megerle, 2013; Enevoldsen and Sovacool, 2016). Accordingly, to Hitzeroth and Megerle (2013, p. 577): "…' acceptance' refers to a range of positive attitude parameters …" and is different than behaviour. However, Wolsink (2010, p. 303) provides a clear distinction between acceptance and attitudes: "Social acceptance is not simply a set of static attitudes of individuals; instead, it refers more broadly to social relationships and organizations, and it is dynamic as it is shaped in learning processes." A third category of studies claims to analyse attitudes but offers no clear explanation of what attitudes are in contrast to acceptance (e.g., Kamal et al., 2015; Ladenburg, 2008; Tapsuwan et al., 2011; Veidemane and Nikodemus, 2015).

Similar issues surround the term *perception*, which many authors, including Bewket (2007), Easterling and Kunreuther et al. (1995), Gross (2007), Hall et al. (2013), Hemström et al. (2014), Leitinger et al. (2010), Liu et al. (2013), Schenk et al. (2007), Tokushige et al. (2007), Toma et al. (2014), Schrader (1995), Spartz et al. (2015), Specht et al. (2016), Stringer et al. (2014), and Zhao et al. (2015), understand as a specific element of acceptance. Perception seems to be a core, broadly influential factor associated with acceptance that can be related to its different aspects, such as the perception of benefits (e.g., Specht et al., 2016), the perception of risks (e.g., Ren et al., 2016; Robinson et al., 2012; Specht et al., 2016), and the perception of specific measures (Hall et al., 2013; Toma et al., 2014). In particular, Bastian et al. (2017), Gilg (2009), Kupidura et al. (2014), and Lokocz et al. (2011) conducted studies of perceptions. These studies defined neither acceptance nor perception. Some studies view perception as a synonym for acceptance (Zoellner et al., 2008; Jones et al., 2012; Schroeder et al., 2013; Eswarlal et al., 2014). While conducting an acceptance study, Zoellner et al. (2008, pp. 4137) use a definition of perception but do not provide a definition for acceptance or describe the relationship between acceptance and perception. According to Zoellner et al. (2008, p. 4137), perception is an "active, subjective and transforming" process. This definition presents characteristics that are similar to those of acceptance in the literature (cf. following paragraph).

To sum up, in the analysed literature, the distinction between acceptance and its related concepts is largely unclear, and the use of these terms is often imprecise. Nonetheless, Fournis and Fortin (2017) make a valuable theoretical contribution by distinguishing between acceptance and acceptability.

Table 1
Definitions of "acceptance" and "acceptability" used in the literature.

Author/Year	Definitions
Anderson et al. (2012)	*"Acceptance implies passivity and as such does not necessarily reflect community approval or support."* (p. 687)
Bewket (2007)	*" … acceptance refers to the farmers' evaluation of the introduced technologies in terms of their effectiveness in arresting soil erosion and their potential to improve land productivity, while adoption refers to the farmers' expression of commitment for a sustained utilization of the technologies as part of the local agricultural system after the external assistance is withdrawn."* (p. 409)
Chin et al. (2014)	*"… social acceptance can be defined as a parameter to indicate public support towards an innovative technology for a sustainable development pathway"* (pp. 31). (This is an amalgamation of several definitions).
Emmann et al. (2013)	*"Farmers' investments in biogas plants can be interpreted as the outcomes of their acceptance of a new technology* (Heyder et al., 2012)*."* (pp. 373)
Engen et al., 2018, 2017 online first	*"Social acceptability is a loosely applied concept in the social sciences that describes the extent to which a group of people prefer a given situation* (Brunson, 1996)*." (pp. 27)*
Fournis and Fortin (2017)	*"… in order to distinguish social acceptance, seen as one of the possible results (. non-acceptance) of a complex process of social acceptability"* (p. 5) *"… we define acceptability as a process of collective assessment of a given project (understood as the specific embodiment of complex interactions between technology and society within a given socio-technical project), integrating plurality of actors (stakeholders) and spatial scales (from global to local) as well as involving the specific trajectory (past and future) of a political group or policy (community/society)."* (pp. 5)
Heldt et al. (2016)	*"While acceptability is 'an objective property'* (Lucke, 1995) *of a technique that could be 'determined in a verification procedure'* (Tschiedel, 1989)*, acceptance can be influenced by generating trust and sharing responsibilities in public participation processes."* (pp. 1052, 1053)
Hemström et al. (2014)	*"… degree to which the public accepts (favors or opposes) intensive forestry practices can be interpreted as adoption of the idea that intensive forestry is used by a forest owner or society. This is a type of non-activist, environmentally significant behavior* (Stern, 2000) *which, whether the public accepts intensive forestry or not, has implications policy and management."* (pp. 198)
Hitzeroth and Megerle (2013)	*"… the present work clearly distinguishes between "attitude" and "behaviour". (pp. 576, 577)* *"…' acceptance' refers to a range of positive attitude parameters adopted by subjects of acceptance (parties concerned by planning) as to an object of acceptance (planning project)."* (pp. 577)
Langer et al. (2016)	*"We focused in this study on the socio-political and community acceptance dimensions according to* Wüstenhagen et al. (2007)*. These dimensions refer to the general and local view of the public towards wind energy."* (pp. 251)
Raven et al. (2009)	*"… societal acceptance as a process of negotiating expectations; Societal acceptance is not just about the acceptance by the general public. In our view it is important to distinguish between the acceptance by different social groups* (Wüstenhagen et al., 2007) *and acceptance on different societal levels* (Rohracher et al., 2004)*."* (pp. 565)
Sattler & Nagel (2010)	*"…acceptance is the result of an interrelated decision making process depending on the subject of acceptance (the farmer), the object of acceptance (the conservation measures), and the surrounding context (the frame conditions)."* (pp. 70) *"… acceptance of an innovation is the result of the interaction and mutual learning within a group of individuals or a community rather than the outcome of an one-to-one interaction between a single adopter and an innovation…"* (pp. 71)
Schumacher and Schultmann (2017)	*"… the present paper defines local acceptance as positive appraisal by direct residents (subject of acceptance) of a local biogas plant (object of acceptance) in the trinational URR (context of acceptance), including both passive approval and active support."* (pp. 2395) (This is a conclusion of the definitions by Lucke (1995) and Wüstenhagen et al. (2007).
Shindler et al. (2002)	*"By its nature, social acceptability is a process rather than an end product"* (pp. 1) *"recognizing that varying degrees of acceptability likely exist."* (pp. 3) In accordance with Brunson (1996) acceptability *is "a condition that results from a judgmental process by which individuals (1) compare the perceived reality with its known alternatives; and (2) decide whether the 'real' condition is superior, or sufficiently similar, to the most favorable alternative condition … Thus, the term 'social acceptability' could be reserved for references to some aggregate form of public consent whereby judgements are shared and articulated by an identifiable and politically relevant segment of the citizenry. As we discuss later, this distinction also is important for assessing the merits of individual evaluations (the type most associated with personal interests) versus socio-political processes for developing a broader shared agreement about what should occur for the larger community of interest."* (pp. 4)
Sonnberger and Ruddat (2017)	*"… acceptance can […] be characterized by a positive attitude of an acceptance subjecta specific acceptance object* (Upham et al., 2015Upham et al., 2015)*. When this positive attitude is paralleled by supportive actions, some scholars speak of support or behavioral acceptance, rather than acceptance* (Batel et al., 2013Batel et al., 2013; Upham et al., 2015)*."* (pp. 57).
D'Souza and Yiridoe, 2014	*"*Williams and Mills (1986) *examined social acceptance in the context of a broad continuum, including the degree or strength of acceptance, and consideration of various social groups."* (pp.263)
Specht et al. (2016)	*"Acceptance in this context describes the process or fact of something being perceived as adequate, valid, or suitable.* (Oxford dictionary, 2015Oxford dictionary, 2015)*. The opposite of acceptance would be non-acceptance or rejection, whereby rejection linked to an action can lead to active resistance or responses* (Dethloff, 2004Dethloff, 2004; Wüste and Schmuck, 2013Wüste and Schmuck, 2013)*."* (pp 755.)
Western et al. (2017)	*"… social acceptability is a judgement people make about whether an action, attribute, or condition is rated as superior or relatively neutral when compared with potential alternatives* (Brunson and Shindler, 2004Brunson and Shindler, 2004)*."* (pp. 531)
Williams (2011)	*"*Brunson (1993, p. 9) *defines acceptance as : 'a condition that results from a judgemental process by which individuals (a) compare the perceived reality with its known alternatives, and (b) decide whether the 'real' condition is superior, or sufficiently similar, to the most favourable alternative condition'."* (pp. 56)
Wolsink (2010)	*"Social acceptance is not simply a set of static attitudes of individuals; instead it refers more broadly to social relationships and organisations, and it is dynamic as it is shaped in learning processes."* (pp. 303)
Wolsink (2012)	*"Following definitions from psychology on the social acceptance of individuals, social acceptance of a phenomenon like the implementation of wind power is the degree to which people like or dislike the phenomenon. The concept includes all degrees, from full refusal to total adoption."* (pp. 1786)
Wüstenhagen et al. (2007)	*"We intend to contribute to the clarity of understanding by distinguishing three dimensions of social acceptance, namely socio-political acceptance, community acceptance and market acceptance."* (pp. 2684) Explanations of these dimensions are given on pp. 12.

3.3. Characteristics and structuring features

In this section, we summarize the variety of characteristics and structuring features of acceptance in the analysed body of literature. Acceptance is a very complex phenomenon that offers different interpretations, as has already been made clear by the various distinguishing features and components mentioned above.

3.3.1. Characteristics

In the following section, we illustrate and contrapose characteristics of acceptance based on their definitions from the literature (Table 1). Due to diverging understandings in the literature, these characteristics are sometimes contradictory. In some cases, differing interpretations of statements about characteristics are also possible.

Process-orientation vs passiveness: Raven et al. (2009), Sattler and Nagel (2010), Shindler et al. (2002), Specht et al. (2016), Williams (2011), and Wolsink (2010) attribute a dynamic and process-orientated component to acceptance. In our interpretation, this means that acceptance can change in both directions (positive or negative) over time as it is proactively influenced by subjects. In contrast to this position,

Anderson et al. (2012) state that acceptance implies passiveness.

Intra-personal vs. intersubjective judgement processes: Bewket (2007), Williams (2011), and Schumacher and Schultmann (2017) describe acceptance as the outcome of an evaluation and judgement process. In our interpretation, the authors focus with this statement on intra-personal (conscious or unconscious) processes, which are not necessarily based on interactions with others. However, this process requires self-active engagement with the issue of acceptance. According to Hitzeroth and Megerle (2013), the evaluation and judgement process is limited to attitudes or personal judgements and does not include the process of acting. Thus, acceptance is not focused on behaviour, even though it is a (pro)active opinion-forming process in terms of an intersubjective or intra-personal engagement from a psychological and sociological point of view (Lucke, 1995). Following Anderson et al. (2012), a third interpretation is that the evaluation and judgement process is generally passive as only acting or behaviour can be seen as activities. In contrast to the intra-personal perspective, Raven et al. (2009), Sattler and Nagel (2010), Shindler et al. (2002), and Wolsink (2010) emphasize interactions and relationships between individuals, groups, and institutions. Thus, acceptance is intersubjective and not an isolated and silent issue. Communication and participation are important impact factors. The decision process depends on interactions with others.

Excluding vs. including rejection: Chin et al. (2014) and Williams (2014) consider acceptance to be the (public) support of an idea or a technology. Thus, acceptance only has a positive connotation as it does not have a negative side/"charge" in terms of rejection. Hitzeroth and Megerle (2013), Schumacher and Schultmann (2017), Specht et al. (2016), and Shindler et al. (2002) also share this opinion. In contrast, Anderson et al. (2012) believe that acceptance does not automatically equate to approval or support. The phenomenon also covers non-acceptance or rejection. D'Souza and Yiridoe, 2014 and Wolsink (2012) advocate for a similar understanding.

Adoption vs. acceptance: According to Bewket (2007), acceptance is not the same as adoption. Whereas acceptance refers to personal judgements concerning farming technologies, adoption is an "… expression of commitment for sustained use of the technologies …" (Bewket, 2007, pp. 409). Other authors have an opposing understanding, stating that acceptance "…. can be interpreted as adoption of the idea …" (Hemström et al., 2014, pp. 198) or as "investment of technology" (Emmann et al., 2013, pp. 373).

Finally, some authors understand acceptance only as a positive result or condition (Shindler et al., 2002; Hitzeroth and Megerle, 2013; Chin et al., 2014; Specht et al., 2016; Fournis and Fortin, 2017; Schumacher and Schultmann, 2017), whereas other authors believe it to be a complex phenomenon that is compound, many-faceted, multi-layered, and affected by various conditions (e.g., Wolsink, 2012; Wüstenhagen et al., 2007). To achieve more clarity concerning these two positions and to prevent misunderstandings, Fournis and Fortin (2017) suggest the differentiation between acceptance and acceptability.

3.3.2. Intentions of structuring acceptance

Various approaches to conceptually structuring acceptance can be found in the literature. These structuring elements are sometimes based on the abovementioned characteristics.

Types: The analysed literature offers various types of acceptance, e.g., public acceptance, social acceptance, local acceptance, community acceptance, or acceptance of specific affected groups (e.g., landowners, farmers, and tourists). The type of acceptance is mainly connected to the subject of acceptance and possibly to spatial levels. Thus, each type can be associated with certain subject groups (Wüstenhagen et al., 2007; Wolsink, 2012; as well Lucke, 1995). A review of the body of literature shows that a clear differentiation between the types of acceptance cannot be found in all cases. In some publications, different terms (e.g., community, local, social, public) have the same meaning and are used confusingly. Enevoldsen and Sovacool (2016) use the terms public and community acceptance synonymously. Achillas et al. (2011), Chin et al. (2014), Liu et al. (2013), and Stigka et al. (2014) use social and public acceptance interchangeably. Petrova (2016), Williams (2011, 2014), and Zoellner et al. (2008) apply the term public acceptance to refer to specific case study areas and not the public in general. Wüstenhagen et al. (2007) and Wolsink (2012) clearly emphasize that public acceptance, local acceptance, and social acceptance do not have equivalent meanings and cannot be used interchangeably. In their definition and conception of social acceptance, they articulate the following types of social acceptance: (1) social-political acceptance, (2) community acceptance, and (3) market acceptance. Within this typology, the subjects of acceptance and the social group also play an important role. (1) Social-political acceptance is the general acceptance of broad topics (e.g., renewable energy or nature conservation laws) without referring to a site-specific project. The social groups involved in this type include the general public, key stakeholders, or policy makers. (2) By community acceptance, Wüstenhagen et al. (2007) refer to a specific (energy) project to be implemented in a defined location. In this case, the local stakeholders and residents are the subjects of acceptance. (3) Market acceptance refers to Rogers' (2003) market adoption of innovations by customers "through a communication process between individual adopters and their environment" (Wüstenhagen et al., 2007, p. 2685). Embracing the possibility of categorizing a broad range of acceptance phenomena into differentiable types, many other authors have referred to and apply this classification (cf. 3.1; 3.4). Scherhaufer et al. (2017), pp. 864) rejects the rigorous differentiation between socio-political, market, and community acceptance by advocating for a more integrative perspective that considers interdependencies between the three types.

Dimensions: In her theoretical approach to acceptance, the German sociologist Doris Lucke (1995) developed a relation triangle as an orientation guide. It consists of three dimensions: (1) the acceptance object, (2) the acceptance subject, and (3) the acceptance context. The acceptance object is the thematic reference (1) of what should be accepted to a certain extent by a subject. This acceptance subject can be an individual or a group (2) who constantly interacts with other actors. Thus, the process of evaluations and decisions happens not only as a reflection of the thematic issue but also with regard for personal beliefs, norms, and values and in the interplay with positions of others (e.g., society and political actors). Lucke (1995) labels the object-related and subject-related framing conditions (political, institutional, legal, historical setting, etc.) as the acceptance context (3). By determining the dimensions of the given acceptance phenomenon, the researcher can structure the problem and gain more clarity regarding the boundaries of the issue. Hitzeroth and Megerle (2013), Sattler and Nagel (2010), and Schumacher and Schultmann (2017) refer to this relationship triangle, although Hitzeroth and Megerle (2013) do not explicitly mention in their definition the acceptance context as an important and double-constituted reference point in the triangle. The importance of distinguishing between object, subject, and inter-subject dimension as analytical categories is stated in van Os et al. (2014). Referring to Roo and Porter (2007), a publication about the role of actors in a fuzzy governance environment, van Os et al. (2014) adopt this distinction procedure in their acceptance study. As mentioned in the previous paragraph, Wüstenhagen et al. (2007) also emphasize the specific roles of different subjects, objects, and contexts in their typology. Lucke goes beyond a type assignment by explaining that acceptance decisions are made in the interaction between different actors by considering the conditions of the specific object and their framing conditions. Lucke focuses on mutual negotiation and communication processes, value-oriented decision making, active reflection on issues, and circumstances. Thus, the perspective of Lucke (1995) is a more sociological (and social-psychological) perspective than that of Wüstenhagen et al. (2007). Such social-psychological aspects concerning the relation between subjects, objects, and contexts can also be identified in the concepts described by Fournis and Fortin (2017) and Wolsink (2012).

Levels: Another division of the acceptance phenomena includes at least two action levels: the level of attitudes and the level of acting (Raven et al., 2009; Sattler and Nagel, 2010; Wolsink, 2010, 2012). At the non-proactive level of attitudes, the subject offers an internal judgement before acting. At the next level, the subject alters his judgement into an action, and his behaviour is an expression of his attitudes.

Degrees: Different degrees of decisions about acceptance exist on a quality axis with possible positions on the positive or negative side (cf. Sauer et al., 2005). Ranging from negative grades to positive grades, these degrees include non-acceptance (rejection), low acceptance, indifference, high acceptance, approval, proactive support, and active ownership (Wolsink, 2012; D'Souza and Yiridoe, 2014). Hitzeroth and Megerle (2013) involve the range of rejection, range of risk, and range of acceptance in their model of the evolution of attitudes. This inclusion provides the opportunity to analyse the factors underlying critical degrees, and this might be important for project success.

In summary, very few publications recognize the enormous complexity of the structuring elements regarding acceptance or acceptability. The conceptual efforts made by Wolsink (2010,2012) should be mentioned as a noteworthy exception.

3.4. Disciplinary relations and theories

Acceptance is generally a cross-sectoral research topic in different disciplines or areas of applied research with their own perspectives on and understandings the issue (Lucke, 1995; Schenk et al., 2007).[1] With regard for land use changes, acceptance is mostly an application-oriented or even an interdisciplinary issue. Therefore, the analysed studies contain different disciplinary relations. These disciplinary relations are reflected in the use of theories and theoretical constructs to design the research frameworks or/and to explain acceptance phenomena. The application of the theory can vary in its extent, ranging from explicitly theory-based by testing deducted hypotheses to less strict forms of theory use (Davies et al., 2010). The disciplinary relations and the use of specific theories are obviously strongly connected to the particular research issue (especially the acceptance objects), the research interest and intention, and the academic background of the researcher. In terms of the analysed body of literature, the frameworks used for data generation and analysis are based either on single theories or a combination of several theories. Although research generally requires a sound theoretical foundation (Udo-Akang, 2012), we found 32 empirical studies that do not use any theory or concept for their empirical research. At the same time, these publications failed to apply an inductive methodology where theory building is the outcome of the empirical analysis.

Schenk et al. (2007, p. 68) state that, "Until now there has been no real theory of acceptance available." We assume that a generally valid and interdisciplinary theoretical explanatory model for a broad range of acceptance phenomena and issues is difficult to establish if acceptance cannot be assigned to a single discipline. This assumption has been confirmed by the analysed publications. In our opinion, no "real theories"[2] have been offered until now, only contributions to a theoretical understanding of acceptance phenomena in land use from different disciplinary perspectives. The most important contribution found in the body of literature is the typology of acceptance of renewable energy suggested by Wüstenhagen et al. (2007). This typology is more of a problem structuring model than a "real theory" of acceptance because it

is not capable of explaining or predicting how acceptance is constituted or why individuals or groups accept or do not accept ideas, practices, or innovations. Several publications on renewable energy also reference Wüstenhagen et al. (2007) in explaining their research framework and study design (Huber et al., 2012; Sovacool and Ratan, 2012; Chin et al., 2014; Eswarlal et al., 2014; Ganzevles et al., 2015; Yuan et al., 2015; Hammami et al., 2016; Höltinger et al., 2016). Even studies focussing on others issues (but similarly structured) have adopted the typology of Wüstenhagen et al. (Williams, 2011; van Os et al., 2014; Williams, 2014; Zhao et al., 2015; Haug and Stigson, 2016).

A popular and often cited but nonetheless controversial explanation for non-acceptance or rejection of local projects (e.g., wind turbines, power plants, waste management) is the so-called "Not In My Back Yard" (NIMBY) syndrome. Originally suggested and described by Dear (1992), NIMBY has long been used by project developers and policy makers, though today, many researchers agree that it is more of "a normative label" than a serious and scientifically sound explanation (Devine-Wright, 2009; Wolsink, 2012, pp. 1797; Petrova, 2016; Wolsink, 2006). Thus, within the scientific community, NIMBY's explanatory power has been widely discarded due to its limitations given the negative attribution of human attitudes and its tendency to obscure the actual reasons for rejecting land use changes (e.g., Enevoldsen and Sovacool, 2016; Petrova, 2016; Wolsink, 2012; Wüstenhagen et al., 2007).

Fournis and Fortin (2017) have developed a new and promising concept that distinguishes the notions of acceptance and acceptability. The authors enrich the recent theoretical-conceptual debate by advocating the conscious use of these terms and proposing three analytical levels (micro-social, meso-political, and macro-economic). While this concept was developed as a result of a literature review in the field of wind energy projects, it has the potential to be applied in a broader context.

The most extensive and comprehensive sociological contribution to a theoretical understanding of acceptability comes from Lucke (1995). Beyond the acceptance subject, object, and context dimensions already mentioned in Section 3.3, Lucke addresses mutual process orientation, the concept of values, acceptance action levels, sociological acceptance types, etc. Very few aspects of Lucke's reflections on acceptance are considered in the analysed literature, and what does appear is only presented by German-speaking researchers (Hitzeroth and Megerle, 2013; Schenk et al., 2007; Schumacher and Schultmann, 2017; Specht et al., 2016).

Generally, if no established theory exists, applying theories of related subject areas is often appropriate (Schnell et al., 2013). This practice can also be observed in the case of acceptance studies. Our analysis reveals many uses of theories and theoretical constructs from other disciplines, subject areas, and research fields. However, the terms and concepts within these disciplines are not used consistently. Table 2 presents the disciplines and research fields with the embedded theories that are used to design the framework for the empirical work in the analysed acceptance studies.

A diverse array of psychological theories are used in acceptance studies. Due to the essential role that psychological processes of human thinking and acting play in acceptance decisions, psychology is unsurprisingly the most prominent discipline when considering acceptance from a theoretical perspective. Personal values, attitudes, and behaviour are psychologically constituted constructs and thus fundamental topics in psychology. None of the applied psychological theories are dominant or used particularly often.

For numerous definitions (cf. Subsection 3.2), acceptance is therefore constituted in a social space and depends on social interactions between people and social groups: so-called social acceptance. The discipline that investigates social behaviour – sociology – thus has the second most important role in acceptance research. In addition to the aforementioned theoretical contribution of Lucke (1995), theories regarding essential communication requirements (Habermas, 1997), the

---

[1] Beyond topics related to land use, acceptance studies are well known in (clinical) psychology, food science, technology assessment, and product marketing.

[2] Schnell et al. (2013) and Turner (1991) define a theory as a system of statements that explains a part of reality. Despite an on-going discussion of what theories are and of what they consist (Sovacool and Hess, 2017), Udo-Akang (2012) mentions the following generally established characteristics of theories: descriptive ability, explanatory power, heuristic value, testability, integration, parsimony, clarity, comprehensiveness, and delimitation.

Table 2
Theories and theoretical constructs in the literature.

(Sub)Disciplines /research areas[a]	Embedded theories or theoretical constructs	References
Acceptance of renewable energy	Typology of acceptance (Wüstenhagen et al., 2007)	Chin et al. (2014), Dermont et al. (2017), Ganzevles et al. (2015), Hammami et al. (2016), Huber et al. (2012), Eswarlal et al. (2014), Langer et al. (2016), Rand and Hoen (2017), van Os et al. (2014), Williams (2011, 2014), Sovacool and Ratan (2012), Sonnberger and Ruddat (2017), Schumacher and Schultmann (2017), Yuan et al. (2015); Zhao et al. (2015)
	From social acceptance to acceptability (Fournis and Fortin, 2017)	Fournis and Fortin (2017)
(Environmental) Psychology and Behavioural Studies	Theory of valuing environmental and natural resources (Haab and McConnell, 2003)	Caporale and de Lucia (2015)
	Cognitive and behavioural theories (without bibliographical reference)	Walter (2014)
	Theory of reasoned action (Ajzen and Fishbein, 1980)	Stigka et al. (2014), Emmann et al. (2013)
	Theory of planned behaviour (Ajzen, 1991)	Stigka et al. (2014), Price and Leviston (2014), Wolsink (2012)
	Value-Belief-Norms (Stern, 2000)	Price and Leviston (2014)
	Attitude of confidence (Adrian et al., 2005)	Tohidyan Far and Rezaei-Moghaddam (2017)
	Environmental-psychological approaches (based on various sources)	Zoellner et al., 2008
	Theory of psychological reactance (Brehm, 1966)	Schenk et al. (2007)
	Attitudes in social psychology (Rajecki, 1990)	Mann and Kögl (2003)
Sociology	"Acceptance theory" (Lucke, 1995)	Hitzeroth and Megerle (2013), Schumacher and Schultmann (2017), Specht et al. (2016), Schenk et al. (2007), indirectly: Sattler and Nagel (2010), Suškevičs and Külvik (2010)
	Theory of communicative behaviour (Habermas, 1997)	Schenk et al. (2007)
	Theory of symbolic interactions (Mead, 1968; Blumer, 1992)	Schenk et al. (2007)
	Social capital (Putnam, 2000; van Oorschot et al., 2006)	Jones et al. (2012)
	Framing theory (Goffmann, 1974)	Spartz et al. (2015)
Ethics	"frame of reference" concept (human-nature and human-animal relationships, Te Velde et al., 2002)	Boogaard et al. (2011)
Innovation research	Technology Acceptance Model - TAM (Davis, 1989)	Emmann et al. (2013), Sharifzadeh et al. (2017), Tohidyan Far and Rezaei-Moghaddam (2017)
	Diffusion of innovation (Rogers, 2003)	Sattler and Nagel (2010), Hemström et al. (2014)
	Organizational innovation adoption (Frambach and Schillewaert, 2002)	Emmann et al. (2013)

[a] Generally, academic disciplines have the following common elements: a particular object of research; a homogenous communication context; an accepted knowledge corpus; a set of research methods, concepts, and theories; and, to a certain extent, a manifestation at scientific institutions (e.g. Krishnan, 2009). Thus, acceptance and innovation research are more research areas than definable disciplines.

symbolic value building of "things" through continuously occurring interactions (Blumer, 1992 in Schenk et al., 2007), and social capital "as a multi-dimensional concept" (Jones et al., 2012, pp. 56) have been applied in the analysed literature.

A third source of important theories is innovation research. The Technology Acceptance Model (TAM) (Davis, 1989), the theory of diffusion of innovation (Rogers, 2003), and organizational innovation adoption (Frambach and Schillewaert, 2002) are models restricted to explaining the acceptance behaviour of technical innovations or/and specific products. In TAM, acceptance is synonymous with innovation adoption by users. Rogers' theory of acceptance includes one step in an idealised innovation adoption process. The main acceptance factors in both theory models are similar: relative advantage, compatibility, complexity, traceability, observability (Rogers, 2003), perceived usefulness, and perceived ease of use (Davis, 1989). Although both theories are highly appreciated by a large community of technical innovations researchers, the acceptance of technical innovations in the field of land use is rarely explained by these theories.

Considering the reviewed literature, landscape planning,[3] sustainability research, and agroeconomics are (sub)disciplines in which acceptance studies are frequently conducted but which have not created their own theories. A possible exception to this is the unacceptance-

acceptance spectrum designed by Sauer et al. (2005; cited in Hitzeroth and Megerle, 2013) for a landscape planning and nature conservation study. This spectrum contributes to the definitional understanding of acceptance. However, its contribution is mainly based on theoretical considerations from environmental psychology and sociology.

The included publications reveal that theories of justice are an issue of increasing importance with disciplinary bases in social psychology, law, (political) philosophy, and ethics. Gross (2007) stated that general justice principles, including fairness regarding distribution and outcome and the fairness of processes and decision-making procedures, exist across these disciplines. Thus, justice consists of distributional and procedural justice as its two main pillars, and these two forms find expression in individual perceptions. These principles of justice are applied in the studies of Gross (2007), Walker et al. (2014), Wüstenhagen et al. (2007), and Zoellner et al. (2008). With the introduction of the concept of environmental justice, a link between justice principles and environmental planning has been established. Environmental justice stresses the importance of proactively including justice principles in environmental planning processes and environmental policies to enhance the acceptance of land use measures (Gross, 2007; Wüstenhagen et al., 2007).

In conclusion, the theoretical foundations of acceptance studies in general still remain poor and in need of further development. To wit, only one-third of the analysed literature uses a theoretical approach for their studies.

---

[3] In its origins, landscape planning is the planning instrument of nature conservation. In the course of its scientification, landscape planning has also become a planning discipline.

3.5. The role of factors influencing acceptance

The majority of the investigated studies mention the importance of factors influencing acceptance. These factors can be described as the specific conditions and driving forces that positively or negatively impact the degree or quality of acceptance in each case. Therefore, these factors are essential for studies that aim to analyse reasons for acceptance and go beyond describing the degrees (from low to high acceptance). Only by identifying the influencing factors is it possible to improve acceptance and successfully manage projects.

In the analysed publications, the use and handling of factors differ depending on the applied research method (quantitative or qualitative) and the researchers' individual theoretical comprehension of acceptance and/or acceptability. In this sense, Sovacool and Hess (2017, pp. 740) acknowledge that "… different theories accommodate (and may incentivize) different methods". In several studies, the sources of factors for empirical work are neither clearly nor explicitly described in the research methodology (Schrader, 1995; Janikowski et al., 2000; Luz, 2000; Mante and Gerowitt, 2007; Tumuhairwe et al., 2007; Ladenburg, 2008; Leitinger et al., 2010; Qiu et al., 2014; Ruggiero et al., 2014; Kendal et al., 2015; Ren et al., 2016). In these cases, identifying the researcher's perception of relevant factors is difficult, and the theoretical basis appears to be weak. Another factor selection strategy is the adoption and adaptation of factors used by other published case studies as a basis for their research design in order to quantitatively measure the evidence and specific manifestation of those factors (e.g., Bewket, 2007; Que et al., 2015; Robinson et al., 2012; Veidemane and Nikodemus, 2015; Williams, 2014; Yuan et al., 2015; Zhao et al., 2015). Examples of applying of theory-based factors include the studies of Achillas et al. (2011), Boogaard et al. (2011), Chin et al. (2014), Hitzeroth and Megerle (2013), Jones et al. (2012), Liu et al. (2013), Musall and Kuik (2011), Sattler and Nagel (2010), and Spartz et al. (2015). In this category, the extent to which theory guides the research differs, ranging from a rigorous adoption of predefined factors (e.g., Sattler and Nagel, 2010) to a more open interpretation and application of theories or theoretical constructs (e.g., Hitzeroth and Megerle, 2013; Musall and Kuik, 2011) and a partially theory-based factor use in which theory-based factors are just one part of the factor set (Jones et al., 2012). The studies conducted by Emmann et al. (2013), Hemström et al. (2014), Suškevičs and Külvik (2010), and Thøgersen and Noblet (2012) use a mix of theory-based factors as well as factors from other empirical studies. All of the studies in the abovementioned categories (excluding some studies with unclear factor selection sources) have the common characteristic in that they select the acceptance factors before quantitatively gathering empirical data.

Another smaller category of studies neither determined nor fixed factors before gathering empirical data. These include studies by Gross (2007), Hall et al. (2013), Hammami et al. (2016), Schenk et al. (2007), Schröter et al. (2015), and Sovacool and Ratan (2012). In these cases, factors were not the starting point, but instead the outcome of a theory-based data analysis. The theories served as analytical frameworks and explanation models to varying degrees. Factors were later discussed and compared with findings from other studies. From our point of view, the openness related to factors provides the advantage of a direct relation to a specific case. Additionally, compared to previously fixed factors, all aspects mentioned by interviewees during data collection can be considered in the analysis phase. These strong, qualitatively oriented research methods are suitable for explorative studies in which not all factors are already known.

Generally, the factors vary between cases. Thus, a simple adoption of factors to other cases bears the risk of disconnecting the empirical work from theory and excluding important acceptance factors. The question that arises is whether common/universal and transferable factors exist. Schenk et al. (2007) state that regardless of the acceptance object, there are some similar factors, but no evidence exists for the most important ones, "especially in the context of nature and landscape conservation measures" (Schenk et al., 2007, pp. 67). Indeed, after analysing the body of literature, some similar factors are apparent. For example, trust, participation, knowledge, prior experiences, and economic and visual aspects are frequently cited as influencing factors. However, researchers´ opinions and scientific evidence regarding the most important factors strongly depend on the theoretical foundations of each study.[4] Furthermore, factors in form-driving forces are rarely clearly defined entities across the range of studies and are *per se* not on the same level. More general or unspecific factors often encompass a bundle of specific factors (economical aspects, justice, communication, perceived (dis)advantages, general attitude, etc.). Due to their lack of specificity, these general factors are often used. However, factors can also be of a specific character describing a narrow issue, a particular situation, or specific circumstances (e.g., production costs, job creation, perceived procedural justice, prior experiences, or attitudes towards technology or towards the innovation initiator). In conclusion, creating a complete list of all factors and determining which are most crucial seems to require a disproportionate amount of effort and is likely to be less useful.

4. Conclusion

In this literature review, we sought to synthesise publications' contributions to the acceptance phenomena in order to advance the theoretical-conceptual debate on this topic. Therefore, we discussed its epistemological foundations and linkages and analytically revealed its weaknesses. In summary, the lack of definitions and theories of acceptance and acceptability as well as an insufficient theoretical foundation regarding the selection of explanatory factors are widespread among studies. Many consider acceptance only as a positive outcome that should be achieved when planning projects (e.g., Specht et al., 2016). Few publications acknowledge the complexity of these issues and the need for a theoretical-conceptual foundation (e.g., Fournis and Fortin, 2017).

4.1. Recommendations for further research

1) Authors of scientific publications should always clarify their understanding of acceptance or acceptability to make their work more comprehensible to others, to provide guidance for the logical structure of the paper and to reflect on their own concepts. In this sense, it is also important to distinguish acceptance from related notions and concepts (e.g., acceptability, perception, attitudes, etc.) or to include them in a meaningful way.

2) From a theoretical point of view, it is worth incorporating a broad range of degrees, including non-acceptance and rejection, into analyses. This has been recommended not only in the literature we reviewed about land use issues, but also by Kahma and Matschoss (2017) and Sovacool et al. (2017). It should be taken into account that degrees of negative acceptance can reveal important findings for the implementation of projects and the diffusion of innovations. The timely exposure of active resistance allows the consideration of alternative solutions in early stages of the process (Sovacool et al., 2017). According to Kahma and Matschoss (2017), it is improper to conclude that non-acceptance can be explained by opposite influencing factors other than acceptance. Both outcomes are based on different factors and explanations worthy of analysis (Kahma and Matschoss, 2017). Hitzeroth and Megerle (2013) suggest paying special attention to critical degrees and acceptance risks such as doubt or conditional acceptance. Knowledge about these degrees is

---

[4] The rational choice approaches or contingent valuation (e.g., willingness-to-pay studies) mainly focus on individual behaviour decisions based on individual perceived (economic) benefits. In these approaches, economic factors have an outsized importance. Approaches that are strongly influenced by cultural and social norms centre more on norms and value-related factors.

crucial for successful project implementation because it enables reaction to and management of potential threats.

3) As a methodological recommendation, we advocate a sound analysis of factors. Qualitative analyses in terms of explorative or in-depth studies are suitable for cases when factors are previously unknown. The use of factors from other sources (e.g., established literature) is only advisable if comparable cases exist. Such is the case for widely analysed and discussed topics, e.g., wind turbines. Hence, factors from other studies could be used to conduct own surveys, but only if the framing conditions and settings are similar.

4) Dealing with land-based issues, especially when policy makers are involved, requires careful reflection upon and spatial framing of acceptability studies. This means considering not only assigning the issue to a spatial level (local, regional, national, etc.) but also embedding the findings into a broader spatial implementation context (e.g., in regional planning and landscape development).

4.2. Redefining acceptance and acceptability

Based on the analysed literature, we conclude with our own reflections in order to advance the scientific understanding of the conceptualization of acceptance. To prevent misunderstandings related to the use of terms (as outlined above) and to thereby achieve more clarity, we advocate differentiating between acceptance and acceptability, as suggested by Fournis and Fortin (2017). This enables the recognition of acceptability as complex scientific concept and the simultaneous recognition of acceptance as positive outcome of a judgement processes and everyday term. To conclude for this review, this differentiation means that most analysed studies deal with acceptability rather than with acceptance.[5] According to our understanding, acceptability encompasses: (a) actor-based and dynamic decision processes that are supported by value-based arguments and formed in intrapersonal and intersubjective judgement processes. These decisions, so-called acceptability decisions, are (b) the products of the interactions among the acceptability actor, the specific acceptability object, other actors, and the context. Furthermore, the (c) acceptability decisions can be assigned to a particular degree (from opposition and rejection to high acceptance and engagement) and can be made on a certain level, including (d) attitude, action, or utilization. At the non-proactive level of attitudes, the subject offers an internal judgement before acting. At the next level, the subject alters his judgement into an action that is the expression of his attitudes. The utilization level refers to assessing the long-term use of an innovation. This definition of acceptability is based on theoretical reflexions from Fournis and Fortin (2017), Lucke (1995), and Wolsink (2012, 2010). Applying this understanding of acceptability offers the possibility of decoding and structuring very different (regarding issues and spatial scales) cases while considering the main characteristics and elements of acceptability. Furthermore, it supports an open, case-oriented, and explorative analysis in which not all drivers and influencing factors are already known. In summary, we believe that land use and social research can benefit from this advanced understanding of acceptability.

Acknowledgments

---

[5] Nonetheless, in this review, we used mainly the term "acceptance" because this was the starting point for our analysis. The differentiation between "acceptance" and acceptability is one of the conclusions and should be considered in further research.

References

Achillas, C., Vlachokostas, C., Moussiopoulos, N., Banias, G., Kafetzopoulos, G., Karagiannidis, A., 2011. Social acceptance for the development of a waste-to-energy plant in an urban area. Resour. Conserv. Recycl. 55, 857–863. http://dx.doi.org/10.1016/j.resconrec.2011.04.012.

Adrian, A.M., Norwood, S.H., Mask, P.L., 2005. Producers' perceptions and attitudes toward precision agriculture technologies. Comput. Electron. Agric. 48, 256–271. http://dx.doi.org/10.1016/j.compag.2005.04.004.

Ajzen, I., 1991. The theory of planned behaviour. Organ. Behav. Hum. Decis. 50, 179–211.

Ajzen, I., Fishbein, M., 1980. Understanding Attitudes and Predicting Social Behaviour. Prentice-Hall, Englewood Cliffs.

Anderson, C., Schirmer, J., Abjorensen, N., 2012. Exploring CCS community acceptance and public participation from a human and social capital perspective. Change 17, 687–706. http://dx.doi.org/10.1007/s11027-011-9312-z.

Bastian, C.T., Keske, C.M.H., McLeod, D.M., Hoag, D.L., 2017. Landowner and land trust agent preferences for conservation easements: implications for sustainable land uses and landscapes. Landsc. Urban Plann. 157, 1–13. http://dx.doi.org/10.1016/j.landurbplan.2016.05.030.

Batel, S., Devine-Wright, P., Tangeland, T., 2013. Social acceptance of low carbon energy and associated infrastructures: a critical discussion. Energy Policy 58, 1–5. http://dx.doi.org/10.1016/j.enpol.2013.03.018.

Bewket, W., 2007. Soil and water conservation intervention with conventional technologies in northwestern highlands of Ethiopia: acceptance and adoption by farmers. Land Use Policy 24, 404–416. http://dx.doi.org/10.1016/j.landusepol.2006.05.004.

Blumer, H., 1992. Der methodologische Standort Des Symbolischen Interaktionismus. In: Burkart, R., Hömberger, W. (Eds.), Kommunikationstheorien: ein Textbuch zur einführung. Wilhelm Braumüller Universitäts—Verlagsbuchhandlung GmbH, Wien, pp. 23–40.

Boogaard, B.K., Bock, B.B., Oosting, S.J., Wiskerke, J.S.C., van der Zijpp, A.J., 2011. Social acceptance of dairy farming: the ambivalence between the two faces of modernity. J. Agric. Environ. Ethics 24 (3), 259–282. http://dx.doi.org/10.1007/s10806-010-9256-4.

Booth, A., Papaioannou, D., Sutton, A., 2012. Systematic Approaches to a Successful Literature Review. Sage Publications, Thousand Oaks.

Brehm, J.W., 1966. A Theory of Psychological Reactance. Academic Press, New York.

Brunson, M.W., 1996. A definition of "social acceptability" in ecosystem management. In: Brunson, M.W., Kruger, L.E., Tyler, C.B., Schroeder, S.A., tech (Eds.), Defining Social Acceptability in Ecosystem Management: A Workshop Proceedings. Gen. Tech. Rep. PNW-GTR-369, pp. 7–16.

Brunson, M.W., Shindler, B.A., 2004. Geographic variation in social acceptability of wildland fuels management in the Western United States. Soc. Nat. Resour. 17, 661–678. http://dx.doi.org/10.1080/08941920490480688.

Caporale, D., de Lucia, C., 2015. Social acceptance of on-shore wind energy in Apulia Region (Southern Italy). Renew. Sustain. Energy Rev. 52, 1378–1390. http://dx.doi.org/10.1016/j.rser.2015.07.183.

Chin, H.-C., Choong, W.-W., Wan Alwi, S.R.W., Mohammed, A.H., 2014. Issues of social acceptance on biofuel development. J. Clean. Prod. 71, 30–39. http://dx.doi.org/10.1016/j.jclepro.2013.12.060.

D'Souza, C.D., Yiridoe, E.K., 2014. Social acceptance of wind energy development and planning in rural communities of Australia: a consumer analysis. Energy Policy 74, 262–270. http://dx.doi.org/10.1016/j.enpol.2014.08.035.

Davies, P., Walker, A.E., Grimshaw, J.M., 2010. A systematic review of the use of theory in the design of guideline dissemination and implementation strategies and interpretation of the results of rigorous evaluations. Implement. Sci. 5, 14. http://dx.doi.org/10.1186/1748-5908-5-14.

Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q. 13, 319–340. http://dx.doi.org/10.2307/249008.

Dear, M., 1992. Understanding and overcoming the NIMBY syndrome. J. Am. Plann. Assoc. 58, 288–300. http://dx.doi.org/10.1080/01944369208975808.

Dermont, C., Ingold, K., Kammermann, L., Stadelmann-Steffen, I., 2017. Bringing the policy making perspective in: a political science approach to social acceptance. Energy Policy 108, 359–368. http://dx.doi.org/10.1016/j.enpol.2017.05.062.

Dethloff, C., 2004. Akzeptanz und Nicht-Akzeptanz von technischen Produktinnovationen [Acceptance and non-acceptance of technical product innovations]. Pabst Science Publ, Berlin.

Devine-Wright, P., 2009. Rethinking NIMBYism: the role of place attachment and place identity inexplaining place-protective action. J. Commun. Appl. Soc. Psychol. 19, 426–441. http://dx.doi.org/10.1002/casp.1004.

Dzidic, P., Green, M., 2012. Outdoing the Joneses: understanding community acceptance of an alternative water supply scheme and sustainable water use. Landsc. Urban Plann. 105, 266–273. http://dx.doi.org/10.1016/j.landurbplan.2011.12.023.

Easterling, D., Kunreuther, H., 1995. A siting process to gain public acceptance. In: Easterling, D., Kunreuther, H. (Eds.), The Dilemma of Siting a High-Level Nuclear Waste Repository. Springer, Netherlands, Boston, pp. 167–192.

Emmann, C.H., Arens, L., Theuvsen, L., 2013. Individual acceptance of the biogas innovation: a structural equation model. Energy Policy 62, 372–378. http://dx.doi.org/10.1016/j.enpol.2013.07.083.

Enevoldsen, P., Sovacool, B.K., 2016. Examining the social acceptance of wind energy: practical guidelines for onshore wind project development in France. Renew. Sustain. Energy Rev. 53, 178–184. http://dx.doi.org/10.1016/j.rser.2015.08.041.

Engen, S., Runge, C., Brown, G., Fauchald, P., Nilsen, L., Hausner, V., 2018. Assessing local acceptance of protected area management using public participation GIS (PPGIS). J. Nat. Conserv. 43, 27–34. http://dx.doi.org/10.1016/j.jnc.2017.12.002.

Eswarlal, V.K., Vasudevan, G., Dey, P.K., Vasudevan, P., 2014. Role of community acceptance in sustainable bioenergy projects in India. Energy Policy 73, 333–343. http://dx.doi.org/10.1016/j.enpol.2014.04.019.

Fink, A., 1998. Conducting Research Literature Reviews: From Paper to the Internet. Sage Publications, Thousand Oaks.

Fournis, Y., Fortin, M.-J., 2017. From social "acceptance" to social "acceptability" of wind energy projects: towards a territorial perspective. J. Environ. Plann. Manage. 60, 1–21. http://dx.doi.org/10.1080/09640568.2015.1133406.

Frambach, R.T., Schillewaert, N., 2002. Organizational innovation adoption: a multi-level framework of determinants and opportunities for future research. J. Bus. Res. 55, 163–176. http://dx.doi.org/10.1016/S0148-2963(00)00152-1.

Gaede, J., Rowlands, I.H., 2018. Visualizing social acceptance research. Energy Res. Soc. Sci. 40, 142–158. http://dx.doi.org/10.1016/j.erss.2017.12.006.

Ganzevles, J., Asveld, L., Osseweijer, P., 2015. Extending bioenergy towards smart biomass use issues of social acceptance at Park Cuijk, The Netherlands. Energy Sustain. Soc. 5, 22–34. http://dx.doi.org/10.1186/s13705-015-0053-9.

Gilg, A., 2009. Perceptions about land use. Land Use Policy 26, S76–S82. http://dx.doi.org/10.1016/j.landusepol.2009.08.018.

Goffmann, E., 1974. Frame Analysis: An Essay on the Organization of Experience. Harvard University Press, Cambridge.

Gross, C., 2007. Community perspectives of wind energy in Australia: the application of a justice and community fairness framework to increase social acceptance. Energy Policy 35, 2727–2736. http://dx.doi.org/10.1016/j.enpol.2006.12.013.

Haab, T., McConnell, K.E., 2003. Valuing Environmental and Natural Resources: The Ecometrics of Non-Market Valuation. Edward Elgar Publishing, Cheltenham.

Habermas, J., 1997. Theorie des kommunikativen Handelns Band 1, Handlungsrationalität und gesellschaftliche Rationalisierung. Suhrkamp, Frankfurt am Main.

Hall, N., Ashworth, P., Devine-Wright, P., 2013. Societal acceptance of wind farms: analysis of four common themes across Australian case studies. Energy Policy 58, 200–208. http://dx.doi.org/10.1016/j.enpol.2013.03.009.

Hammami, S.M., Chtourou, S., Triki, A., 2016. Identifying the determinants of community acceptance of renewable energy technologies: the case study of a wind energy project from Tunisia. Renew. Sustain. Energy Rev. 54, 151–160. http://dx.doi.org/10.1016/j.rser.2015.09.037.

Haug, J.K., Stigson, P., 2016. Local acceptance and communication as crucial elements for realizing CCS in the Nordic region. Energy Procedia 86, 315–323. http://dx.doi.org/10.1016/j.egypro.2016.01.032.

Heldt, S., Budryte, P., Ingensiep, H.W., Teichgräber, B., Schneider, U., Danecke, M., 2016. Social pitfalls for river restoration: how public participation uncovers problems with public acceptance. Environ. Earth Sci. 75, 1053. http://dx.doi.org/10.1007/s12665-016-5787-y.

Hemström, K., Mahapatra, K., Gustavsson, L., 2014. Public perceptions and acceptance of intensive forestry in Sweden. Ambio 43, 196–206. http://dx.doi.org/10.1007/s13280-013-0411-9.

Heyder, M., Hollmann-Hespos, T., Theuvsen, L., 2012. Investments in tracking and tracing systems in the food industry: a PLS analysis. Food Policy 37, 102–113. http://dx.doi.org/10.1016/j.foodpol.2011.11.006.

Hitzeroth, M., Megerle, A., 2013. Renewable energy projects: acceptance risks and their management. Renew. Sustain. Energy Rev. 27, 576–584. http://dx.doi.org/10.1016/j.rser.2013.07.022.

Höltinger, S., Salak, B., Schauppenlehner, T., Scherhaufer, P., Schmidt, J., 2016. Austria's wind energy potential—a participatory modeling approach to assess socio-political and market acceptance. Energy Policy 98, 49–61. http://dx.doi.org/10.1016/j.enpol.2016.08.010.

Huber, S., Horbaty, R., Ellis, G., 2012. Social acceptance of wind power projects: learning from trans-national experience. In: Szarka, J., Cowell, R., Ellis, G., Strachan, P.A., Warren, C. (Eds.), Learning from Wind Power. Palgrave Macmillan, UK, Basingstoke, pp. 215–234.

Janikowski, R., Kucharski, R., Sas-Nowosielska, A., 2000. Multi-criteria and multi-perspective analysis of contaminated land management methods. Environ. Monit. Assess. 60, 89–102. http://dx.doi.org/10.1023/A:1006152212344.

Jones, N., Clark, J.R.A., Panteli, M., Proikaki, M., Dimitrakopoulos, P.G., 2012. Local social capital and the acceptance of protected Area policies: an empirical study of two Ramsar river delta ecosystems in northern Greece. J. Environ. Manage. 96, 55–63. http://dx.doi.org/10.1016/j.jenvman.2011.10.012.

Kahma, N., Matschoss, K., 2017. The rejection of innovations? Rethinking technology diffusion and the non-use of smart energy services in Finland. Energy Res. Soc. Sci. 34, 27–36. http://dx.doi.org/10.1016/j.erss.2017.05.024.

Kamal, S., Kocór, M., Grodzińska-Jurczak, M., 2015. Conservation opportunity in biodiversity conservation on regulated private lands: factors influencing landowners' attitude. Environ. Sci. Policy 54, 287–296. http://dx.doi.org/10.1016/j.envsci.2015.07.023.

Kendal, D., Ford, R.M., Anderson, N.M., Farrar, A., 2015. The VALS: a new tool to measure people's general valued attributes of landscapes. J. Environ. Manage. 163, 224–233. http://dx.doi.org/10.1016/j.jenvman.2015.08.017.

Krishnan, A. (2009). What are Academic Disciplines? Some observations on the Disciplinarity vs. Interdisciplinarity debate. National Centre for Research Methods, NCRM Working Paper Series 03.

Kupidura, A., Łuczewski, M., Home, R., Kupidura, P., 2014. Public perceptions of rural landscapes in land consolidation procedures in Poland. Land Use Policy 39, 313–319. http://dx.doi.org/10.1016/j.landusepol.2014.02.005.

Ladenburg, J., 2008. Attitudes towards on-land and offshore wind power development in Denmark; choice of development strategy. Renew. Energy 33, 111–118. http://dx.doi.org/10.1016/j.renene.2007.01.011.

Langer, K., Decker, T., Roosen, J., Menrad, K., 2016. A qualitative analysis to understand the acceptance of wind energy in Bavaria. Renew. Sustain. Energy Rev. 64, 248–259. http://dx.doi.org/10.1016/j.rser.2016.05.084.

Lee, G.-E., Loveridge, S., Joshi, S., 2017. Local acceptance and heterogeneous externalities of biorefineries. Energy Econ. 67, 328–336. http://dx.doi.org/10.1016/j.eneco.2017.08.013.

Leitinger, G., Walde, J., Bottarin, R., Tappeiner, G., Tappeiner, U., 2010. Identifying significant determinants for acceptance of nature reserves: a case study in the Stilfserjoch National Park, Italy. eco.Mont 2, 15–22.

Liu, W., Wang, C., Mol, A.P.J., 2013. Rural public acceptance of renewable energy deployment: the case of Shandong in China. Appl. Energy 102, 1187–1196. http://dx.doi.org/10.1016/j.apenergy.2012.06.057.

Lokocz, E., Ryan, R.L., Sadler, A.J., 2011. Motivations for land protection and stewardship: exploring place attachment and rural landscape character in Massachusetts. Landsc. Urban Plann. 99, 65–76. http://dx.doi.org/10.1016/j.landurbplan.2010.08.015.

Lucke, D., 1995. Akzeptanz: Legitimität in der 'Abstimmungsgesellschaft'. Leske und Buderich, Opladen.

Luz, F., 2000. Participatory landscape ecology—a basis for acceptance and implementation. Landsc. Urban Plann. 50, 157–166. http://dx.doi.org/10.1016/S0169-2046(00)00087-6.

Mann, S., Kögl, H., 2003. On the acceptance of animal production in rural communities. Land Use Policy 20, 243–252. http://dx.doi.org/10.1016/S0264-8377(03)00025-5.

Mante, J., Gerowitt, B., 2007. A survey of on-farm acceptance of low-input measures in intensive agriculture. Agron. Sustain. Dev. 27, 399–406. http://dx.doi.org/10.1051/agro:2007038.

Mead, G.H., 1968. Geist, Identität und Gesellschaft: aus der Sicht des Sozialbehaviourismus. Suhrkamp, Frankfurt.

Musall, F.D., Kuik, O., 2011. Local acceptance of renewable energy—a case study from southeast Germany. Energy Policy 39, 3252–3260. http://dx.doi.org/10.1016/j.enpol.2011.03.017.

Oxford Dictionary. Acceptance (Accessed 18 Aug 2015). http://www.oxforddictionaries.com/de/definition/englisch/acceptance.

Petrova, M.A., 2016. From NIMBY to acceptance: toward a novel framework – Vespa – for organizing and interpreting community concerns. Renew. Energy 86, 1280–1294. http://dx.doi.org/10.1016/j.renene.2015.09.047.

Petticrew, M., Roberts, H., 2006. Systematic Reviews in the Social Sciences. A Practical Guide. Blackwell Publishing, Marden.

Price, J.C., Leviston, Z., 2014. Predicting pro-environmental agricultural practices: the social, psychological and contextual influences on land management. J. Rural Stud. 34, 65–78. http://dx.doi.org/10.1016/j.jrurstud.2013.10.001.

Putnam, R.D., 2000. Bowling Alone: The Collapse and Revival of American Community. Simon & Schuster Paperbacks, New York.

Qiu, J., Shen, Z., Chen, L., Xie, H., Sun, C., Huang, Q., 2014. The stakeholder preference for best management practices in the three gorges reservoir region. Environ. Manage. 54, 1163–1174. http://dx.doi.org/10.1007/s00267-014-0324-9.

Que, S., Awuah-Offei, K., Samaranayake, V.A., 2015. Classifying critical factors that influence community acceptance of mining projects for discrete choice experiments in the United States. J. Clean. Prod. 87, 489–500. http://dx.doi.org/10.1016/j.jclepro.2014.09.084.

Rajecki, D.W., 1990. Attitudes. Sinauer, Sunderland.

Rand, J., Hoen, B., 2017. Thirty years of North American wind energy acceptance research: what have we learned? Energy Res. Soc. Sci. 29, 135–148. http://dx.doi.org/10.1016/j.erss.2017.05.019.

Raven, R.P.J.M., Mourik, R.M., Feenstra, C.F.J., Heiskanen, E., 2009. Modulating societal acceptance in new energy projects: towards a toolkit methodology for project managers. Energy 34, 564–574. http://dx.doi.org/10.1016/j.energy.2008.08.012.

Ren, X., Che, Y., Yang, K., Tao, Y., 2016. Risk perception and public acceptance toward a highly protested waste-to-energy facility. Waste Manage. 48, 528–539. http://dx.doi.org/10.1016/j.wasman.2015.10.036.

Robinson, K.G., Robinson, C.H., Raup, L.A., Markum, T.R., 2012. Public attitudes and risk perception toward land application of biosolids within the south-eastern United States. J. Environ. Manage. 98, 29–36. http://dx.doi.org/10.1016/j.jenvman.2011.12.012.

Rogers, E.M., 2003. Diffusion of Innovation, fifth ed. Free Press, New York.

Rohracher, H., Bogner, R., Späth, P., Faber, F., 2004. Improving the Public Perception of Bioenergy in the Eu. Final report.

Roo, G., Porter, G., 2007. Fuzzy Planning: The Role of Actors in a Fuzzy Governance Environment. Ashgate, Cornwall.

Ruggiero, S., Onkila, T., Kuittinen, V., 2014. Realizing the social acceptance of community renewable energy: a process-outcome analysis of stakeholder influence. Energy Res. Soc. Sci. 4, 53–63. http://dx.doi.org/10.1016/j.erss.2014.09.001.

Sattler, C., Nagel, U.J., 2010. Factors affecting farmers' acceptance of conservation measures—a case study from north-eastern Germany. Land Use Policy 27, 70–77. http://dx.doi.org/10.1016/j.landusepol.2008.02.002.

Sauer, A., Luz, F., Suda, M., Weiland, U., 2005. Steigerung der Akzeptanz von FFH-Gebieten. BfN-Skripten 144, München.

Schenk, A., Hunziker, M., Kienast, F., 2007. Factors influencing the acceptance of nature conservation measures—a qualitative study in Switzerland. J. Environ. Manage. 83, 66–79. http://dx.doi.org/10.1016/j.jenvman.2006.01.010.

Scherhaufer, P., Höltinger, S., Salak, B., Schauppenlehner, T., Schmidt, J., 2017. Patterns of acceptance and non-acceptance within energy landscapes: a case study on wind energy expansion in Austria. Energy Policy 109, 863–870. http://dx.doi.org/10.1016/j.enpol.2017.05.057.

Schnell, R., Hill, P.B., Esser, E., 2013. Methoden der empirischen Sozialforschung, tenth ed. Ouldenburg, Munich.

Schrader, C.C., 1995. Rural greenway planning: the role of streamland perception in

landowner acceptance of land management strategies. Landsc. Urban Plann. 33, 375–390. http://dx.doi.org/10.1016/0169-2046(94)02029-F.

Schroeder, L.A., Isselstein, J., Chaplin, S., Peel, S., 2013. Agri-environment schemes: farmers' acceptance and perception of potential 'payment by results' in grassland—a case study in England. Land Use Policy 32, 134–144. http://dx.doi.org/10.1016/j.landusepol.2012.10.009.

Schröter, B., Matzdorf, B., Sattler, C., Garcia Alarcon, G., 2015. Intermediaries to foster the implementation of innovative land management practice for ecosystem service provision—a new role for researchers. Ecosyst. Serv. 16, 192–200. http://dx.doi.org/10.1016/j.ecoser.2015.10.007.

Schumacher, K., Schultmann, F., 2017. Local acceptance of biogas plants: a comparative study in the trinational upper rhine region. Waste Biomass Valorization 8, 2393–2412. http://dx.doi.org/10.1007/s12649-016-9802-z.

Sharifzadeh, M.S., Damalas, C.A., Abdollahzadeh, G., Ahmadi-Gorgi, H., 2017. Predicting adoption of biological control among Iranian rice farmers: an application of the extended technology acceptance model (TAM2). Crop Prot. 96, 88–96. http://dx.doi.org/10.1016/j.cropro.2017.01.014.

Shindler, B.A., Brunson, M., Stankey, G.H., 2002. Social Acceptability of Forest Conditions and Management Practices: A Problem Analysis. Gen. Tech. Rep. PNW-GTR-537. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland.

Sonnberger, M., Ruddat, M., 2017. Local and socio-political acceptance of wind farms in Germany. Technol. Soc. 51, 56–65. http://dx.doi.org/10.1016/j.techsoc.2017.07.005.

Sovacool, B.K., Hess, D.J., 2017. Ordering theories: typologies and conceptual frameworks for sociotechnical change. Soc. Stud. Sci. 47, 703–750. http://dx.doi.org/10.1177/0306312717709363.

Sovacool, B.K., Kivimaa, P., Hielscher, S., Jenkins, K., 2017. Vulnerability and resistance in the United Kingdom's smart meter transition. Energy Policy 109, 767–781. http://dx.doi.org/10.1016/j.enpol.2017.07.037.

Sovacool, B.K., Ratan, P.L., 2012. Conceptualizing the acceptance of wind and solar electricity. Renew. Sustain. Energy Rev. 16, 5268–5279. http://dx.doi.org/10.1016/j.rser.2012.04.048.

Spartz, J.T., Rickenbach, M., Shaw, B.R., 2015. Public perceptions of bioenergy and land use change: comparing narrative frames of agriculture and forestry. Biomass Bioenergy 75, 1–10. http://dx.doi.org/10.1016/j.biombioe.2015.01.026.

Specht, K., Siebert, R., Thomaier, S., 2016. Perception and acceptance of agricultural production in and on urban buildings (ZFarming): a qualitative study from Berlin, Germany. Agric. Hum. Values 33, 753–769. http://dx.doi.org/10.1007/s10460-015-9658-z.

Stern, P.C., 2000. New environmental theories: towards a coherent theory of environmentally significant behaviour. J. Soc. Issues 50, 65–84.

Stigka, E.K., Paravantis, J.A., Mihalakakou, G.K., 2014. Social acceptance of renewable energy sources: a review of contingent valuation applications. Renew. Sustain. Energy Rev. 32, 100–106. http://dx.doi.org/10.1016/j.rser.2013.12.026.

Strazzera, E., Statzu, V., 2017. Fostering photovoltaic technologies in Mediterranean cities: consumers' demand and social acceptance. Renew. Energy 102, 361–371. http://dx.doi.org/10.1016/j.renene.2016.10.056.

Stringer, L.C., Fleskens, L., Reed, M.S., de Vente, J., Zengin, M., 2014. Participatory evaluation of monitoring and modeling of sustainable land management technologies in areas prone to land degradation. Environ. Manage. 54, 1022–1042. http://dx.doi.org/10.1007/s00267-013-0126-5.

Suškevičs, M., Külvik, M., 2010. The role of information, knowledge, and acceptance during landowner participation in the natura 2000 designations: the cases of Otepää and Kõnnumaa, Estonia. In: Jones, M., Stenseke, M. (Eds.), Therapeutic European Landscape Convention. Springer, Netherlands, pp. 275–294. http://dx.doi.org/10.1007/978-90-481-9932-7_14.

Tapsuwan, S., Leviston, Z., Tucker, D., 2011. Community values and attitudes towards land use on the Gnangara groundwater system: a sense of place study in Perth, Western Australia. Landsc. Urban Plann. 100, 24–34. http://dx.doi.org/10.1016/j.landurbplan.2010.09.006.

Te Velde, H., Aarts, N., Van Woerkum, C., 2002. Dealing with ambivalence: farmers' and consumers' perceptions of animal welfare in livestock breeding. J. Agric. Environ. Ethics 15, 203–219.

Thøgersen, J., Noblet, C., 2012. Does green consumerism increase the acceptance of wind power? Energy Policy 51, 854–862. http://dx.doi.org/10.1016/j.enpol.2012.09.044.

Tohidyan Far, S., Rezaei-Moghaddam, K., 2017. Determinants of Iranian agricultural consultants' intentions toward precision agriculture: integrating innovativeness to the technology acceptance model. J. Saudi Soc. Agric. Sci. 16, 280–286. http://dx.doi.org/10.1016/j.jssas.2015.09.003.

Tokushige, K., Akimoto, K., Tomoda, T., 2007. Public perceptions on the acceptance of geological storage of carbon dioxide and information influencing the acceptance. Int. J. Greenh. Gas Control 1, 101–112. http://dx.doi.org/10.1016/S1750-5836(07)00020-5.

Toma, L., Barnes, A., Revoredo-Giha, C., Tsitsoni, V., Glenk, K., 2014. A behavioural economics analysis of the impact of information and knowledge on CO2 capture and storage acceptance in the European union. Procedia Econ. Finance 14, 605–614.

http://dx.doi.org/10.1016/S2212-5671(14)00749-7.

Tschiedel, R., 1989. Sozialverträgliche Technikgestaltung–Wissenschaftskritik für eine soziologische Sozialverträglichkeitsforschung zwischen Akzeptabilität. Westdeutscher Verlag, Opladen.

Tudor, C.A., Iojă, I.C., Rozylowicz, L., Pătru-Stupariu, I., Hersperger, A.M., 2015. Similarities and differences in the assessment of land-use associations by local people and experts. Land Use Policy 49, 341–351. http://dx.doi.org/10.1016/j.landusepol.2015.07.001.

Tumuhairwe, J.B., Rwakaikara-Silver, M.C., Muwanga, S., Natigo, S., 2007. Screening legume green manure for climatic adaptability and farmer acceptance in the semi-arid agro-ecological zone of Uganda. In: Bationo, A., Waswa, B., Kihara, J., Kimetu, J. (Eds.), Advances in Integrated Soil Fertility Management in Sub-Saharan Africa: Challenges and Opportunities. Springer, Netherlands, pp. 255–259. http://dx.doi.org/10.1007/978-1-4020-5760-1_22.

Turner, J., 1991. The Structure of Sociological Theory, fifth ed. Wadsworth Publishing Company, Belmont.

Udo-Akang, D., 2012. Theoretical constructs, concepts, and applications. Am. Int. J. Contemp. Res. 2, 89–97.

Upham, P., Oltra, C., Boso, A., 2015. Towards a cross-paradigmatic framework of the social acceptance of energy systems. Energy Res. Soc. Sci. 8, 100–112. http://dx.doi.org/10.1016/j.erss.2015.05.003.

van Oorschot, W., Gelissen, W., Arts, J., 2006. Social capital in Europe. Measurement and social and regional distribution of a multifaceted phenomenon. Acta Sociol. 49, 149–167.

van Os, H.W.A., Herber, R., Scholtens, B., 2014. Not under our back yards? A case study of social acceptance of the Northern Netherlands CCS initiative. Renew. Sustain. Energy Rev. 30, 923–942. http://dx.doi.org/10.1016/j.rser.2013.11.037.

Veidemane, K., Nikodemus, O., 2015. Coherence between marine and land use planning: public attitudes to landscapes in the context of siting a wind park along the Latvian coast of the Baltic Sea. J. Environ. Plann. Manage. 58, 949–975. http://dx.doi.org/10.1080/09640568.2014.903167.

Walker, B.J.A., Wiersma, B., Bailey, E., 2014. Community benefits, framing and the social acceptance of offshore wind farms: an experimental study in England. Energy Res. Soc. Sci. 3, 46–54. http://dx.doi.org/10.1016/j.erss.2014.07.003.

Walter, G., 2014. Determining the local acceptance of wind energy projects in Switzerland: the importance of general attitudes and project characteristics. Energy Res. Soc. Sci. 4, 78–88. http://dx.doi.org/10.1016/j.erss.2014.09.003.

Western, J.M., Cheng, A.S., Anderson, N.M., Motley, P., 2017. Examining the social acceptability of forest biomass harvesting and utilization from collaborative forest landscape restoration: a case study from western Colorado, USA. J. For. 115, 530–539. http://dx.doi.org/10.5849/JOF-2016-086.

Williams, R., Mills, S., 1986. Public Acceptance of New Technologies: An International Review. Croom Helm, London, UK, pp. 1–18.

Williams, K., 2011. Relative acceptance of traditional and non-traditional rural land uses: views of residents in two regions, southern Australia. Landsc. Urban Plann. 103, 55–63. http://dx.doi.org/10.1016/j.landurbplan.2011.05.012.

Williams, K.J.H., 2014. Public acceptance of plantation forestry: implications for policy and practice in Australian rural landscape. Land Use Policy 38, 346–354. http://dx.doi.org/10.1016/j.landusepol.2013.11.023.

Wolff, J., Herzog, H., 2014. What lessons can hydraulic fracturing teach CCS about social acceptance? Energy Procedia 63, 7024–7042. http://dx.doi.org/10.1016/j.egypro.2014.11.736.

Wolsink, M., 2006. Invalid theory impedes our understanding: a critique on the persistence of the language of NIMBY. Trans. Inst. Br. Geogr. 31, 85–91. http://dx.doi.org/10.1111/j.1475-5661.2006.00191.x.

Wolsink, M., 2010. Contested environmental policy infrastructure: socio-political acceptance of renewable energy, water, and waste facilities. Environ. Impact Asses. Rev. 30, 302–311. http://dx.doi.org/10.1016/j.eiar.2010.01.001.

Wolsink, M., 2012. Wind power: basic challenge concerning social acceptance. In: Meyers, R.A. (Ed.), Encyclopedia of Sustainability Science and Technology. Springer, New York, pp. 12218–12254. http://dx.doi.org/10.1007/978-1-4419-0851-3_88.

Wüste, A., Schmuck, P., 2013. Social acceptance of bioenergy use and the success factors of communal bioenergy projects. In: Ruppert, H., Kappas, M., Ibendorf, J. (Eds.), Sustainable Bioenergy Production–An Integrated Approach. Springer, Dordrecht, pp. 293–318.

Wüstenhagen, R., Wolsink, M., Bürer, M.J., 2007. Social acceptance of renewable energy innovation: an introduction to the concept. Energy Policy 35, 2683–2691. http://dx.doi.org/10.1016/j.enpol.2006.12.001.

Yuan, X., Zuo, J., Huisingh, D., 2015. Social acceptance of wind power: a case study of Shandong Province, China. J. Clean. Prod. 92, 168–178. http://dx.doi.org/10.1016/j.jclepro.2014.12.097.

Zhao, D.-X., He, B.-J., Johnson, C., Mou, B., 2015. Social problems of green buildings: from the humanistic needs to social acceptance. Renew. Sustain. Energy Rev. 51, 1594–1609. http://dx.doi.org/10.1016/j.rser.2015.07.072.

Zoellner, J., Schweizer-Ries, P., Wemheuer, C., 2008. Public acceptance of renewable energies: results from case studies in Germany. Energy Policy 36, 4136–4141. http://dx.doi.org/10.1016/j.enpol.2008.06.026.