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Transition Communication and Household Energy Shift: A Lived Experience from a Developing Community

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Abstract

This study explores how transition communication facilitates household transition to modern energy solutions in Pader District, Northern Uganda. Drawing on the Diffusion of Innovation Theory and Agenda-Setting Theory, the study adopted a qualitative narrative inquiry approach based on the lived experiences of households transitioning from traditional biomass fuels to modern low-carbon energy alternatives. Data were collected through in-depth semi-structured interviews with households, local opinion leaders, and communication agents from the Ministry of Energy and Mineral Development and analysed using a narrative approach. Findings reveal that households initially resisted electricity adoption because of concerns about safety, cost, and compatibility with local practices. However, participatory and culturally sensitive communication through trusted local leaders, community dialogues, dramas, skits, and hands-on demonstrations reduced fear, strengthened trust, and improved understanding of electricity use. These processes enhanced household readiness and facilitated adoption of electricity and other low-carbon energy solutions. The findings show that transition communication facilitates adoption by combining adequate information, credible communicators, locally relevant interactions, and experiential learning. The study extends Diffusion of Innovation Theory by demonstrating how trust-building and experiential learning facilitate movement from knowledge to adoption, while Agenda-Setting Theory explains how trusted community actors shape the salience of energy transition messages. Although based on a single developing community, the study provides theoretical, policy, and practical insights for designing communication strategies that support household energy transitions in low-resource settings.

Keywords: Household energy transition, transition communication, lived experiences, developing communities, Diffusion of Innovation Theory, Agenda-Setting Theory

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Introduction

Global agreements such as the Paris Agreement (2015) and Sustainable Development Goal (SDG) 13 underscore the need to reduce greenhouse gas emissions through transitions to low-carbon, sustainable energy sources (International Renewable Energy Agency [IRENA], 2022). Such transitions can mitigate climate change, protect ecosystems, improve public health, and support long-term environmental sustainability (World Meteorological Organisation [WMO], 2024; Elasu et al., 2024). At the household level, shifting from carbon-intensive fuels such as firewood, charcoal, and kerosene to cleaner alternatives, including liquefied petroleum gas (LPG), biogas, and solar energy, can reduce indoor air pollution and contribute to global carbon-emission reduction efforts (Elasu et al., 2023; Friedlingstein et al., 2023; Kashyap & Hussain, 2025).

Globally, more than 2.3 billion people still rely on polluting biomass fuels such as firewood, animal waste, and crop residues (International Energy Agency [IEA], 2023). The challenge is particularly pronounced in Sub-Saharan Africa, where approximately 580 million people lacked access to electricity in 2019, representing almost 75% of the world's unelectrified population (Zhang et al., 2025; International Energy Agency, 2020; Riva & Colombo, 2020; Gould & Urpelainen, 2018). In Uganda, more than 94% of households still rely on high-carbon-emitting fuels despite government and development-partner efforts to promote cleaner cooking solutions such as LPG and improved cookstoves (Elasu et al., 2025; UBOS, 2022).

Despite the growing availability of clean energy technologies, communication promoting their adoption often remains overly technical and disconnected from households' everyday experiences. Terms such as "carbon neutrality," "climate change," and "global warming" may have limited resonance with households more concerned with immediate issues such as smoke-related health risks, rising charcoal costs, and the burden of collecting firewood (Workicho et al., 2021; Cardey et al., 2024; Elasu et al., 2023). Although previous research has extensively examined socioeconomic and technological determinants of household energy transitions, including income, gender, affordability, accessibility, education, and cultural cooking practices, less attention has been given to how communication shapes household decision-making around clean energy adoption (Katutsi et al., 2023; Kayima et al., 2023; Katutsi et al., 2024). Limited attention has also been paid to how community leadership and household decision-making structures shape whose voices become influential in energy-transition communication.

SDG alignment

SDG 7 (Affordable and Clean Energy): Transition from traditional biomass to modern low-carbon energy solutions,

SDG 13 (Climate Action): Reduced emissions and air pollution.

SDG 5 (Gender Equality): Lowered time burden and health risks for women's and children's from traditional fuel collection and cooking.

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Bibliometric studies of clean energy adoption research confirm the limited attention given to communication-focused research relative to technological innovation, infrastructure, financing, and socioeconomic determinants of adoption (Odoi-Yorke, 2024; Yao et al., 2025; Rady et al., 2025; Elasu et al., 2023). Odoi-Yorke (2024), for example, identified community engagement as an emerging theme in mini-grid research but noted limited attention to how household interaction and trust-building influence adoption in rural settings. Similarly, Yao et al. (2025) identified cross-cultural trust dynamics and behavioural dimensions of consumer adoption as underexplored. These studies point to an important gap in understanding communication as a mechanism through which households interpret and respond to energy-transition initiatives.

While Palm et al. (2025) examined energy-transition communication, their study focused on municipal-level communication tailored to stakeholder preferences using Jakobson's linguistic model and Freeman's stakeholder matrix, leaving household-level decision-making processes comparatively underexplored. Limited attention has therefore been given to participatory communication, community engagement, and how households interpret, negotiate, and respond to information promoting low-carbon energy transitions. Consequently, evidence remains limited on how communication interventions shape household adoption behaviour in rural developing-country contexts.

This challenge is compounded by top-down communication approaches that may fail to align with local values, beliefs, practices, and household routines. Clean cooking interventions, for example, may encounter resistance when they inadequately account for cultural preferences and everyday cooking practices (Lewis & Pattanayak, 2012; Puzzolo et al., 2016). In Uganda, government and development organisations such as GIZ have promoted LPG, energy-saving cookstoves, and electric equipment, yet community buy-in remains constrained where messages are perceived as political, externally driven, or disconnected from everyday realities (National Renewable Energy Platform [NREP], 2024; Gould & Urpelainen, 2018).

Against this background, this study explores how bottom-up communication approaches linked national energy policy with community-level action to facilitate household energy transition in Pader District, Northern Uganda. Pader District was selected as a theoretically purposeful positive case because it experienced a relatively successful household electrification transition following sustained communication interventions by the Ministry of Energy and Mineral Development (MEMD) and the Pader-Abim Community Multi-Purpose Electric Cooperative Society (PACMECS). The setting therefore provides an opportunity to examine communication practices associated with successful transition outcomes and the mechanisms through which they influenced household understanding, trust, and adoption. Guided by Diffusion of Innovation Theory and Agenda-Setting Theory, the study examines the communication practices used to facilitate household energy transitions, how households interpreted and responded to these practices, and how communication contributed to readiness and adoption of low-carbon energy solutions.

The study addresses the following research questions:

RQ1: What transition communication practices were used to facilitate household transition to low-carbon energy solutions in Pader District?

RQ2: How did households interpret and respond to these transition communication practices?

RQ3: How did communication processes contribute to household readiness and adoption of low-carbon energy solutions?

Literature and Theoretical Review

Transition communication refers to the strategic use of information, dialogue, and engagement to guide stakeholders through organisational or societal change towards sustainable practices (Allen, 2016; Christensen, 2014; Palm et al., 2025). In the energy transition context, communication provides households with relevant information and participatory learning opportunities that can strengthen awareness, understanding, trust, and readiness to adopt cleaner energy technologies (Cardey et al., 2024; Workicho et al., 2021). Although the concept draws partly from change communication literature (Allen, 2016; Christensen, 2014; Kotter, 2012), its application to household energy transitions is relevant because both contexts involve behavioural adaptation, uncertainty management, and adoption of new practices. Accordingly, this study conceptualises transition communication as communication processes and practices that facilitate household movement from traditional energy practices towards low-carbon energy solutions.

The Diffusion of Innovation (DOI) Theory (Rogers, 2003) provides a useful lens for understanding how new energy solutions spread within communities. DOI proposes that innovation adoption is influenced by perceived relative advantage, compatibility, complexity, trialability, and observability, together with information received through communication channels and social interactions (Greenhalgh et al., 2004). Although originally developed to explain agricultural innovation adoption (Rogers, 1962), DOI has been

applied to low-carbon energy technologies, solar systems, and rural electrification in Sub-Saharan Africa (Hsu et al., 2021; Katutsi et al., 2023; Otte, 2009; Troncoso et al., 2007). It is therefore useful for explaining how information, interpersonal communication, and social influence shape household energy-adoption decisions. However, DOI gives comparatively less attention to structured communication by governments, media, and development actors that can shape the importance attached to particular issues. Agenda-Setting (AS) Theory (McCombs & Shaw, 1972; McCombs, 1977) complements DOI by explaining how repeated communication can influence the salience and perceived importance of issues. In an energy-transition context, institutions and change agents may direct household attention towards the economic, health, and environmental benefits of cleaner energy and thereby influence readiness to adopt. Although AS Theory originated in mass-media research, subsequent applications recognise that opinion leaders and community networks can also perform agenda-setting functions by directing attention, framing issues, and shaping collective perceptions. This makes the theory relevant in rural settings where trusted interpersonal communication may be more influential than mass-media channels. Together, DOI and AS Theory provide complementary explanations of household energy transition. DOI explains how households acquire knowledge, evaluate innovations, interact with others, and progress towards adoption, whereas AS Theory explains how institutions and trusted community actors direct attention towards energy-transition issues and shape their perceived importance. Although the findings also resonate with Social Learning Theory (Bandura, 1977), particularly where households learn by observing trusted leaders using electricity, Social Learning Theory is treated as a complementary perspective rather than a primary theoretical lens.

Empirical research supports the importance of communication, information dissemination, demonstrations, peer influence, and participatory engagement in household adoption of low-carbon energy technologies. Studies of clean cooking and solar-energy adoption show that households are more likely to adopt new energy solutions when information is practical, understandable, and reinforced through demonstrations, peer learning, and trusted community networks (Aklin & Urpelainen, 2018; Hsu et al., 2021; Rhodes et al., 2014). Adoption is also influenced by affordability, perceived usefulness, social influence, user confidence, and the extent to which communication addresses everyday household concerns (Lewis & Pattanayak, 2012). Evidence from Africa similarly demonstrates the importance of communication and social engagement. In Ethiopia, awareness creation, training, and community engagement have been associated with household adoption of improved cookstoves and other clean energy technologies (Gebreegziabher et al., 2018). Studies in Kenya and Tanzania also demonstrate the role of social networks, peer learning, and community-based information sharing in household decisions concerning solar home systems and clean cooking technologies (Ondraczek, 2013; Lee et al., 2016). Across Sub-Saharan Africa, participatory approaches can strengthen trust and reduce uncertainty by enabling households to engage with technologies and relate them to local needs and experiences (Puzzolo et al., 2016).

Despite these insights, communication is frequently treated as a supporting or contextual factor rather than as a central mechanism through which households interpret, negotiate, and act upon energy-transition messages (Bößner et al., 2020; Aklin & Urpelainen, 2018; Hsu et al., 2021). Existing literature also provides limited integration of DOI Theory and Agenda-Setting Theory to explain how policy-level energy-transition messages are translated into household-level meanings and adoption decisions. This study addresses this gap by examining how bottom-up communication practices linked national energy-transition priorities with community-level action in Pader District, Northern Uganda.

Methodology

Study Context

Pader District in Northern Uganda is a rural community that relied predominantly on traditional carbon-intensive energy solutions such as firewood, cow dung, paraffin, and candles for lighting and cooking. It lacked access to the national grid and other modern energy solutions as of 2019; the households were grappling with ongoing energy insecurity. According to UBOS (2024), Pader District had a population of 240,159, up from 178,004 in 2019, with agriculture as the dominant economic activity engaging approximately 90% of residents, reinforcing the district's characterisation as a low-resource setting.

Philosophy and Researchers' Positionality

Consistent with qualitative inquiry traditions (Creswell, 2014), the study was grounded in social constructivism and interpretivism. It assumed that reality is socially constructed through participants' perceptions, beliefs, cultural narratives, and lived experiences. This perspective was appropriate because meanings attached to electricity adoption in Pader District were embedded in local traditions, community stories, and collective fears. Interpretivism therefore enabled the study to understand how participants made sense of communication surrounding energy transitions and their experiences of trust, resistance, and eventual acceptance (Antwi & Hamza, 2015; Yiga et al., 2023). Consistent with this philosophical orientation, the researchers recognised their role in interpreting participants' experiences. None of the

researchers was a resident of Pader District, and reflexivity was maintained through field notes, documentation of analytical decisions, and continuous reflection on assumptions during data interpretation. The use of multiple stakeholder groups, member checking, and triangulation further strengthened the credibility of the interpretations.

Research Design

A qualitative narrative inquiry design was adopted to understand participants lived experiences through storytelling (Wang & Geale, 2015). The design enabled participants to recount experiences of fear, adaptation, and transition in their own words and allowed the study to examine how meanings surrounding electricity adoption evolved over time. Stories were therefore treated as both sources of data and units of interpretation.

Population and Sample

The study involved three stakeholder groups directly associated with the energy transition process in Pader District: community members (n = 8), local opinion leaders (n = 5), and communication agents from the Ministry of Energy and Mineral Development (MEMD) (n = 3). Participants were purposively selected based on their involvement in or exposure to MEMD interventions between 2019 and 2024. Eligible community participants were at least 25 years old and had lived in Pader for a minimum of five years during the electricity rollout period. The final sample comprised 16 participants, with recruitment guided by data saturation (Guest et al., 2006; Fusch & Ness, 2015).

Table 1: Sample Characteristics of Respondents by Stakeholder Group

Stakeholder Group	Respondent ID	Gender	Age (Years)	Occupation/Role	Years of Residency in Pader
Community Members	C1	Male	32	Farmer	10
	C2	Female	29	Trader	7
	C3	Male	40	Farmer	15
	C4	Female	35	Teacher	12
	C5	Male	28	Youth Leader	8
	C6	Female	45	Homemaker	20
	C7	Male	38	Farmer	18
	C8	Female	31	Trader	9
Local Opinion Leaders	L1	Male	50	Village Chief	25
	L2	Female	48	Elder	30
	L3	Male	55	Religious Leader	35
	L4	Male	46	Clan Head	22
	L5	Female	52	Community Mobilizer	28
Communication Agents from MEMD	M1	Male	34	Energy Officer	10
	M2	Female	30	Communication Specialist	8
	M3	Male	36	Project Coordinator	12

Source: *primary data*

From Table 1, the sample included men and women aged 28–55 years from different occupational and stakeholder backgrounds. Community members were mainly farmers, traders, a teacher, a homemaker, and a youth leader, while opinion leaders included a village chief, elder, religious leader, clan head, and community mobilizer. MEMD participants included an energy officer, communication specialist, and project coordinator. Participants had lived in Pader for at least seven years, providing sufficient exposure to the electricity rollout and related communication interventions. Although gender was not an explicit analytical focus, the composition also reflected gendered patterns in some community leadership roles.

Data Collection

Data were collected between July and September 2025 using semi-structured interviews guided by the study objectives, theoretical framework, and Appreciative Inquiry principles (Watkins et al., 2016).

Illustrative interview questions are provided in Appendix A. Interviews explored participants' experiences of communication interventions, information sources and channels, household interpretation of messages, and the contribution of communication to readiness and adoption. Appreciative Inquiry informed the framing of questions, particularly the Discovery and Dream phases, rather than being implemented as a complete 4-D intervention. Participants reflected on energy-transition initiatives and communication interventions implemented between 2019 and 2024. Interviews were conducted in participants' homes, local administration centres, and cooperative premises, lasted approximately 45–60 minutes, and were audio-recorded with consent (Patton, 2015; Boje & Rosile, 2022). Observations of community meetings, sensitisation activities, and informal interactions supplemented the interviews (Creswell, 2014). Interviews were transcribed verbatim and supported by field notes and relevant MEMD documents. Participants were re-contacted where clarification was required.

Data Analysis

Narrative analysis followed Riessman (2008) and Clandinin and Connelly (2000). Each interview was treated as a story containing settings, actions, tensions, turning points, decisions, and outcomes. Analysis was abductive, combining inductive coding with theory-informed interpretation. First, narrative segments were coded inductively to identify patterns emerging from participants' accounts. Second, emergent patterns were interpreted using sensitising concepts from Diffusion of Innovation Theory and Agenda-Setting Theory, including communication encounters, trust-building, perceptual shifts, issue salience, and adoption decisions (Timmermans & Tavory, 2012). Individual narrative profiles were organised chronologically and thematically to preserve the trajectory of participants' experiences. These profiles were subsequently synthesised into a composite lived-experience narrative that captured common patterns and contrasts across participants.

Trustworthiness

Credibility and dependability were enhanced through member checking, triangulation, field notes, and an audit trail (Lincoln & Guba, 1985; Creswell & Poth, 2018). Six participants from different stakeholder groups reviewed summaries of preliminary themes and interpretations and largely confirmed their accuracy, with minor clarifications incorporated into the analysis. Triangulation involved interviews, observations, informal conversations, and MEMD documents. An audit trail documented analytical decisions, while participant quotations strengthened the connection between the evidence and interpretations (Nowell et al., 2017).

Ethical Considerations

Ethical clearance was obtained from the Makerere University Research Ethics Committee (Approval No. MUK-REC/2025/032), together with permission from relevant district and community authorities in Pader District. Participants were informed about the study purpose, voluntary participation, confidentiality, and their right to withdraw without repercussions. Informed consent was obtained before interviews and audio recording. Participant anonymity was maintained, and research materials were securely stored with access restricted to the research team.

Results

The findings are organised around the three research questions while retaining participants' lived experiences and the narrative progression from initial uncertainty to household energy adoption. The analysis distinguishes communication practices (RQ1), household interpretation and responses (RQ2), and the contribution of communication to readiness and adoption (RQ3).

Transition Communication Practices Facilitating Household Energy Shift (RQ1)

To address fears and misconceptions, MEMD implemented culturally adapted interventions, working through trusted local influencers (elders, chiefs, mobilizers) who were fluent in local languages. Activities included:

Dramas and Skits: Local youth performed scenarios demonstrating safe household wiring, lamp use, and billing procedures. Participants were then invited to replicate tasks under supervision. C1 described that *"…After the drama at the community hall, I finally understood that electricity can be safe if we follow the rules."*

Poems and Songs: Community-created poems highlighted practical benefits of electricity, including safer cooking and studying at night. C2 noted that *"…The skits and songs made it clear for me how to connect and pay for electricity. My family started discussing how this could work at home."*

Hands-On Demonstrations: Residents, guided by elders and communication agents, interacted with meters, wires, and appliances to gain experiential understanding. M3 explained that *"…Our target of using people who know these local languages was to ease communication so that residents get the message clearly."*

These activities encouraged questions, problem-solving, and discussion, directly addressing fears and reshaping mental models.

Cognitive Mapping and Experiential Learning

Cognitive mapping exercises were conducted to translate abstract electricity concepts into practical routines. Residents collectively drew household energy flows on flipcharts, identifying where electricity could replace traditional fuels. This allowed participants to visualize new practices in familiar contexts. Participant C6 reflected that *"…Seeing the connections on the chart helped me understand how electricity could make cooking easier and safer for my children."* Observation of trusted local leaders engaging with electricity reinforced credibility. L4 (clan head) explained that *"…I demonstrated using electricity myself to show that it is safe for my people."* Through this process, residents internalized the technology, linking abstract concepts to everyday life.

Household Interpretation and Responses to Transition Communication (RQ2)

Pader District relied primarily on firewood, cow dung, paraffin, and candles, with limited exposure to electricity. Early initiatives, such as PACMECS, had achieved limited success, and residents held strong fears and misconceptions. Electricity was perceived as dangerous, costly, and incompatible with local cooking practices. Rumours suggested the government's intentions to formalise camps or dispossess land. As one elder (L2) explained: *"…We were afraid to touch the wires. Some said electricity would burn our homes or our children."* Youth participants expressed similar concerns, compounded by unfamiliarity with billing: *"…Many of us had never seen a meter or paid bills, so we were worried about being cheated." (L5).*

These perceptions created cognitive and emotional barriers, shaping initial resistance to adoption.

Households interpreted communication in relation to their existing concerns about safety, electricity bills, and compatibility with daily routines. The accounts indicate that messages became meaningful when participants could ask questions, observe practical demonstrations, and compare the unfamiliar technology with familiar household activities. For example, C1 associated a community drama with understanding safe electricity use, while C2 described how skits and songs prompted family discussion about connection and payment. C6 connected visual explanations to the practical possibilities of household cooking. These accounts suggest that communication was not merely received but actively interpreted and discussed. Trusted local leaders also influenced interpretation: L4 described modelling electricity use to reassure residents. Responses therefore included questioning earlier assumptions, discussing adoption within households, and developing confidence in safe use. These interpretations varied in pace and intensity, and the sample does not establish that all households responded similarly.

The findings illustrate a process of mindset change captured in five broad stages. These stages represent an analytical synthesis of dominant patterns identified across participant narratives rather than a rigid sequence experienced identically by all respondents. While most participants described movement from fear and uncertainty toward eventual adoption, differences were observed in the pace, sequence, and intensity of these experiences.

Stage 1: Initial Fear and Mistrust. Participants initially expressed concerns regarding safety, affordability, electricity billing, and government intentions. These concerns created cognitive and emotional barriers that contributed to resistance and uncertainty regarding electricity adoption.

Stage 2: Exposure to Participatory Communication. Community dramas, poems, songs, demonstrations, and dialogue sessions provided opportunities for experiential learning and helped address misconceptions. Through these activities, participants gained practical knowledge about electricity use, billing procedures, and household safety.

Stage 3: Observation of Trusted Leaders Modelling Safe Behaviour. The visible involvement of elders, religious leaders, clan heads, and local mobilizers enhanced the credibility of communication messages. Observing respected community members safely using electricity increased trust and confidence among residents.

Stage 4: Cognitive Reframing. Participants gradually reinterpreted electricity as safe, useful, and compatible with their daily lives. Electricity became increasingly associated with improved household wellbeing, safer cooking practices, and enhanced educational opportunities for children.

How Communication Contributed to Readiness and Adoption (RQ3)

The narratives suggest an interpretive pathway through which locally relevant information and participatory encounters helped households reconsider perceived risks. Demonstrations and cognitive mapping made electricity use more observable and understandable; explanations in local languages addressed practical concerns; and trusted leaders provided social reassurance. These processes were associated with greater understanding, trust, and willingness to consider connection. C8 summarised this relationship by linking clear explanations and leaders' visible use of electricity with confidence to adopt. The findings therefore indicate how communication contributed to transformational readiness, rather than establishing that communication alone caused adoption. Infrastructure availability, affordability, and other conditions may also have influenced household decisions.

Stage 5: Adoption and Integration. Households subsequently connected to the grid adjusted their energy practices and integrated electricity into everyday activities. By 2024, over 107,779 domestic customers and 559 commercial customers had been connected to the electricity network (MEMD, 2024). Some participants also reported requesting additional electricity poles and exploring complementary energy solutions, including solar technologies.

Absence of Strong Disconfirming Cases

Although participants described varying levels of fear, uncertainty, and hesitation during the early stages of the electrification process, no participant reported outright rejection of electricity following the communication interventions. Differences were observed in the pace at which households adopted electricity, with some requiring more time and reassurance than others before connecting to the grid. However, the overall narrative reflected movement from initial skepticism toward greater acceptance and adoption. This finding suggests that the communication approaches employed were generally perceived as credible, relevant, and responsive to community concerns. However, because the study primarily involved participants who had engaged with or adopted the intervention, the perspectives of persistent non-adopters may be underrepresented.

Lessons

The findings demonstrate that effective transition communication is participatory, culturally sensitive, and mediated by trusted local actors. Combining experiential activities (interaction resonance), provision of sufficient information (information adequacy), cognitive mapping, and influencer modelling (communicative competence) reshaped perceptions, built trust, and enabled practical understanding, thereby creating a pathway from fear to adoption. As participant C8 summarized:

> *"When people explain clearly, and we see trusted leaders use electricity, we feel confident to adopt it ourselves."*

Engagement with credible communicators (communicative competence) empowered households to integrate low-carbon energy solutions into daily life, illustrating the mechanisms through which information dissemination facilitates transformational readiness.

Differences were observed across stakeholder groups in how the transition process was experienced and interpreted. Community members primarily described their personal journeys from fear and uncertainty to understanding and adoption of electricity. Opinion leaders focused on their role as trusted intermediaries who translated technical information into meaningful local messages and reassured residents about safety and costs. In contrast, MEMD communication agents ensured effective design and implementation of the transition communication messages, including the use of local languages, demonstrations, and community engagement activities. Although these groups occupied different positions within the transition process, their accounts converged around the importance of trust-building, participatory communication, and experiential learning in facilitating household energy shift.

Discussion

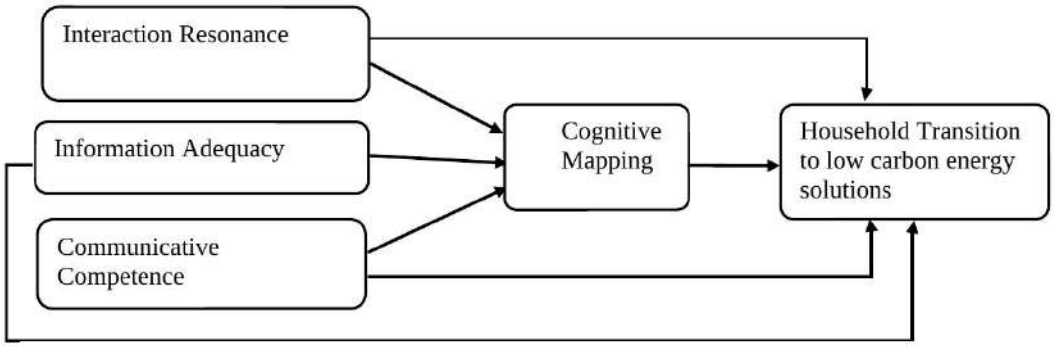
The findings show that household energy transition in Pader District involved a communicative process through which households interpreted, questioned, and gradually accepted electricity. This process is conceptualised as transformational readiness: the development of understanding, trust, and willingness to adopt a new energy solution.

The findings extend Diffusion of Innovation (DOI) Theory by showing how communication facilitates movement from knowledge to adoption (Rogers, 2003). Practical and understandable information, demonstrations, and interpersonal engagement helped households reassess concerns about safety, cost, and electricity use. This supports previous research showing that contextually relevant information reduces uncertainty surrounding clean energy technologies (Aklin & Urpelainen, 2018; Hsu et al., 2021). However, information alone was insufficient. Trusted local leaders translated technical messages into locally meaningful explanations and provided reassurance through their own experiences with electricity. This extends DOI's emphasis on interpersonal communication and resonates with Social Learning Theory (Bandura, 1977), as households gained confidence by observing credible community actors using electricity. Agenda-Setting Theory further explains how repeated communication made electricity adoption salient to households (McCombs & Shaw, 1972; McCombs, 1977). In Pader, agenda-setting occurred through community meetings, local leaders, demonstrations, and interpersonal engagement rather than primarily through mass media. These channels connected electricity to immediate household concerns such as safety, cost, lighting, and everyday energy use.

The findings also demonstrate the importance of cognitive mapping and experiential learning. Visual explanations and demonstrations enabled households to connect unfamiliar electricity systems with existing knowledge and practices, thereby reducing perceived complexity and increasing compatibility, trialability, and observability (Rogers, 2003). Three communication dimensions emerged from the narratives: information adequacy, communicative competence, and interaction resonance. These

dimensions were not predetermined coding categories but emerged abductively from participants' accounts and were interpreted alongside existing communication literature, including Bashir et al. (2022). Information adequacy concerns the sufficiency and relevance of information; communicative competence concerns the credibility and ability of communicators to convey messages effectively; and interaction resonance concerns the extent to which communication connects with households through dialogue, cultural relevance, and repeated engagement. Together, these dimensions form an emergent framework explaining how transition communication may facilitate household readiness and adoption of low-carbon energy solutions. The framework emerged from the narrative analysis and should be understood as an interpretive explanation rather than a validated causal model. Figure 1 illustrates this emergent framework, showing how information adequacy, communicative competence and interaction resonance relate to cognitive mapping and household transition to low-carbon energy solutions. The arrows represent interpretive relationships drawn from participants' narratives rather than tested causal effects.

Figure 1: Emergent Framework of Transformational Readiness for Household Adoption of Low-Carbon Energy Solutions



Source: *Authors' own work.*

Conclusion and Implications

This study examined how transition communication facilitates household transition to low-carbon energy solutions in Pader District, Northern Uganda. The findings show that household transition involved more than access to electricity infrastructure; it required communication that reduced uncertainty, strengthened trust, and enabled households to relate new energy solutions to their everyday experiences. Participatory communication, trusted community actors, demonstrations, and locally relevant information contributed to household readiness and adoption.

Theoretically, the study extends DOI Theory by showing how communication supports movement from knowledge and initial uncertainty towards evaluation and adoption. It also extends Agenda-Setting Theory to a rural community context by demonstrating how trusted local actors and interpersonal networks can increase the salience of energy-transition issues beyond conventional mass-media channels. The emergent dimensions of information adequacy, communicative competence, and interaction resonance further explain how transition communication may facilitate household readiness for low-carbon energy adoption.

From a policy and practical perspective, energy-transition programmes should complement infrastructure investment with sustained community communication. Government agencies, energy providers, and development partners should work with trusted local leaders, use locally understandable messages, and provide opportunities for dialogue and practical demonstrations. Communication should address household concerns about cost, safety, usability, and compatibility with everyday practices rather than relying primarily on technical or one-way information dissemination.

Limitations and Future Research

The study deliberately adopted a single-community, positive-case narrative inquiry design to develop a contextual understanding of household experiences; this methodological choice should not itself be treated as a limitation. Nevertheless, the interpretation of findings is bounded by the selection of participants who were exposed to relatively successful interventions, which may underrepresent persistent non-adopters and less favourable experiences. Retrospective accounts of events between 2019 and 2024 may be affected by recall bias, notwithstanding triangulation and member checking. The analysis also did not systematically examine how affordability, infrastructure access, seasonal conditions, gender roles, and household decision-making shaped adoption independently of communication. These boundaries should inform transferability to other settings.

Future research should compare successful and less successful energy-transition cases across different contexts to establish the conditions under which communication facilitates or constrains adoption.

Longitudinal studies could examine whether communication-related changes in household behaviour are sustained over time, while further research could investigate gender, youth engagement, and household decision-making dynamics. Quantitative studies could also test the emergent framework and assess the contribution of information adequacy, communicative competence, and interaction resonance to household readiness and adoption of low-carbon energy solutions.

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Appendix A. Illustrative Interview Questions

Communication Experiences

1. Can you describe how you first learned about the low-carbon energy initiative in your community?
2. What communication activities or messages did you find most useful in helping you understand the initiative?

Information Sources and Channels

3. What sources of information about low-carbon energy solutions were available to your household?
4. Which communication channels were most effective in influencing your understanding and decision-making?

Interpretation and Response

5. How did you interpret the information you received about low-carbon energy solutions?
6. Were there any concerns, fears, or uncertainties? How were they addressed?

Adoption and Readiness

7. How did the communication process influence your household's readiness to adopt the energy solution?
8. What factors motivated your household to proceed with adoption?
9. What communication approaches would you recommend for similar communities?
10. In your view, what role did communication play in the success of the transition process?