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Climate Change Adaptation: What is Driving Us Into Action?

Monika Mačiulienė , Aelita Skaržauskienė , Kristina Kovaitė 

ABSTRACT

The growing frequency of climate-related events underscores the urgent need for effective adaptation strategies alongside mitigation efforts. This study investigates the motivations driving climate adaptation behaviors in Lithuania, a region less immediately affected by climate change impacts. Drawing on survey data from 1,013 respondents, the research applies established theoretical frameworks, including the Theory of Planned Behavior and Value-Belief-Norm Theory, to analyze economic, ecological and social motivators for adaptation actions. Results reveal that financial considerations, such as affordability and incentives, are the strongest drivers, followed by social influences, including interpersonal encouragement and moral satisfaction. Ecological motivations, while impactful, are predominantly linked to actions with visible local environmental benefits. Demographic analyses highlight age-related differences in motivations, with younger respondents displaying higher ecological and economic concerns, and gendered patterns showing females prioritizing social and ecological values. The findings emphasize the importance of localized strategies that align interventions with dominant motivators and demographic preferences, fostering inclusive and effective climate adaptation policies. This study contributes a nuanced understanding of adaptation behaviors in less vulnerable regions, offering insights for targeted communication and policy design.

KEY WORDS: climate-related hazards, worldviews, motivation, citizen climate adaptation, adaptation actions.

JEL Classification: I310.

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1. Introduction

In August 2024, approximately 4.1 billion people – half of the global population – experienced unusually high temperatures, a phenomenon made three times more likely by climate change (Climate Central, 2024). While mitigation efforts aimed at reducing the causes of climate change remain essential, the growing frequency and intensity of climate-related events highlight an urgent need for adaptation strategies that manage the consequences

and support resilience in the face of new climate realities (Intergovernmental Panel on Climate Change [IPCC], 2021). Climate adaptation is inherently complex, encompassing resilience, transition and transformation, and it requires varying depths of response to effectively address diverse climate impacts (Colloff et al., 2017; Štreimikis et al., 2024).

Adaptation strategies span a wide continuum, from influencing human behavior and innovating new technologies to implementing governance policies and enhancing resource accessibility across

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sectors such as agriculture, coastal management, health, water resources and urban planning (Aryal et al., 2020; Banelienė & Strazdas, 2023; Diallo et al., 2020; Palanivel & Shah, 2021; Yang et al., 2021). The shifting frequency of climate impacts, coupled with limited capacity at local governance levels to manage these risks, stress the need for enhanced engagement of a broader set of stakeholders in adaptation processes (IPCC, 2021; Wamsler & Brink, 2018). Meanwhile, public interest in personal adaptation measures has grown, driven by heightened awareness and the visible impacts of climate change on daily life (Carman & Zint, 2020; Van Valkengoed & Steg, 2019), as well as increased civil activism (Hügel & Davies, 2020). International frameworks, including the IPCC's Special Report on Global Warming of 1.5°C and the European Commission's Adaptation to Climate Change Mission, emphasize the importance of citizen engagement to build climate resilience by 2050 (IPCC, 2022; European Commission, 2020).

Yet, despite public support for climate action, a significant portion of individuals do not feel personally responsible for addressing climate change as reported by Eurobarometer (2021), suggesting a disconnect between the policy support and personal actions. Research indicates that cognitive biases and psychological distancing often hinder proactive climate responses, making it difficult to shift established patterns of thinking and behavior (Bechtoldt et al., 2021; Gifford et al., 2018; Streimikiene, 2023). Substantial gaps remain in understanding how climate adaptation motivations vary based on local contexts with some drivers like social influence, worry and perceived costs having universal effects across countries and others such as flood experience and media impact differing due to specific cultural or contextual modifications (Jones et al., 2021; Noll et al., 2022). Additionally, most studies focus on the areas where climate impacts are severe, emphasizing immediate needs presenting a geographical imbalance in the studies on climate adaptation (Cabana et al., 2023; Jooste et al., 2018; Ng, 2023). In this regard, motivational drivers in regions like Lithuania, where impacts of climate change are currently less intense (Ministry of Environment of the Republic of Lithuania,

2024; Streimikiene, 2022), are under researched and mostly focused on mitigation (Balezentis et al., 2024; Jakučionytė-Skodienė & Liobikienė, 2023; Žičkienė et al., 2022).

This study seeks to fill this gap by focusing on the motivations that drive climate adaptation actions in Lithuania. Using a survey framework developed by Brink and Wamsler (2019), this research investigates a range of motivations that influence individuals' decisions to take adaptive actions through the analysis of large-scale survey results of a representative sample in Lithuania. By doing so, the results provide a detailed understanding of the economic, social, ecological and other motivations that underpin adaptation behaviors and their dynamics in a localized context.

The following sections are structured as follows: Section 2 provides an overview of existing research on motivation in climate adaptation, detailing economic, social, ecological and practical motivators. Section 3 details the study sample, data collection methods and analytical techniques employed. Section 4 presents the study findings, including statistical analyses and correlations between the motivational factors, demographics and adaptation actions. Section 5 interprets the results, comparing them with existing literature and discussing their implications. The final sections provide conclusions, discuss limitations and suggest directions for future research.

2. Literature Review and Research Questions

Understanding climate adaptation as a behavioral process is critical to addressing the growing challenges posed by climate change. While technological and policy solutions play a key role, the effectiveness of adaptation efforts largely depends on individuals' willingness and ability to adopt adaptive behaviors (Barnett et al., 2021). However, changing human behavior in response to climate change remains a significant challenge due to entrenched psychological patterns and the interplay of internal and external influences (van Valkengoed & Steg, 2019). This literature review examines the foundations for understanding behavioral change in the context of climate

adaptation by exploring key theoretical models in environmental psychology and determinants of adaptation behavior.

2.1. Key Theoretical Models Explaining the Behavioral Change Aspects in Climate Adaptation

According to Walawalkar et al. (2023), the research on behavioral change in the field of adaptation are built on studies on pro-environmental behavior more generally. Among the most widely applied are the theories of planned behavior (TPB) (Ajzen, 2020) and the value-belief-norm (VBN) (Stern et al., 1999), both of which highlight the importance of individual attitudes, beliefs and values in shaping the behavior (Gifford et al., 2021; Xue et al., 2023). Overall, research shows that TPB appears to be more effective in predicting self-interest-oriented (e.g. economic) behaviors, while the VBN theory better explains altruistic (e.g., pro-social, pro-environmental) behaviors (Zhang et al., 2020).

More specifically, TPB emphasizes the influence of attitudes (i.e., beliefs about the outcomes of behavior), subjective norms (i.e., social pressures to act) and perceived behavioral control (i.e., confidence in one's ability to act) in driving intentions and subsequent actions (Ajzen, 2020). Research in the context of climate change adaptation and mitigation behaviors shows that TPB component significantly influence intentions to adopt pro-environmental behaviors (Di Falco & Sharma-Khushal, 2019; Jacob et al., 2021; Pouya & Niyaz, 2022;). In contrast, VBN theory focuses on the moral and normative dimensions of behavior, linking values (e.g., biospheric, altruistic) to environmental actions through personal beliefs about environmental responsibility and the perceived consequences of inaction (Stern et al., 1999). For instance, individuals with strong ecological values are more likely to engage in sustainable behaviors, such as vegetarianism or participation in environmental organizations, due to their alignment with biospheric and altruistic concerns (Bouman et al., 2021; Howell & Allen, 2017).

It is important to note that while both TPB and VBN provide valuable insights, they have limitations. Adaptation to climate change is a multifaceted

process and there is no single theory which could capture the whole spectrum of influences on behavior change. More specifically, TPB struggles to account for habitual or intuitive behaviors that are less consciously planned, while VBN may overlook external constraints or incentives that influence decision-making (Walawalkar et al., 2023). Nevertheless, these theoretical models provide a basis for understanding how value orientations motivate adaptation actions.

2.2. Determinants of Adaptation Behavior

The drivers of climate adaptation behavior are shaped by both internal and external determinants, which influence individuals' motivations to engage in adaptive actions. These motivations are often categorized into three core value orientations: economic, ecological and social (Brink & Wamsler, 2019). This section explores how these values interact with cognitive, emotional and contextual factors to enable or constrain adaptation behavior.

2.2.1. External Motivators for Climate Adaptation

External influences, such as financial incentives, social norms and community dynamics, often shape the value orientations underlying adaptation decisions. Financial motivators, for example, can promote short-term adaptive actions by reducing perceived costs (Nyborg et al., 2016), whereas ecological motivators tied to place attachment and environmental concern enhance the relevance of long-term climate actions (Wilkins & de Urioste-Stone, 2018). Social motivators, such as the influence of community networks and descriptive norms, foster a shared sense of responsibility and encourage collective adaptation behaviors (Whitmarsh et al., 2013; Steynor et al., 2021). Additionally, exposure to extreme weather events has been shown to heighten environmental concern and strengthen ecological value orientations, particularly in regions where climate risks are tangible (Ágoston et al., 2022). These external motivators are critical for understanding how individuals prioritize economic benefits, ecological sustainability, and social cohesion in their adaptation decisions.

2.2.2. Internal Motivators for Climate Adaptation

Internal motivators, such as personal values, moral responsibility and emotional responses, provide a foundation for sustained climate adaptation. Economic value orientations are often linked to self-interest and cost-benefit considerations, particularly when individuals perceive adaptation actions as beneficial for their financial security (Grothmann & Patt, 2005). Ecological values, on the other hand, are driven by biospheric concern and environmental responsibility, motivating behaviors like sustainable consumption, vegetarianism, and engagement with environmental organizations (Bouman et al., 2021; Howell & Allen, 2017). Social value orientations stem from a sense of connectedness to others and a desire to uphold societal norms, which can drive participation in adaptation initiatives that benefit communities (Vulturius et al., 2018). Furthermore, psychological factors such as environmental anxiety and perceived efficacy often amplify these value-based motivations, highlighting the importance of addressing both rational and emotional dimensions of behavior (Lutz et al., 2023; Pihkala, 2020;).

2.3. Knowledge Gaps and Research Questions

While research discussed above have offered valuable insights, they often lack a localized understanding of how these value types interact or differ in importance across specific contexts. For instance, the relative strength of ecological versus economic motivators may vary significantly between regions with different levels of exposure to climate risks or differing economic and cultural characteristics. This gap points to the need for a more context-specific studies that can inform adaptation strategies. Most studies have focused on areas where climate impacts are severe, emphasizing immediate adaptation needs and responses. For example, coastal areas (Cabana et al; 2023; Khan et al., 2023;) and islands (Robinson, 2020). Yet in regions like Lithuania, where adaptation urgency may be lower, the role and relative importance of economic, ecological and social values may vary significantly. Studies by van Valkengoed and Steg (2019) and Steynor et al. (2021) indicate that both internal values and external factors shape

adaptation behaviors differently across contexts, underscoring the need for localized studies that capture these nuanced dynamics.

This study addresses this gap by focusing exclusively on motivations for climate adaptation actions in Lithuania. By comparing different types of motivators in a single setting, this research seeks to contribute a localized understanding of how these motivators influence climate adaptation behaviors, thereby informing more effective, context-specific adaptation strategies. Based on the identified gaps, this study aims to answer the following questions:

RQ1: What are the motivational factors (economic, ecological, social or other) that influence individuals' intentions to undertake climate adaptation actions in Lithuania?

RQ2: How do demographic variables (e.g., age, gender, education level) influence motivations for climate adaptation, and what patterns emerge in relation to these motivations across different population segments?

RQ3: What is the relationship between motivation levels and the likelihood of completing adaptation actions, and which motivational factors (economic, ecological, social, or other) are most strongly associated with actual engagement in climate adaptation behaviors?

3. Methodology

3.1. Study Design

The survey questionnaire was developed by Brink and Wamsler (2019) and aims to capture a range of factors related to climate-related hazard experiences, worldviews, climate change concerns and adaptation actions grounded in theories of climate change adaptation, risk and environmental behavior. In this article, we focus exclusively on the motivational factors influencing climate adaptation behaviors, with other dimensions such as worldviews to be analyzed in subsequent publications. This questionnaire draws on the Theory of Planned Behavior (Ajzen, 2020) and the Value-Belief-Norm Theory (Stern et al., 1999) to examine the motivations underlying climate adaptation behaviors. These frameworks inform the categorization of motivational factors in this study – economic, ecological, social and other drivers – and guide the design of the survey in-

strument. By applying these established theories to a localized context in Lithuania, this research seeks to explore how value orientations influence adaptation decisions and identify patterns that can inform more effective, context-specific strategies.

Permission for translation and adaptation was granted from the original authors. The survey was translated to Lithuanian by the research team and back-translated to ensure the integrity of the translation. Minimal adaptations of the questionnaire were implemented i.e., the phrasing of some questions (related to adaptation actions) was adjusted to the regional climate specificities. Following sections detail dimensions covered by the survey questionnaire relevant to this research.

3.1.1. Motivation for Adaptation

In this context, motivation refers to the underlying reasons or drivers that prompt individuals to take adaptive actions in response to climate risks (van Valkengoed & Steg, 2019). Motivations were categorized into economic, ecological, social and other drivers (see Table 1).

Respondents rated their motivation on a 5-point Likert scale across nine items.

Economic motivations reflect financial or cost-related incentives, emphasizing affordability and benefits, as aligned with Theory of Planned Behavior's focus on perceived rewards and accessibility. Ecological motivations capture the appeal of environmental benefits and align with Value-Belief-Norm Theory, driven by biospheric values and concern for ecological risks. Social motivations, tied to family, friends and community norms, also draw from Theory of Planned Behavior, highlighting the role of social expectations. Additional items assess ease of implementation and institutional support, addressing factors crucial for accessibility and confidence in adaptation actions.

3.1.2. Adaptation Actions to Protect People and Possessions

In this paper, adaptation is defined as a process, action or outcome within a system (i.e., household) aimed at improving the ability to cope with, manage or adjust

Table 1
Statements for Assessing the Motivation for Adaptation (Brink & Wamsler, 2019)

Groups	Element	Statement
Economic motivators	Low cost	"The action has low or no cost."
	Economic incentive	"I get financial benefits if I take action, e.g., tax deductions."
Social motivators	Family/friends	"I am encouraged by family members, friends or neighbors to take action."
	Others' risk	"The action can reduce the risk of other community members, who are more at risk."
	Good conscience	"I have a good conscience knowing I am doing the 'right' thing."
Ecological motivators	Greening	"The action also contributes to a green and thriving local environment."
	Climate change mitigation	"The action also contributes to mitigating greenhouse gas emissions."
Other motivators	Little know-how	"The action requires no or few skills or know-how."
	Public adaptation	"I am encouraged by the municipality to take action or being encouraged by friends"

to changing conditions, stresses, hazards, risks or opportunities (Smit & Wandel, 2006). Adaptation actions were assessed based on a checklist of everyday household actions for risk reduction and adaptation: Water pumps/sandbags ("Purchased water pumps or sandbags for use during floods or storms."); Food supplies ("Stocked up on food in preparation for extreme weather risks."); Flood barriers ("Built barriers or protective measures to safeguard property from floods or storms."); Tree removal ("Removed trees that could damage property during storms."); Property upgrades ("Invested in improving property to withstand rain, strong winds, or heatwaves."); Planting trees ("Planted trees or other vegetation to create more pleasant conditions during summer heat"); Caring for others ("Supported elderly relatives or neighbors during extreme weather."); Warning neighbors ("Warned neighbors about impending storms, floods, or other extreme weather events."); Housing association influence ("Attempted to influence housing associations or property owners to implement additional protective measures."); Insurance ("Took out or upgraded insurance to cover property against extreme weather risks"); Construction permits ("Applied for building permits to implement protective measures for property against extreme weather."); Power outage preparation ("Prepared for power outages due to extreme weather."); Securing outdoor items ("Secured outdoor furniture and equipment before a storm."); and Relocation ("Moved to a less vulnerable area to reduce exposure to extreme weather risks").

3.1.3. Demographics

Demographic questions were included to gather essential background information about respondents, such as gender, age, income level, education and place of residence. These variables were critical for analyzing patterns in adaptation behaviors and motivations across different population segments.

3.2. Survey Implementation

A representative survey of Lithuania's residents was conducted from October 23 to November 7, 2023, at 109 survey locations (31 cities and 43 villages). The survey was conducted by the public opinion research company "Baltijos tyrimai," which is based in Lithuania and the United Kingdom. During the study, 1,013 residents of Lithuania aged 18 and older were surveyed. The age

limits were selected following the practice of population opinion surveys applied in European Union countries (ESOMAR) to facilitate comparisons with previous surveys. The survey was conducted through individual interviews. Respondents for the survey were selected using a multistage stratified random sampling method.

Participation in the study was voluntary, with respondents providing informed consent and not receiving any compensation. They were given detailed information about the study's purpose, risks, benefits and their rights, including the right to withdraw at any time. Consent was obtained through a two-step process, ensuring participants fully understood their involvement. Data confidentiality was maintained through anonymization and secure storage on password-protected servers, with access limited to the research team.

3.3. Validation of the Instrument

Internal consistency of the motivation scales was assessed using Cronbach's alpha (α). The results demonstrated good to excellent reliability across all dimensions. The overall motivation scale, comprising all items, showed excellent internal consistency ($\alpha = 0.92$). At the subscale level, all dimensions demonstrated good reliability: social motivations ($\alpha = 0.80$), economic motivations ($\alpha = 0.80$), ecological motivations ($\alpha = 0.77$) and other motivations ($\alpha = 0.76$). These values exceed the commonly accepted threshold of $\alpha > 0.70$ for acceptable internal consistency in social science research (Nunnally & Bernstein, 1994), indicating that the items within each subscale consistently measure their respective constructs.

The high overall alpha coefficient ($\alpha = 0.92$) suggests strong interrelatedness among the items across all motivation dimensions, while the subscale coefficients (ranging from 0.76 to 0.80) indicate that each dimension maintains its distinct measurement properties while still being part of the broader motivation construct. These reliability coefficients are particularly robust considering the relatively small number of items in each subscale (2-3 items), as Cronbach's alpha tends to be sensitive to the number of items in a scale.

In addition to motivational factors, the analysis included adaptation actions and demographic characteristics. The adaptation actions, categorized

into technical, ecosystem-based, social, and institutional measures, were analyzed for consistency and alignment with motivational factors. Demographic variables such as age, gender, education, and income were examined to ensure representativeness and to explore their influence on motivation and adaptation behaviors.

3.4. Data Analysis Methods

The data analysis was conducted using Python 3.x and its advanced statistical and visualization libraries. Descriptive statistics were applied to demographic variables, including age, gender, education and income, to assess the representativeness of the sample. Motivational and their correlations with adaptation actions were examined using `scipy.stats`. Python's data science ecosystem, including `pandas` and `numpy`, ensured an efficient analysis. We also employed an

Analysis of Variance (ANOVA) test to evaluate the differences in the number of adaptation actions across different motivation quartiles. This statistical method allowed us to determine whether the mean number of actions varied significantly among groups with differing levels of motivation.

4. Results

4.1. Characteristics of the Respondents

Table 2 presents the sociodemographic characteristics of the survey respondents, which closely reflect the demographic composition of the Lithuanian population. The sample includes a balanced distribution across gender, age groups, education levels and household income categories, ensuring representativeness and providing the basis for analyzing factors influencing climate adaptation behaviors.

Table 2
Sociodemographic Characteristics of Participants at Baseline

Baseline Characteristic	n	%
Gender		
Male	462	46%
Female	551	54%
Age		
18 - 29	151	15%
30 - 49	341	34%
50 +	520	51%
Household income		
Up to 1000 EUR	287	28%
1001 – 1800 EUR	259	26%
More than 1800 EUR	243	24%
Refused to answer	224	22%
Education		
Master's / Doctor's degree (University)	48	5%
Bachelor's Degree (University)	136	13%
Non-university higher education (college)	122	12%
Higher technical school	181	18%
Vocational school	274	27%
Secondary school	202	20%

4.2. Motivation for Adaptation Actions

In understanding the factors that motivate adaptation actions, this study employs a dual-metric approach. Positive responses were captured through '4' (agree) and '5' (strongly agree) ratings. Mean scores and the distribution of high endorsement levels were then calculated to provide a nuanced understanding of the motivational landscape in Lithuania.

The results reveal notable variations in the motivational factors influencing climate adaptation actions in Lithuania, with economic, social, ecological, and other motivators showing distinct patterns of endorsement. Economic motivators, such as "low cost" and "economic incentives," yielded the highest combined agreement levels (69.89% and 68.9%, respectively), indicating that financial considerations are a significant driver of adaptation behaviors. These findings align with the expectation that affordability and tangible economic benefits play a central role in motivating actions, particularly in contexts where resources may be limited.

Social motivators demonstrated slightly lower combined agreement levels, ranging from 63.18% ("family/friends' encouragement") to 66.14% ("good conscience"). These results highlight the importance of interpersonal influences and moral satisfaction in driving adaptation. The relatively high endorsement of "good conscience" suggests that personal values and a sense of doing the "right thing" are impactful motivators for many individuals.

Ecological motivators also scored relatively high, with "greening" receiving a combined agreement of 68.9%, indicating that participants value actions contributing to local environmental improvements. However, "climate change mitigation" showed a lower combined agreement (59.92%), suggesting that while participants recognize the benefits of local environmental outcomes, they may perceive broader, global benefits as less immediately relevant or impactful to their personal actions.

Finally, "other motivators," such as ease of ac-

Table 3
Motivation for Adaptation Actions

Factors		Statement	Mean	4-rated	5-rated	Combined
Economic motivators	Low cost	"The action has low or no cost."	4.06	29.62%	40.28%	69.89%
	Economic incentive	"I get financial benefits if I take action, e.g., tax deductions."	4.06	39.09%	39.09%	68.9%
Social motivators	Family/friends	"I am encouraged by family members, friends or neighbors to take action."	3.85	33.66%	29.52%	63.18%
	Others' risk	"The action can reduce the risk of other community members, who are more at risk."	3.92	39.88%	26.06%	65.94%
	Good conscience	"I have a good conscience knowing I am doing the "right" thing."	3.97	35.04%	31.1%	66.14%
Ecologic motivators	Greening	"The action also contributes to a green and thriving local environment."	3.98	36.43%	32.48%	68.9%
	Climate change mitigation	"The action also contributes to mitigating greenhouse gas emissions."	3.81	34.45%	25.47%	59.92%
Other motivators	Little know-how	"The action requires no or few skills or know-how."	3.95	35.24%	30.7%	65.94%
	Public adaptation	"I am encouraged by the municipality to take action or being encouraged by friends"	3.73	32.08%	24.68%	56.76%

tion ("little know-how") and institutional encouragement ("public adaptation"), showed moderate agreement levels (65.94% and 56.76%, respectively). The lower score for institutional encouragement highlights a potential gap in the role of municipalities and public institutions in motivating adaptation behaviors, suggesting the need for stronger institutional engagement and support.

4.3. Demographic Differences in Motivation for Climate Adaptation

The analysis of demographic variables provides a clearer picture of how gender, age, education and income influence motivation for climate adaptation, with certain trends emerging from the data.

4.3.1. Gender

Overall, gender differences in motivation are small but noticeable in specific areas. Females report slightly higher scores for ecological motivations, with an average mean of 4.01 for environmental concerns compared to males (3.95). In social motivations, females show higher scores in conscience-related factors (4.00 compared to 3.92 for males). On economic motivations, the differences are minimal, with males scoring slightly higher on financial incentives (4.08) compared to females (4.05). Although the differences are not statistically significant, they suggest that ecological and social motivations may resonate slightly more with females, while males may place a marginally higher value on economic incentives.

4.3.2. Age

The analysis of motivation patterns across age groups reveals several statistically significant relationships, particularly in ecological and social dimensions. For ecological motivations, climate change mitigation shows a significant negative correlation with age ($r = -0.114$, $p < 0.001$), with younger respondents (18-30) scoring an average of 4.05 compared to 3.72 for those over 60. While local environmental benefits show a similar declining pattern (from 4.03 to 3.94), this relationship is not statistically significant ($p = 0.269$). In terms of social motivations, conscience-related factors demonstrate a significant age-related decline ($r = -0.075$, $p = 0.030$), with scores decreasing from 4.04 among

the youngest group to 3.85 in the oldest cohort.

Economic motivations also show an interesting pattern, with economic incentives showing a significant negative correlation with age ($r = -0.073$, $p = 0.034$), declining from 4.20 in younger respondents to 3.98 among older individuals. The low-cost motivation shows a similar declining trend (from 4.21 to 3.99) though this relationship is marginally significant ($p = 0.087$). These findings suggest that age plays a particularly important role in shaping climate change-related and economic motivations, with younger generations showing significantly higher motivation levels across these dimensions. This pattern may reflect generational differences in environmental awareness and economic priorities, potentially influenced by contemporary discourse on climate change and sustainable development.

4.3.3. Education Level

Economic motivations tend to decrease with higher education, with those holding basic education reporting the highest scores, while bachelor's degree holders show significantly lower economic motivation ($r = -0.078$ to -0.089 , $p < 0.05$). In contrast, ecological and social motivations display no consistent relationship with education level, with only slight variations across educational backgrounds.

4.3.4. Income

The correlation analysis between household income levels and motivation scores indicates no statistically significant relationships across the various motivation factors. The correlation coefficients for each motivation item are weak, with p-values exceeding the conventional threshold for statistical significance ($p < 0.05$). This suggests that income levels do not have a strong or consistent impact on motivation patterns in this dataset.

4.4. Links Between Adaptation Actions and Motivation to Complete Them

4.4.1. Completion of Adaptation Actions

Adaptation is a complex process involving different purposes and activities as a result the survey questionnaire covered a wide range of adaptation actions (14 items). Overall, the analysis of the re-

sults showed that 385 individuals (38%) in the sample did not complete any adaptation actions, 137 (13.5%) individuals completed at least one action, 103 (10.2%) individuals completed two actions and 101 (9.9%) individuals completed three actions. Further analysis (see Table 4) reveal significant variation in the types and prevalence of adaptation actions undertaken by respondents, reflecting a diverse range of behavioral responses to climate risks.

Economic and technical actions, such as upgrading insurance policies (25.47%) and removing trees that could damage property (22.51%), were moderately represented. These behaviors suggest a focus on safeguarding personal property, though the relatively low uptake of more resource-intensive measures, such as property upgrades (13.13%) and purchasing water pumps or sandbags (6.42%), indicates potential barriers, such as cost or perceived necessity. Ecosystem-based actions, such as planting trees to mitigate heat effects, were reported by 19.35% of respondents, showing some engagement with long-term environmental adaptation strategies. However, more proactive institutional or organizational measures, such as influencing housing associations (6.22%), building flood barriers (3.16%), seeking construction permits (1.38%), and

relocating to safer areas (0.99%), were reported by very few respondents, indicating limited interaction with formal adaptation systems or significant constraints preventing these actions. These findings suggest that respondents predominantly favor low-cost, easily implemented measures while avoiding more complex or resource-intensive actions. The limited uptake of institutional and relocation measures highlights the need for greater institutional support and incentives to encourage broader engagement in adaptive strategies.

The analysis indicates that gender has a statistically significant impact on the number of adaptation actions completed, suggesting potential differences in engagement or accessibility between genders. The analysis revealed notable gender differences in technical adaptations, with men more likely to engage in tree removal (29.02% vs. 18.08%) and purchasing water pumps or sandbags (9.51% vs. 4.31%), while women led slightly in power outage preparation (35.32% vs. 32.44%). Social actions, such as caring for others and warning neighbors, showed minimal differences, indicating shared responsibility in community-oriented measures. Overall, men tended to participate more in resource-intensive or physical actions, while women

Table 4
Completion of Adaptation Actions by Individuals in the Sample

Factors	Count	%
Power outage preparation	346	34,16
Securing outdoor items	338	33,37
Warning neighbors	303	29,91
Took out/upgraded insurance	258	25,47
Removed trees that could damage property	228	22,51
Planting more trees	196	19,35
Stocked up on food supplies	180	17,77
Caring for others (e.g., elderly relatives)	167	16,49
Property upgrades	133	13,13
Purchased water pumps//sandbags	65	6,42
Housing association influence	63	6,22
Built flood barriers	32	3,16
Construction permits	14	1,38
Moved to a less vulnerable area	10	0,99

Figure 1
Relationship between Total Motivation and Total Actions

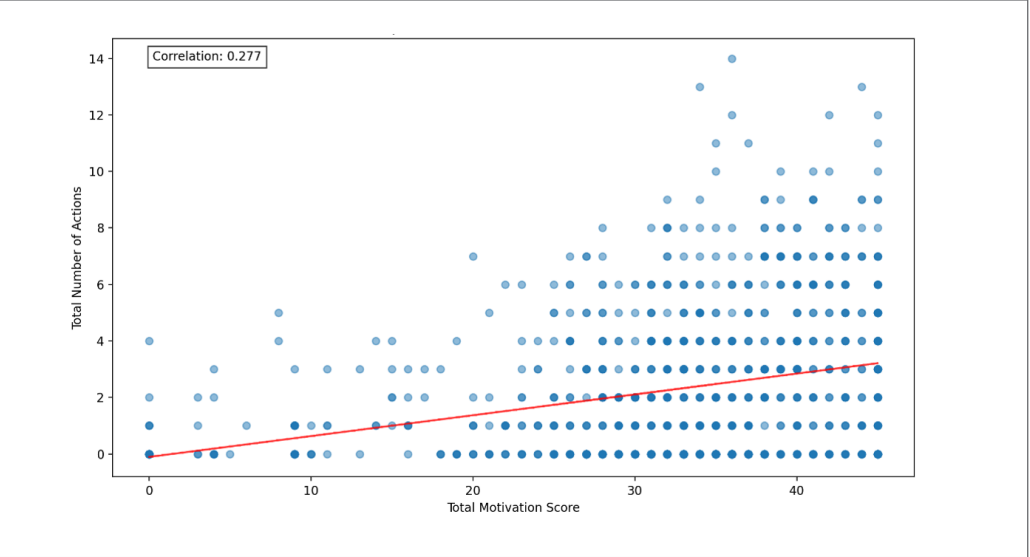
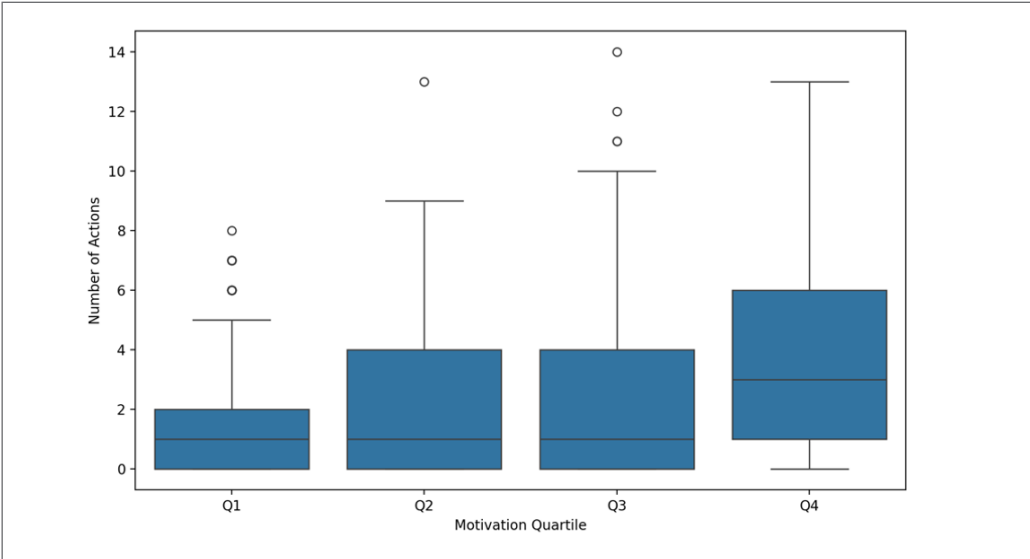


Figure 2
Distribution of Actions by Motivation Quartile



were more active in organizational and social adaptation efforts. Other demographic variables such as age, education and income did not show significant variances, implying that these factors may not strongly influence the completion of adaptation actions in this dataset.

4.4.2. Relationships Between Motivation and Adaptation Actions

To examine the relationship between overall motivation and adaptation actions, total motivation and total actions scores were calculated for each respondent, and their relationship was assessed using correlation analysis and an ANOVA test. The findings reveal a positive association, indicating that higher motivation is linked to a greater number of adaptation actions. The correlation analysis confirmed a positive relationship, with higher total motivation scores corresponding to increased adaptation actions. ANOVA results further demonstrated significant differences in adaptation actions across motivation quartiles ($F = 29.465$, $p < 0.001$). Respondents in higher motivation quartiles consistently undertook more adaptation actions, as visualized in scatter plot (Figure 1) and boxplot (Figure 2).

Further correlation analysis between motivations and adaptation actions provides detailed insights into the drivers of specific adaptation behaviors. Economic motivations exhibited the strongest correlations with organizational actions, particularly power outage preparation ($r = 0.27$) and securing outdoor items ($r = 0.24$), indicating that financial considerations are pivotal in motivating these preparedness behaviors. Social motivations also showed notable relationships, with strong correlations observed for warning neighbors ($r = 0.22$) and securing outdoor items ($r = 0.20$), emphasizing the influence of interpersonal networks and community involvement.

Ecological motivations were moderately associated with actions such as tree planting ($r = 0.18$) and tree removal ($r = 0.15$), demonstrating that environmental concerns influence both preventive and protective measures. Among motivational factors, social motivation exhibited the highest average correlation strength (0.133) across all adapta-

tion actions, followed closely by other motivations (0.129) and social concerns (0.128). On the other hand, ecological motivation 2 displayed the weakest average correlation (0.061), suggesting a more limited influence on specific adaptation behaviors.

5. Discussion

5.1. Overview of Key Findings in Relation to Previous Research

This study contributes new insights into the role of motivations in driving climate adaptation behaviors, with a specific focus on Lithuania as a case study. The representativeness of the sample ensures that the conclusions are applicable to the broader population. Findings reinforce the central role of economic and social motivations in driving adaptation actions, while ecological motivations showed moderate and context-dependent effects. These results expand upon earlier research emphasizing psychological and cultural factors in climate-related behaviors (e.g., Brink & Wamsler, 2019) by providing a localized perspective on how individuals balance financial, social and environmental considerations in adapting to climate risks.

5.1.1. Motivational Patterns

The prominence of economic motivations in this study underscores the significant role of financial considerations in shaping adaptation behavior. High endorsement rates for low-cost and incentivized actions mirror findings from Marschütz et al. (2020), which highlight financial accessibility as an enabler of adaptation efforts. These results suggest that interventions emphasizing affordability, subsidies and tangible economic benefits are likely to resonate most strongly with individuals. However, previous research underlines that the focus on costs might provide benefits only in short term (Nyborg et al., 2016). Social motivations, including interpersonal encouragement and moral satisfaction, were similarly impactful, particularly for actions such as warning neighbors and securing outdoor items. This finding supports Brick et al.'s (2019) argument that fundamental social needs – such as belongingness and trust – are more practical intervention targets than attempts to create environmentalist identities. Communication strategies that leverage these social dynamics, such as promoting

community-based adaptation programs, may therefore prove especially effective (Mackay et al., 2021).

In contrast, ecological motivations were more localized, showing higher correlations with actions tied to visible environmental benefits, such as tree planting. This echoes research by Brügger et al. (2016), which emphasizes the importance of "proximizing" climate change to bridge the psychological distance between global issues and local actions. The lower influence of ecological motivations tied to global outcomes, such as climate change mitigation, suggests that communication efforts should focus on tangible, immediate benefits to enhance engagement.

This study's findings align with those of Brink & Wamsler (2019), which emphasize the predominance of economic motivations, such as low costs and financial incentives, in driving climate adaptation behaviors. While both studies highlight the importance of social factors, including interpersonal encouragement and moral satisfaction, the role of ecological motivations appears to be more context-dependent.

5.1.2. Motivational Patterns

The nuanced demographic trends observed in this study align with broader patterns in climate behavior research. Younger respondents' higher motivation levels across all categories, especially ecological concerns, support the findings of Van Valkengoed et al. (2022) and Brink & Wamsler (2019), which attribute generational differences to increased environmental awareness and exposure to climate discourse. These results also resonate with Hornsey et al. (2016), who argue that younger generations are more likely to adopt pro-environmental behaviors due to stronger social and cultural influences.

Gender differences, while modest, reveal distinct preferences: females exhibited slightly higher ecological and social motivations, while males leaned toward economic motivations and resource-intensive actions such as tree removal. Similarly, gendered preferences were noted in the study by Brink & Wamsler (2019) i.e., women's alignment with social and ecological motivations versus men's focus on technical and economic actions – underscore the importance of designing tailored, gender-sensitive adaptation strategies. These findings reflect the gendered nature of climate engagement observed in Lacroix & Gifford (2020) and

highlight the need for gender-sensitive approaches to adaptation strategies.

5.1.3. Relationships Between Motivation and Adaptation Actions

The correlation analysis underscores the key role of motivation in driving adaptation behaviors. Higher motivation scores were associated with a greater number of completed adaptation actions, consistent with findings by De Witt et al. (2016) that emphasize the centrality of motivational factors in environmental decision-making. Economic motivations demonstrated the strongest correlations with preparedness actions such as power outage preparation ($r = 0.27$) and securing outdoor items ($r = 0.24$), indicating that financial considerations are particularly effective in encouraging practical, tangible measures. Social motivations showed notable correlations with both social and organizational actions, supporting Brosch & Sauter's (2023) assertion that interpersonal relationships and community engagement are critical for fostering climate action. However, ecological motivations, while moderate, were more specific to actions with visible environmental outcomes, such as tree planting ($r = 0.18$).

5.2. Implications for Policy and Practice

This study highlights the critical need for targeted, context-specific communication strategies to foster climate adaptation behaviors. Building on the concept of "proximizing" climate change (Brügger et al., 2016), interventions should focus on emphasizing local, immediate impacts rather than abstract global outcomes to enhance personal relevance and motivation. For example, showcasing the benefits of tree planting for local air quality and shade during heatwaves could increase engagement with ecological actions. The findings also stress the importance of integrating financial incentives into adaptation policies. Subsidies for property upgrades or discounted insurance rates for adaptation measures could address cost-related barriers and enhance uptake of resource-intensive actions. At the same time, community-based initiatives that leverage social motivators (e.g., neighborhood adaptation programs or public awareness campaigns) can amplify interpersonal influences and foster collective responsibility, as suggested by Fernández-Llamazares et al. (2015).

5.3. Limitations and Future Research

While this study offers valuable insights, its reliance on self-reported data may introduce bias, and the cross-sectional design limits the ability to establish causality. Therefore, the investigation of the real behavior of individuals should be analyzed through real-time observations. Future research could adopt longitudinal approaches to explore how motivations and behaviors evolve over time, particularly in response to changing climate conditions and policy interventions. Additionally, integrating qualitative methods, as advocated by Whitmarsh et al. (2021), could provide deeper insights into the contextual and value-laden aspects of adaptation behaviors, enriching the development of effective and inclusive strategies.

6. Conclusion

This study offers valuable insights into the motivations driving climate adaptation behaviors, using Lithuania as a case study. The findings emphasize the central role of economic, social and ecological motivations in influencing individual and community responses to climate risks. Economic motivations, particularly affordability and financial incentives, emerged as the strongest drivers, reflecting the significance of tangible benefits in decision-making. Social motivations, rooted in interpersonal influences and moral responsibility, were impactful to a lesser extent and highlighted the importance of community-based approaches. Ecological motivations, while moderate, were most influential for actions with visible local environmental benefits, underscoring the need for strategies that "proximize" climate change by emphasizing immediate and localized impacts. The study confirms that motivations are deeply intertwined with psychological, social and cultural factors, highlighting the need for strategies that address both rational and emotional dimensions of behavior. By emphasizing local relevance, leveraging social networks and enhancing institutional support, policymakers and practitioners can create more effective, inclusive adaptation strategies.

This study contributes to the broader literature on climate adaptation by providing a localized understanding of the interplay between motivations and behaviors. Unlike studies that broadly link climate hazards to adaptation actions, this research delves

into specific motivational pathways and demographic variations. The findings align with psychological and behavioral models, such as the Theory of Planned Behavior (Ajzen, 2020) and Value-Belief-Norm Theory (Stern et al., 1999), by demonstrating how economic, social and ecological values shape adaptation behaviors. Moreover, the nuanced differences observed across demographic groups, such as age and gender, stress the complexity of adaptation motivations, reflecting generational and cultural influences on environmental engagement.

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References

- Ágoston, C., Urban, R., Nagy, B., Csaba, B., Kőváry, Z., Kovacs, K., ... & Demetrovics, Z. (2022). The psychological consequences of the ecological crisis: Three new questionnaires to assess eco-anxiety, eco-guilt, and ecological grief. *Climate Risk Management*, 37, 100441. <https://doi.org/10.1016/j.crm.2022.100441>
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human behavior and emerging technologies*, 2(4), 314-324. <https://doi.org/10.1002/hbe2.195>
- Aryal, J. P., Sapkota, T. B., Rahut, D. B., Krupnik, T. J., Shahrin, S., Jat, M. L., & Stirling, C. M. (2020). Major climate risks and adaptation strategies of smallholder farmers in coastal Bangladesh. *Environmental Management*, 66(1), 105-120. <https://doi.org/10.1007/s00267-020-01291-8>
- Balezentis, T., Streimikiene, D., Stankuniene, G., & Shobande, O. A. (2024). Willingness to pay for climate change mitigation measures in households: Bundling up renewable energy, energy efficiency, and renovation. *Sustainable Development*, 32(3), 2385-2402. <https://doi.org/10.1002/sd.2784>
- Banelienė, R., & Strazdas, R. (2023). Green innovation for competitiveness: impact on GDP growth in the European Union. *Contemporary Economics*, 17(1), 92-108. <https://doi.org/10.5709/ce.1897-9254.501>

- Barnett, J., Graham, S., Quinn, T., Adger, W. N., & Butler, C. (2021). Three ways social identity shapes climate change adaptation. *Environmental Research Letters*, 16(12), 124029. <https://doi.org/10.1088/1748-9326/ac36f7>
- Bechtoldt, M. N., Götmann, A., Moslener, U., & Pauw, W. P. (2021). Addressing the climate change adaptation puzzle: A psychological science perspective. *Climate Policy*, 21(2), 186–202. <https://doi.org/10.1080/14693062.2020.1807897>
- Bouman, T., Van der Werff, E., Perlaviciute, G., & Steg, L. (2021). Environmental values and identities at the personal and group level. *Current Opinion in Behavioral Sciences*, 42, 47–53. <https://doi.org/10.1016/j.cobeha.2021.02.022>
- Brick, C., Bosshard, A., & Whitmarsh, L. (2020). Motivation and climate change: A review. In press 2021, *Current Opinion in Psychology*, special issue on climate change. <https://doi.org/10.1016/j.copsyc.2021.04.001>
- Brink, E., & Wamsler, C. (2019). Citizen engagement in climate adaptation surveyed: The role of values, worldviews, gender and place. *Journal of Cleaner Production*, 209, 1342–1353. <https://doi.org/10.1016/j.jclepro.2018.10.164>
- Brosch, T., & Sauter, D. (2023). Emotions and the climate crisis: A research agenda for an affective sustainability science. *Emotion Review*, 15(4), 253–257. <https://doi.org/10.1177/17540739231193741>
- Brügger, A., Morton, T. A., & Dessai, S. (2016). “Proximating” climate change reconsidered: A construal level theory perspective. *Journal of Environmental Psychology*, 46, 125–142. <https://doi.org/10.1016/j.jenvp.2016.04.004>
- Cabana, D., Rölfer, L., Evadzi, P., & Celliers, L. (2023). Enabling climate change adaptation in coastal systems: A systematic literature review. *Earth's Future*, 11(8), e2023EF003713. <https://doi.org/10.1029/2023EF003713>
- Carman, J. P., & Zint, M. T. (2020). Defining and classifying personal and household climate change adaptation behaviors. *Global Environmental Change*, 61, 102062. DOI:10.1016/j.gloenvcha
- Climate Central. (2024). *A Climate Central seasonal analysis of how climate change boosted temperatures worldwide between June-August 2024*. Retrieved November 11, 2024, from https://assets.ctfassets.net/cxgxgtp8r5d/47T3SeXG9B40B12GhHW89h/16ed6591ea594637867cc9d7acf0720a/Climate_Central_People_Exposed_to_Climate_Change_June-August_2024.pdf
- Colloff, M. J., Wise, R. M., Palomo, I., Lavorel, S., & Pascual, U. (2020). Nature's contribution to adaptation: insights from examples of the transformation of social-ecological systems. *Ecosystems and People*, 16(1), 137–150. <https://doi.org/10.1080/26395916.2020.1754919>
- De Witt, A., de Boer, J., Hedlund, N., & Osseweijer, P. (2016). A new tool to map the major worldviews in the Netherlands and USA, and explore how they relate to climate change. *Environmental Science & Policy*, 63, 101–112. <https://doi.org/10.1016/j.envsci.2016.05.012>
- Di Falco, S., & Sharma-Khushal, S. (2019). Cognitive drivers, and the effect of information on climate change adaptive behaviour in Fiji Islands. *Environmental Science & Policy*, 92, 245–254. <https://doi.org/10.1016/j.envsci.2018.11.019>
- Diallo, A., Donkor, E., & Owusu, V. (2020). Climate change adaptation strategies, productivity and sustainable food security in southern Mali. *Climatic Change*, 159(3), 309–327. <https://doi.org/10.1007/s10584-020-02684-8>
- Eurobarometer. (2021). *Special Eurobarometer 513: EU Climate Action*. Retrieved November 11, 2024 from https://climate.ec.europa.eu/system/files/2021-07/report_2021_en.pdf
- European Commission (2020) *A climate resilient Europe – Prepare Europe for climate disruptions and accelerate the transformation to a climate resilient and just Europe by 2030*, Publications Office. Retrieved November 11, 2024 from <https://data.europa.eu/doi/10.2777/69766>
- Fernández-Llamazares, Á., Méndez-López, M. E., Díaz-Reviriego, I., McBride, M. E., Pyhälä, A., Rosell-Melé, A., & Reyes-García, V. (2015). Links between media communication and local perceptions of climate change in an indigenous society. *Climatic change*, 131(2), 307–320. <https://doi.org/10.1007/s10584-015-1381-7>
- Gifford, R., Kormos, C., & McIntyre, A. (2011). Behavioral dimensions of climate change: drivers, responses, barriers, and interventions. *Wiley Interdisciplinary Reviews: Climate Change*, 2(6), 801–827. <https://doi.org/10.1002/wcc.143>
- Gifford, R., Lacroix, K., & Chen, A. (2018). Understanding responses to climate change: Psychological barriers to mitigation and a new theory of behavioral choice. In *Psychology and climate change* (pp 161–183). Academic press.
- Grothmann, T., & Patt, A. (2005). Adaptive capacity and human cognition: the process of individual adaptation to climate change. *Global Environmental Change*, 15(3), 199–213.

- Hornsey, M. J., Harris, E. A., Bain, P. G., & Fielding, K. S. (2016). Meta-analyses of the determinants and outcomes of belief in climate change. *Nature Climate Change*, 6(6), 622-626. DOI:10.1016/j.gloenvcha.2005.01.002
- Howell, R., & Allen, S. (2017). People and planet: Values, motivations and formative influences of individuals acting to mitigate climate change. *Environmental Values*, 26(2), 131-155. DOI:10.3197/096327117X14847335385436
- Hügel, S., & Davies, A. R. (2020). Public participation, engagement, and climate change adaptation: A review of the research literature. *Wiley Interdisciplinary Reviews: Climate Change*, 11(4), e645. DOI:10.1007/s10113-017-1195-4
- Intergovernmental Panel on Climate Change. (2021). *Climate Change 2021: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Retrieved November 11, 2024 from <https://www.ipcc.ch/report/ar6/wg1/>.
- Intergovernmental Panel on Climate Change. (2022). *Global warming of 1.5°C. An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Retrieved November 11, 2024 from <https://www.ipcc.ch/sr15/>.
- Jacob, J., Valois, P., & Tessier, M. (2021). Using the theory of planned behavior to predict the adoption of heat and flood adaptation behaviors by municipal authorities in the province of Quebec, Canada. *Sustainability*, 13(5), 2420. <https://doi.org/10.3390/su13052420>
- Jakučionytė-Skodienė, M., & Liobikienė, G. (2023). Changes in energy consumption and CO₂ emissions in the Lithuanian household sector caused by environmental awareness and climate change policy. *Energy Policy*, 180, 113687. <https://doi.org/10.1016/j.indic.2024>
- Jones, J. H., Ready, E., & Pisor, A. C. (2021). Want climate-change adaptation? Evolutionary theory can help. *American Journal of Human Biology*, 33(4), e23539. <https://doi.org/10.1002/ajhb.23539>
- Jooste, B. S., Dokken, J. V., Van Niekerk, D., & Loubser, R. A. (2018). Challenges to belief systems in the context of climate change adaptation. *Jambá: Journal of Disaster Risk Studies*, 10(1), 1-10. <https://doi.org/10.1175/WCAS-D-13-00027>
- Khan, S. A., Al Rashid, A., & Koç, M. (2023). Adaptive response for climate change challenges for small and vulnerable coastal area (SVCA) countries: *Qatar perspective*. *International Journal of Disaster Risk Reduction*, 96, 103969. <https://doi.org/10.1016/j.ijdrr.2023.103969>
- Lacroix, K., Gifford, R., & Rush, J. (2020). Climate change beliefs shape the interpretation of forest fire events. *Climatic Change*, 159(1), 103-120. <https://doi.org/10.1007/S10584-019-02584-6>
- Lutz, P. K., Zelenski, J. M., & Newman, D. B. (2023). Eco-anxiety in daily life: Relationships with well-being and pro-environmental behavior. *Current Research in Ecological and Social Psychology*, 4, 100110. <https://doi.org/10.1016/j.cresp.2023.100110>
- Mackay, C. M., Schmitt, M. T., Lutz, A. E., & Mendel, J. (2021). Recent developments in the social identity approach to the psychology of climate change. *Current Opinion in Psychology*, 42, 95-101. <https://doi.org/10.1016/j.copsyc.2021.04.009>
- Marschütz, B., Bremer, S., Runhaar, H., Hegger, D., Mees, H., Vervoort, J., & Wardekker, A. (2020). Local narratives of change as an entry point for building urban climate resilience. *Climate Risk Management*, 28, 100223. <https://doi.org/10.1016/j.crm.2020.100223>
- Ministry of Environment of the Republic of Lithuania. (2024). *General information about climate change*. Retrieved November 11, 2024 from <https://am.lrv.lt/lt/veiklos-sritys-1/klimato-politika/klimato-kaita/bendra-informacija-apie-klimato-kaita/>
- Ng, S. L. (2023). Climate mitigation and adaptation: Regional imbalance in research efforts. *Anthropocene*, 44, 100410. <https://doi.org/10.1016/j.anthro.2023.100410>
- Noll, B., Filatova, T., Need, A., & Taberna, A. (2022). Contextualizing cross-national patterns in household climate change adaptation. *Nature Climate Change*, 12(1), 30-35. <https://doi.org/10.1038/s41558-021-01222-3>
- Nunnally, J.C. and Bernstein, I.H. (1994) The Assessment of Reliability. *Psychometric Theory*, 3, 248-292.
- Nyborg, K., Anderies, J. M., Dannenberg, A., Lindahl, T., Schill, C., Schlüter, M., ... & De Zeeuw, A. (2016). Social norms as solutions. *Science*, 354(6308), 42-43. <https://doi.org/10.1126/science.aaf8317>
- Palanivel, H., & Shah, S. (2021). Unlocking the inherent potential of plant genetic resources: food security and climate adaptation strategy in Fiji

- and the Pacific. *Environment, Development and Sustainability*, 23(10), 14264-14323. <https://doi.org/10.1007/s10668-021-01273-8>
- Pihkala, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Sustainability*, 12(19), 7836. <https://doi.org/10.3390/su12197836>
- Pouya, A. S., & Niyaz, Ö. C. (2022). Modeling Turkish Households' Climate Change-Related Behaviors: Theory of Planned Behavior Approach. *Sustainability*, 14(18), 11290. <https://doi.org/10.3390/su141811290>
- Robinson, S. A. (2020). Climate change adaptation in SIDS: A systematic review of the literature pre and post the IPCC Fifth Assessment Report. *Wiley Interdisciplinary Reviews: Climate Change*, 11(4), e653. <https://doi.org/10.1002/wcc.653>
- Spence, A., Leygue, C., Bedwell, B., & O'malley, C. (2014). Engaging with energy reduction: Does a climate change frame have the potential for achieving broader sustainable behaviour?. *Journal of Environmental Psychology*, 38, 17-28. <https://doi.org/10.1016/j.jenvp.2013.12.006>
- Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 81-97.
- Steynor, A., Pasquini, L., Thatcher, A., & Hewitson, B. (2021). Understanding the links between climate change risk perceptions and the action response to inform climate services interventions. *Risk Analysis*, 41(10), 1873-1889. <https://doi.org/10.1111/risa.13683>
- Streimikiene, D. (2022). Assessment of Progress Towards 20-20-20 Targets: Evidence from Baltic States. *Contemporary Economics*, 16(1), 135-150. <https://doi.org/10.5709/ce.1897-9254.473>
- Streimikiene, D. (2023). Transformative changes towards carbon neutral society: barriers and drivers. *Contemporary Economics*, 17(3), 351-360. <https://doi.org/10.5709/ce.1897-9254.515>
- Štreimikis, J., Mura, L., Kyriakopoulos, G. L., Simanavičius, A., & Delibacic, M. (2024). Green Jobs: Barriers and Drivers in the EU. *Contemporary Economics*, 18(2), 138-152. <https://doi.org/10.5709/ce.1897-9254.530>
- Van Valkengoed, A. M., & Steg, L. (2019). Meta-analyses of factors motivating climate change adaptation behaviour. *Nature Climate Change*, 9(2), 158-163. <https://doi.org/10.1038/s41558-018-0371-y>
- Vulturius, G., André, K., Swartling, Å. G., Brown, C., Rounsevell, M. D., & Blanco, V. (2018). The relative importance of subjective and structural factors for individual adaptation to climate change by forest owners in Sweden. *Regional Environmental Change*, 18, 511-520. <https://doi.org/10.1007/s10113-017-1218-1>
- Walawalkar, T. P., Hermans, L. M., & Evers, J. (2023). Evaluating behavioural changes for climate adaptation planning. *Journal of Environmental Planning and Management*, 66(7), 1453-1471. <https://doi.org/10.1080/09640568.2022.2028610>
- Wamsler, C., & Brink, E. (2018). Mindsets for sustainability: Exploring the link between mindfulness and sustainable climate adaptation. *Ecological Economics*, 151, 55-61. <https://doi.org/10.1016/j.ecolecon.2018.04.029>
- Whitmarsh, L., O'Neill, S., & Lorenzoni, I. (2013). Public engagement with climate change: what do we know and where do we go from here?. *International Journal of Media & Cultural Politics*, 9(1), 7-25. https://doi.org/10.1386/macp.9.1.7_1
- Wilkins, E. J., & de Urioste-Stone, S. (2018). Place attachment, recreational activities, and travel intent under changing climate conditions. *Journal of Sustainable Tourism*, 26(5), 798-811. <https://doi.org/10.1080/09669582.2017.1417416>
- Xue, M., Zhao, Y., Wang, Z., & Zhang, B. (2021). Behavioural determinants of an individual's intention to adapt to climate change: Both internal and external perspectives. *Environmental impact assessment review*, 91, 106672. <https://doi.org/10.1016/j.eiar.2021.106672>
- Yang, H., Lee, T., & Juhola, S. (2021). The old and the climate adaptation: Climate justice, risks, and urban adaptation plan. *Sustainable Cities and Society*, 67, 102755. <https://doi.org/10.1016/j.scs.2021.102755>
- Žičkienė, A., Morkunas, M., Volkov, A., Balezentis, T., Streimikiene, D., & Siksnelyte-Butkienė, I. (2022). Sustainable energy development and climate change mitigation at the local level through the lens of renewable energy: Evidence from Lithuanian case study. *Energies*, 15(3), 980. <https://doi.org/10.3390/en15030980>