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Unveiling the plurality of visions for the ecological transition in Europe

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ABSTRACT

This paper provides diverse perspectives on ecological transition in five European countries, emphasising how differing values, economic interests, cultural models, and social positions influence perceptions of transition. The widespread dissemination of this concept without considering different viewpoints and limitations may undermine collective efforts to achieve it. For this purpose, we conducted 45 interviews with politicians, scientists, non-governmental organisations, representatives from economic groups, and citizens in the context of the H2020 European project "PHOENIX". The results demonstrate the diversity of perspectives on ecological transition and show that pro-ecological actions are heavily influenced by institutional, political, and financial frameworks rather than being solely personal preferences. The lack of support from institutions that serve as role models in this ecological transition undermined community attempts to achieve it, as well as the apparent contradiction between comfort and living a more frugal lifestyle. To successfully engage people in this transition, it is vital to push for legislation that prioritises environmental goals over corporate profit, promotes engagement with nature from a young age, and overcomes financial barriers by offering incentives and support for sustainable choices. We argue that in order to move beyond a technocratic approach and towards an inclusive and socio-politically engaging transition, future policies must recognise and overcome these structural constraints.

1. Introduction

The concept of ecological transition has gained significant attention in recent years due to the urgent need to address environmental challenges and achieve sustainable development in the context of the European Green Deal (European Commission, 2019). It refers to the fundamental transformation of societies and economies towards ecological sustainability (Giddings et al., 2002), aiming to reduce carbon emissions (Elahi et al., 2024), protect and value ecosystems, and promote social and economic well-being (Rotondo et al., 2022). But dominant narratives often ignore the ways in which political ideologies, economic interests, and social stratification regulate ecological transition engagement (Żuk, 2023). Implementing an ecological transition is challenging, but it can benefit from a

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territorial agenda as a strategic policy framework to guide spatial development and territorial cohesion, specifically at regional and local levels (European Union, 2020). However, the global challenge of ecological transition, while gaining prominence in modern discourse, also reveals tensions regarding equitable and inclusive solutions (Velicu & Barca, 2020), namely from the awareness that encouraging a universal and homogeneous transition with the same strategy for everyone will not result in true transformation but rather the perpetuation of structural disparities within and between countries. These tensions highlight the importance of understanding anticipatory processes, particularly how ideas of the future are used by individuals, organisations, or systems to navigate these transformations.

Due to this complexity, futures research is beginning to recognise that different and multiple perspectives are necessary for comprehending and carrying out ecological changes. Futures studies place a strong emphasis on how multiple future imaginaries, anticipatory governance, and foresight techniques shape sustainable possible futures (Avelino et al., 2016). With the concept of "Possible futures" we want to emphasize the exploration of multiple trajectories society might take, moving away from deterministic visions of the future and embracing complexity and plurality (Dator, 2009; Sardar, 2010; Vidal et al., 2024). These studies highlight the need for "critical futures studies," which question prevailing narratives and power systems, deconstructing dominant assumptions to create inclusive and transformative visions (Inayatullah, 1990, 1998). Gidley (2017) incorporates in particular to this scenario the participatory methods to ensure diverse perspectives are included and Slaughter, (1996), (2004) underlining the social construction of futures and emphasizing resilience and the expansion of social capacity to address uncertainty. It draws on futures studies and highlights how anticipatory governance shapes transformative pathways (Burch et al., 2014). The study aims to address the need for structural rather than merely behavioural change by placing ecological transition within larger socio-political battles by combining viewpoints from political economy (Bell, 2019) and class analysis (Bourdieu, 1984).

Through the investigation of the many viewpoints on ecological transition in five European countries and analysing how people understand and interact with this shift in the context of their sociocultural, economic, and biophysical environments, this research seeks to add to the body of knowledge on the subject. This research advances theoretical understanding of anticipatory processes and the plurality of futures in sustainability transitions by examining these viewpoints. The results of 45 interviews with a range of stakeholders, including politicians, scientists, representatives from non-governmental organisations, business groups, and citizens, are presented in this paper, which was created as part of the Horizon 2020 "PHOENIX" project. According to the interviews, there are several perspectives on what an ecological transition actually is, and these perspectives are influenced by institutional, cultural, and economical factors that affect people's anticipatory actions and decisions. Therefore, the goal of the study is to offer a theoretically grounded analysis of how these various viewpoints support or contradict existing ideas in the field of futures studies, with a focus on socio-technical transitions, foresight methodology, and the morality of future-oriented actions (Gidley, 2017).

2. Theoretical framework

The notion of ecological transition is inherently complex, with multiple interpretations that span from individualistic methods that prioritise behavioural modifications to systemic alterations in economic and social structures. The process of ecological transformation is neither unique nor unopposed. Its analysis requires a multi-scalar approach since it is entwined with power dynamics, class hierarchies, and conflicting economic interests (Fritz et al., 2021). A critical social science viewpoint underlines how institutional and economic constraints affect options for participation in ecological transition, while mainstream discourse frequently emphasises individual responsibility (Żuk & Żuk, 2024). These viewpoints can be useful in futures studies and can be interpreted via the prism of anticipatory governance, which looks at how societies plan and imagine states of the future (Meadowcroft, 2009). In addition to forecasting and scenario planning, anticipatory governance emphasises the need for plural, inclusive, and democratic approaches while also addressing the ethical implications of these futures (Burch et al., 2014). Because it highlights the value of inclusive decision-making and plural engagement, anticipatory governance has been frequently used to comprehend the prospects and challenges of ecological change (Burch et al., 2014; Meadowcroft, 2009).

However, it is crucial to take into account the cognitive and affective processes that impact how people and societies see and interact with future possibilities, going beyond governance and strategic planning (Milkoreit, 2017). According to Homer-Dixon et al. (2013), social actors' interpretations of environmental dangers, opportunities, and challenges are greatly influenced by their imagination and belief systems, which in turn has an impact on their readiness to accept structural or behavioural change. Thinking about the future is not just a logical activity, but also an emotional and symbolic one that is intricately entwined with societal narratives of progress and collapse, claims Szerszynski (2010). This argument makes the case that attitudes towards ecological transition are firmly anchored in class-based socialisation, building on Bourdieu, (1984) idea of habitus. Access to infrastructure, cultural capital, and financial resources all have an impact on the unequal distribution of the ability to adopt sustainable practices. Research shows that working-class people are frequently sceptical of environmental initiatives that they see to be costly (Bell, 2019), but wealthy groups could accept sustainability discourses without a critical framework (Żuk, 2023). Therefore, it is important to acknowledge that various actors will have varied ideas about what makes for a "desirable future," influenced by their expectations, experiences, and values, when examining the various potential futures for ecological transition. This strategy is in line with research showing the importance of futures literacy (Miller, 2018) which improves people's and organisations' capacity to consider alternatives critically.

Despite the wide dissemination of the concept, it is essential to consider the coexistence of different understandings underlying it at two different levels: firstly, how people understand the concept, and secondly, what constrains people from understanding not only at an individual level but at a structural one. Thus, it is possible to recognise the coexistence of multiple perspectives on the meaning of ecological transition in a given territory. These perspectives are shaped by the unique experiences, knowledge, and values of different groups and individuals from a cross-cultural perspective (Descola, 1992).

Several authors consider that transforming society to a more sustainable, balanced, and ecological one implies changing people's ways of living and consumption patterns, but also contemplate the influence of their territories' biophysical, social, cultural, economic and political context (Alves et al., 2023; Alves & Vidal, 2024; Mendonça et al., 2023). This need derives from the risk of promoting a "going green" discourse focused purely on the individual dimension, hiding complex social processes, as stated by Moloney and Strengers (2014), which should consider policies, regulations and infrastructures as internal factors of people's behaviours. By challenging a simplistic look at the behaviour change and assuming that the ecological transition concept may be intricated and multifaceted, it is crucial to explore what it entails, for whom and in what specific contexts (Avelino et al., 2016).

Exploring the coexistence of different visions of the concept is essential as it provides a comprehensive understanding of the potential pathways and strategies for achieving ecological transition. This need is also framed by the fact that Europe is a multicultural, socio-ecologically diverse territory with socioeconomic, cultural, environmental, and political specificities. When considering this diversity, especially in decision-making participatory processes, we are fostering innovation and creativity in tackling complex environmental challenges (Fazey et al., 2020; Kajzer Mitchell & Walinga, 2017), contributing to more informed and robust decision-making processes (Meadowcroft, 2009), enhancing comprehensive and inclusive approaches (Burch et al., 2014) and a crucial point: promoting social acceptance and legitimacy of transition measures (Wüstenhagen et al., 2007).

The ethics of future-oriented practices, which promote the inclusion of varied voices and views in forming future imaginaries, are another source of inspiration for this study (Sardar, 2010). Our research questions the idea of a single or uniform transition plan by looking at many European contexts and instead promotes a plurality of futures that consider the plurality and diversity of socio-cultural, political, and economic characteristics of various regions. The promotion of democratic and ecologically just futures, where the needs and values of various stakeholders are recognised and incorporated into practice and policy, depends on this diversity. It is also necessary to consider the political aspects of ecological transition. State regulations, business lobbying, and governance frameworks all have a significant impact on how the transformation unfolds. As right-wing populist movements have been more active in opposing ecological measures and portraying them as risks to economic security, political divides also impact attitudes (Żuk & Żuk, 2024). Therefore, to comprehend how ecological transformation is experienced and disputed across many social groups, an intersectional perspective is required.

3. Material and methods

3.1. The written interviews script

The written interviews script was designed by the research team and comprise four main themes: (1) individual and collective understandings of ecological transition, examining how various actors conceptualise the process and its implications; (2) the primary challenges and perceived barriers to its implementation, including economic, political, cultural, and infrastructure obstacles; (3) the strategies and policies thought to be most effective in driving this transition, addressing both top-down governmental initiatives and bottom-up community-led approaches; and (4) the allocation of responsibility among various societal actors – citizens, governments, the private sector, and civil society – in facilitating or hindering ecological transformation.

The purpose of the script was to gather a wide variety of viewpoints so that a comparison of the ways in which various stakeholders view and interact with ecological transition could be conducted. It also sought to pinpoint narrative trends, points of agreement and disagreement, and underlying conflicts between conflicting sustainability ideals. A deeper comprehension of the socio-political and economic dynamics that influence ecological transitions in various contexts was made possible by the examination of these insights through the prism of contextual variables like sectoral affiliations, national policy frameworks, and participants' degree of environmental engagement.

3.2. The interviews

Forty-five semi-structured interviews were conducted in five European countries during the period 07 November and 16 December 2022: Estonia (n = 12), Portugal (n = 11), France (n = 9), Italy (n = 5) and Hungary (n = 8). The interview technique was chosen because it is possible to include questions central to the study while allowing greater flexibility to discuss new topics raised by the interviewees themselves (Creswell & Poth, 2018). To facilitate the application of the interviews, and because this is a time-consuming task, it was decided to opt for written interviews, in which the only difference is that the interviewees write their answers instead of providing them verbally. A pre-test interview was conducted to assess the clarity and adequacy of the script master version. Ethics approval was obtained from the Ethical Committee of the Centre for Social Studies, University of Coimbra, Portugal. After this procedure, the project participants shared the interview script to check cultural consistency and contextual conditions. Each project's local partner – in charge of disseminating the interviews - was invited to translate the written interviews into local languages and apply them to their pilots (territorial context). Each Local Partner was responsible for sending us the translations. After being translated into local languages, the interview script was inserted into Google Forms, the platform through which all written interviews were collected. After answering in the local languages, each interview was translated into English.

3.3. Target groups

The selection of the target groups aims to cover the maximum diversity that can be found in the territories, considering people's occupations, cultures, and social and economic diversity. The target groups were included into six categories: Policymaker or

Governmental/municipal representative; Scientific community (area related to environmental issues); Social movements; Community and advocacy groups (Civil society organisations, Environmental NGOs, immigrant, and vulnerable populations NGOs, among others); Economic groups (representative of the most relevant local economic activity); and Citizens (including youth, women, elderly, and vulnerable groups, such as ethnic-racial communities and immigrants).

3.4. Data analysis

We used qualitative content analysis to analyse the interview data. This method is useful for studying complex and contextual phenomena, as it allows for the identification and understanding of patterns and themes within qualitative data. The data were analysed using NVIVO software, as it allows for efficient data management by systematically organising large amounts of data, which is crucial given the multilingual and heterogeneous nature of our dataset. On the other hand, qualitative content analysis and also this software allow both deductive and inductive coding. In this study, we use inductive coding (based on the empirical narratives of our respondents) to uncover emerging patterns in the data. Another important advantage of this software is that it includes powerful tools for searching the data and analysing code patterns, allowing the discovery of deeper insights and links between themes, which helps to improve the transparency and reproducibility of the analysis. It tracks coding decisions and allows easy verification and auditing of the analysis process. The analysis involved both vertical and horizontal analysis. The vertical analysis involved personally reviewing each interview to gain insight into the respondent's point of view. Horizontal analysis involved comparing and contrasting responses from multiple interviews to identify common themes and conflicting viewpoints. Coding matrices were used to determine the diversity of viewpoints and opinions. Verbatim sentences were selected to illustrate specific perspectives on the research topic.

3.5. Sample composition

Of the 45 interviews obtained, 22 are citizens; seven are policymakers or governmental/municipal representatives, six are scientists, 6 are community and advocacy groups actors, and four are representatives of economic groups. Prevailed females (n = 24) and married (33.3 %) in a hypereducated sample, where 90.9 % held a university degree. Regarding age, the median is 45.9 years old, ranging from 18 to 82 years old. All respondents live and work in Europe. However, there is visible diversity concerning nationality: French (n = 9), Italian (n = 6), Hungarian (n = 8), Estonian (n = 6), Portuguese (n = 8), Belarussian (n = 1), German (n = 1), Moroccan (n = 1), Nigerian (n = 1), Brazilian (n = 1), Indian (n = 1), Spanish (n = 1) and Ukrainian (n = 1).

4. Results

4.1. Plural understanding of what ecological transition means and who is responsible for its implementation

This study has revealed a range of perspectives on the understanding of ecological transition among the interviewees. One prominent trend that emerged from the data is the recognition of structural factors within societies. Many participants emphasised the need for a comprehensive transformation in production and consumption modes at a systemic level. They emphasised the importance of addressing the root causes of environmental degradation. They advocated for a shift away from unsustainable practices towards more sustainable approaches.

> *"The ecological transition would be the changes to adopt in the way of consuming (energy, food, leisure), and therefore of producing. It would allow, in the long term, the restoration of balances in terms of biodiversity." (Male, 25 years old, Citizen, Rouen, France)*

> *"Transition from unsustainable production and consumption systems to others that guarantee development without destroying the environment." (Female, 64 years old, Policymaker, Odemira, Portugal)*

On the other hand, we also encountered respondents who framed the ecological transition in more narrow terms, primarily focusing on economic models. For them, the transition primarily entailed adopting environmentally friendly practices within the existing economic framework. They believed that societies would be able to adapt current systems and adopt cleaner technologies without major structural changes.

> *"The search and implementation of new economic models to preserve environmental and natural resources, as an alternative to the idea of eternal economic growth." (Female, 54 years old, Citizen, Tartu, Estonia)*

> *"Yes. It is a change in the economic and also social system aimed at taking into consideration also environmental sustainability." (Male, 41 years old, Citizen, Bologna, Italy)*

Interestingly, we also identified a group of respondents who emphasised individual transformation as a crucial aspect of the ecological transition. For them, the shift towards sustainability was primarily a personal journey involving changes in individual behaviour and lifestyle choices.

> *"Ecological and social transition is the support of populations in their transformation and their vision to meet climate, social and energy challenges." (Female, 47 years old, Citizen, Rouen, France)*

> *"Yes, I went through an ecological transition when I had an illness. I started to change my lifestyle; it was a mental and social change, and I became more aware of what the world is like and how I participate in it. I wasn't the only one who went through this. So, I went to*

Europe's first ecological demonstration, when the first citizens began to object to the comforts of Western life when we realised how much they cost everyone. Pandemics also come from these imbalances." (Male, 75 years old, Citizen, Tavira, Portugal)

Regarding the perceptions of responsibility towards the ecological transition, individuals and governments are perceived as the main parties responsible for driving the ecological transition. At the same time, the private sector is only mentioned once as having responsibility in this transition.

"The ecological transition has to be everyone's responsibility, that's the only way it can be done." (Female, 55 years old, Policymaker, Gata-Malcata, Spain-Portugal)

"This should start from above on the part of the state. "… it would be very important for politics to have a message in this direction." (Male, 30 years old, Citizen, Szeged, Hungary)

"The public sector must guide and coordinate the transition, foreseeing the tasks of the various parties in the process and encouraging/supporting the desired changes." (Female, 76 years old, Community and advocacy groups, Tartu, Estonia)

4.2. Obstacles, challenges and strategies

The interviewees' understandings of ecological transition find a link with the main obstacles to pursuing it, focusing on societal and cultural factors related to people's habits and lack of willingness to change:

"I think it's cultural. I think the issue is a priority for few people and there is little willingness to spend energy and attention on it." (Male, 26 years old, Scientific community, Emilia Romagna, Italy)

"People, because there are quite a lot of old people in society that are not willing to change their way of thinking and habits." (Female, 18 years old, Citizen, Tartu, Estonia)

These obstacles are rooted in societal and cultural factors that can obstruct ecological awareness. Nevertheless, economic and lobbies corporate profit factors related to vested interest and power dynamics, private interests and economic dimension were mentioned by several interviewees:

Interests and the different lobbies associated, namely the energy sector and fossil fuels and the significant dependence on this sector at all levels." (Female, 55 years old, Policymaker, Gata-Malcata, Spain-Portugal)

"Global vision reduced to a society where money is the only driving force, therefore the brake on action." (Female, 47 years old, Citizen, Rouen, France)

Following these obstacles, political power and government appear as a primary obstacle, too:

"I do not think we even see the current government's commitment to green politics." (Male, 30 years old, Citizen, Szeged, Hungary).

"Fighting for political power. It doesn't matter what you believe in, if it doesn't work for you, it won't happen." (Male, 36 years old, Economic group, Tartu, Estonia)

Although mentioned in a limited way, lack of information and awareness, climate issues, and the lack of support from funding and incentives appear in the interviewees' discourses as perceived barriers to the ecological transition in their territories. As far as challenges to the ecological transition are concerned, the incitement to change ways of life and governance systems are at the top. This challenge highlights the need to change policies, create incentive systems, promoting citizen participation and engagement.

"It is difficult to get people to behave more environmentally friendly because they want to live as comfortably as possible". (Female, 18 years old, Citizen, Tartu, Estonia)

"As long as people are living day by day and the government is thinking about burning coal again, it will not be easy. A complete change of direction is required." (Female, 47 years old, Community and advocacy groups, Transdanubia Central Region, Hungary)

Another challenge is the implementation of an economic paradigm transition, although some refer to models that are already known, such as circular economy:

"In our region, there has to be a change of economic paradigm" (Male, 47 years old, Policymaker, Gata-Malcata, Spain-Portugal)

"Predominance of budgetary, economic and financial paradigms in many policies – needs a change in economy" (Male, 33 years old, Scientific community, France)

"Change of economic paradigm - transition to a circular economy" (Female, 55 years old, Policymaker, Gata-Malcata, Spain-Portugal)

Despite these being the most mentioned challenges for the ecological transition identified by the interviewees, implementing an energy transition, adopting sustainable mobility, safeguarding biodiversity, adapting to climate change impacts and access to land and housing were also mentioned. In terms of the perceptions about the most effective strategies, formal and informal education that promotes contact with nature since the interviewees perceive childhood as the most effective to improve collective ecological awareness:

"Contact with nature since childhood and various educational programs, e.g. in schools, because if you get used to valuing nature at an early age, it will not change during your life" (Female, 18 years old, Citizen, Tartu, Estonia)

"Education, the transfer of information for children. But you don't have to expect the solution from them, of course. They can easily get used to new situations and influence their parents as well." (Female, 47 years old, Community and advocacy groups, Szeged, Hungary)

Another strategy most mentioned is the improvement of communication and dissemination of media and scientific communication, related to the use of various forms of media, such as TV, radio, and social media, to raise awareness about environmental issues:

"I think that television still has much impact on older generations, so transmitting much information through television is attractive and simple." (Female, 34 years old, Citizen, Tavira, Portugal)

"Research also plays a significant role; they can tell in which direction things should go." (Female, 75 years old, Citizen, Szeged, Hungary)"

Among other strategies, the need to innovate democratic systems, contact nature, and promote government regulations and campaigns were also mentioned.

4.3. Adoption of pro-ecological behaviours and associated barriers

When asked if interviewees were willing to adopt a more frugal lifestyle and which behaviours were more accessible, the majority focused on buying eco-friendly products, reducing consumption and recycling (Table 1). Few of them mentioned the adoption of a minimalist lifestyle or stopping consuming what is unnecessary.

The main barriers perceived by the interviewees to adopting a more frugal lifestyle are mainly related to financial issues, namely the perception of the high cost of having a frugal lifestyle (Table 2). Barriers related to mobility infrastructure were also mentioned due to the lack of alternative sustainable solutions, such as public transport networks, which force the use of private cars. Comfort, habits, status and resistance to change barriers appear in the interviewee's discourses, almost as if the ecological transition was incompatible with comfort. A key finding is that financial constraints significantly limit engagement with pro-ecological behaviours. Many respondents expressed that sustainable choices remain a privilege of wealthier groups, reinforcing socio-economic inequalities. This supports Żuk's (2023) findings on class-based perceptions of ecological transition in coal-mining communities.

4.4. Visions of/for the ecological transition

In an attempt to identify some categories of visions for the ecological transition (which should be considered an exercise in progress), three can be outlined from the comprehensive analysis of previous results (Table 3).

The first vision, "Structural Transformation", emphasises the need for systemic reforms at the societal level. Based on the awareness of structural elements inside societies, proponents of this view urge for a fundamental reconfiguration of ways of production and consumption. This revolutionary strategy calls into question current growth-oriented frameworks and stresses the importance of making substantial transitions towards sustainability. It recognises the complexities of environmental concerns and underlines the significance of addressing the underlying causes rather than simply treating symptoms. This agenda is driven by policymakers, community and advocacy groups, and citizens who challenge prevailing conventions and advocate radical changes in governance structures and social ideals. Policymakers enact legislation that rebalances economic incentives and encourages environmentally responsible practices. At the same time, community and advocacy groups engage in grassroots activities to raise awareness and organise public support for environmental issues. Citizens actively participate in civil society activities and advocate for systemic change through collective action.

Table 1
Interviewees perceptions of the most adaptable behaviours to a more frugal lifestyle and associated stakeholders.

Behaviours (in order of most to least mentioned)	Quotes	Stakeholders
Buy eco-friendly products/sustainable (clothes, appliances, among others)	"I'm ready to buy eco-friendly products, including clothes" (Female, 22 years old, Scientific community, Tartu, Estonia)	Citizens, Scientists, Community and advocacy groups
Reduce the consumption (of clothes, shopping habits, energy, fossil fuel, water, among others)	"it is easier to reduce energy consumption and fossil fuels" (Female, 26 years old, Citizen, Tavira, Portugal)	Citizens
Recycle	"Pays attention to selective waste collection." (Male, 30 years old, Citizen, Szeged, Hungary)	Citizens
Adopt sustainable mobility	"Change of both every day and extraordinary transport habits, choosing more sustainable means of transportation such as bicycles, trains or fully loaded cars." (Male, 26 years old, Scientific community, Emilia Romagna, Italy)	Citizens, Policymakers and Scientists
Adopt a minimalistic lifestyle.	"I have never accumulated possessions, I do not like objects without a function in the first place, I do not lead a wasteful lifestyle, and I strive to switch to an island operation as soon as possible." (Female, 47 years old, Policymaker, Transdanubia Central Region, Hungary)	Policymakers, Community and advocacy groups

Table 2
Interviewees' perceptions of the main barriers to a more frugal lifestyle and associated stakeholders.

Barriers (in order of most to least mentioned)	Quotes	Stakeholders
Financial barrier	*"Organic and package-free food is costly" (Female, 27 years old, Scientific community, Tartu, Estonia)*	Citizens, Scientists, Community and advocacy groups
Mobility infrastructure barrier	*"Little urban transport network outside the big cities." (Female, 34 years old, Citizen, Tavira, Portugal)*	Citizens and Policymakers
Comfort, habits, status and resistance to change barrier	*"People do not want to voluntarily give up their comforts because it seems like a right that comes with their status." (Male, 36 years old, Tartu, Estonia)*	Citizens, Policymakers, Community and advocacy groups
Ambivalence barrier	*"Using public transport, yes, but my work site remains inaccessible - my employer would have to move; buy more sustainable products, yes, I already think about doing it, but it requires high financial means; consume less, yes, but in periods like the end of year celebrations when everyone buys more and more gifts even if we try to limit it is complex (family barrier)." (Female, 44 years old, Rouen, France)*	Citizens, Policymakers, Community and advocacy groups
Disbelief in the effectiveness of individual actions barrier	*"The perception that individual efforts are meaningless" (Male, age unknown, Citizen, Tartu, Estonia)*	Citizens, Scientists, Community and advocacy groups
Economic interests and political lobbies barrier	*"I would say that the big economic interests and the associated lobbies, namely political ones, are those that we have to influence through our habits." (Female, 55 years old, Policymaker, Gata-Malcata, Spain-Portugal)*	Policymakers, Community and advocacy groups
Lack of trust in organisations and greenwash barrier	*"I perceive some lack of trust in the official organisations. I also have the perception of a lot of "greenwash" that does not help with credibility" (Female, 55 years old, Policymaker, Gata-Malcata, Portugal-Spain)*	Citizens, Policymakers, Community and advocacy groups

Table 3
Categories of visions for the ecological transition and associated stakeholders.

Vision	Description	Stakeholders
Structural transformation	To combat environmental degradation, emphasis is placed on systemic changes in production and consumption modes: advocates for a societal-wide revolution that challenges the current growth-oriented strategies. Prioritises tackling the underlying causes of environmental problems and changing to more sustainable practices. Requires significant changes to economic and social structures.	Policymakers, Community and advocacy groups, and Citizens
Economic transformation	Primarily, it focuses on implementing methods that respect the environment within existing economic systems. Believes that sustainability may be accomplished by modifying existing processes and implementing cleaner technologies: advocates for incorporating environmental factors into economic decision-making without requiring significant structural changes. The transformation is regarded as feasible within the context of present economic paradigms.	Policymakers and Scientists
Individual transformation	Highlights the importance of individual agency and behaviour change in the ecological transition. The transition to sustainability is a personal journey that includes behavioural and lifestyle changes. It highlights the significance of personal development in contributing to more considerable societal change: the view of ecological transformation as dependent on widespread individual commitment and effort.	Citizens

In contrast, the "Economic Transformation" vision focuses on modifying existing economic frameworks to include environmental factors. Proponents of this perspective think that modifying systems and technology makes it possible to achieve sustainability within the constraints of current economic models. This approach prioritises efficiency and innovation within the market economy to incorporate environmental concerns without requiring significant structural changes. It demonstrates a pragmatic approach that balances environmental aims and economic imperatives. Policy makers, citizens and scientists believe in creating and promoting alternative economic frameworks that emphasise environmental sustainability. Policymakers implement policies that integrate environmental concerns into economic decision-making, while citizens demand accountability and openness in economic activities. Scientists use their skills to develop creative solutions that balance economic development and environmental protection.

The third vision, "Individual Transformation", highlights the importance of personal action and behavioural change in accelerating the ecological transition. Advocates of this perspective see sustainability as a deeply personal journey that requires changes in thought and lifestyle choices. This vision aims to catalyse more significant societal change at the grassroots level by emphasising individual responsibility and empowerment. It emphasises the connection between individual actions and societal effects, arguing that widespread behavioural change is required to achieve sustainable goals. Citizens are most visible in this category as they take proactive steps to reduce their environmental footprint through lifestyle changes and purchasing decisions, creating a more ecologically conscious society from the ground up.

However, each vision brings challenges, including resistance to systemic changes, economic limits, and difficulty influencing individual behaviours at scale. Overcoming these issues will necessitate comprehensive approaches incorporating different viewpoints and utilising synergies across structural, economic, and individual transformation routes, enabling collaborative action and transformative change towards a more sustainable future. Furthermore, it is critical to understand that these visions are not static; they are dynamic and frequently interconnected, providing chances for flexibility and adaptation. However, this creates new challenges for the ecological transition. The interchangeability of these ideas necessitates careful navigation and ongoing revision of methods to maintain

congruence with changing societal requirements and environmental demands.

5. Discussion

5.1. Theoretical implications of diverse visions for ecological transition

The implementation of an ecological transition can lead to the misconception that Europe is a homogeneous territory. This is not just a matter of nationality. Socio-economic and cultural realities can influence different ways of understanding this process at different scales, even within the same country, region or city. By recognising and respecting this heterogeneity, we can avoid imposing typical solutions that may not be appropriate or acceptable in all situations. Instead, we can tailor interventions to match specific needs and values, thereby increasing their effectiveness and relevance. The results of the study show that different stakeholders in five different European countries have different ideas about how to achieve an ecological transition. The complexity of the ecological transition as a socio-technical and socio-cultural process is highlighted by these three visions: structural transformation, economic transformation, and individual transformation. All visions are consistent with different theoretical positions in the field of futures studies, which contributes to the ongoing discussions on sustainable futures and the function of anticipatory practices.

According to the research, perceptions about the ecological transition vary significantly between countries and stakeholders' categories. Economic hurdles were found to be one of the primary issues in Southern European countries like Portugal and Italy, with an emphasis on the necessity of financial incentives and government support. These regions, marked by specific socio-economic conditions, face challenges where economic factors are particularly significant in determining attitudes toward ecological transformation. The cultural and ideological dimensions of the transition in these countries are often deeply intertwined with their economic situations, showing that solutions to ecological issues in these areas cannot be isolated from broader economic realities (Szulecki et al., 2024). For instance, in Southern Europe, the implementation of sustainable energy practices is heavily dependent on governmental financial backing and support systems to mitigate the impact on citizens and businesses. Without substantial financial incentives and clear governmental guidance, the transition may face considerable resistance, as people and businesses struggle to adopt necessary changes.

In contrast, Northern and Eastern European countries like Estonia and Hungary exhibit a different kind of challenge, where cultural opposition to transformation is more prevalent. This opposition is not only linked to economic constraints but also to deeply rooted cultural traditions, ideological beliefs, and habits that shape how individuals and communities respond to demands for ecological change. These countries often have historical contexts, such as the legacy of socialist economies, that influence their attitudes toward the transformation process. The rate of ecological transition in these regions is, therefore, heavily shaped by socio-cultural norms and historical experiences, making cultural and ideological resistance significant barriers to overcome. This cultural resistance to transformation is compounded by the slower pace of post-socialist economic restructuring, which has created a more cautious approach to adopting ecological policies and new technologies (Żuk et al., 2023). These findings underline the importance of addressing cultural and socio-geographical differences in sustainability initiatives. In some situations, changing hearts and minds may be just as important as changing infrastructures and policies. Furthermore, citizens and economic sector leaders were more concerned about individual costs and the effect on the labour market than scientists and officials were about the necessity of structural adjustments. These results support earlier research that emphasises the impact of the political and sociocultural environment on how various groups view and respond to sustainable transitions (Geels, 2002; Wüstenhagen et al., 2007). Considering these findings, right-wing populist movements frequently mobilise against ecological policies by framing them as dangers to economic stability and national sovereignty, especially in Eastern Europe. This supports the findings of Żuk and Żuk (2024) study, which shows how anti-environmentalist rhetoric is employed as a political tactic to rally support from economically vulnerable groups. On the other hand, left-leaning political parties in Western Europe typically support stricter laws and government-led initiatives to guarantee that ecological transformation is consistent with social justice ideals.

Indeed, some visions were found to be consistent with theories of socio-technical transitions. This is the case of the structural transformation vision, which has a clear support in the Multi-Level Perspective (MLP) (Geels, 2002), which emphasises systemic shifts in production and consumption. According to this perspective, political, social, and technological developments must coincide for significant regime change to occur. Additionally, proponents of structural change see the ecological transition as a profound, systemic shift that overturns current power structures and growth-oriented mindsets (Jackson, 2016). According to Pereira et al. (2020), this vision is consistent with the idea of "transformative futures" in futures studies, which advocates for significant systemic change to achieve sustainability. These findings support the contention that future-focused strategies need to address the underlying causes of unsustainability that are embedded in the socio-economic structures of the present, rather than just making small adjustments here and there. Looking at the main obstacles for the ecological transition cited by respondents, a common theme is the presence of societal and cultural barriers to ecological transformation. Participants cited people's habits and reluctance to change as key barriers, implying that cultural inertia and a refusal to prioritise environmental issues are holding back progress. This highlights the problem of shifting societal norms and values towards sustainability, which requires changes in individual behaviour and broader societal changes (Sandel, 2022).

On the other hand, the idea of "adaptive futures", in which sustainability can be achieved by modifying current systems without causing significant disruption, is consistent with the vision of the ecological transition as a purely economic transformation (Rotmans et al., 2001). This suggests a more practical approach to transition management that emphasises innovation and incremental improvements in the context of the market economy (Loorbach, 2010). According to our findings, some stakeholders believe that greener innovations and cleaner technologies have the capacity to drive a sustainable future without radically changing economic paradigms.

This illustrates a focus on using "backcasting" and "forecasting" as methodological tools in futures research to imagine different pathways within the existing framework (Dreborg, 1996). The interviews also highlighted economic and political concerns that hinder attempts at ecological transition. Participants cited vested interests in industries such as energy and fossil fuels, and the influence of economic ideologies that prioritise profit over sustainability. Political power dynamics and government inertia were also cited as major obstacles, with some questioning the commitment of current governments to green policies. These difficulties highpoint the need for systemic reforms to governance structures and economic models that prioritise environmental sustainability over short-term economic gain.

However, the idea of “anticipatory governance” idea can also be linked to the vision of individual transformation (Guston, 2014) or “inner transformation” (Woiwode et al., 2021), which focuses on personal agency and behavioural change. This idea emphasises how deliberate actions and lifestyle choices, both individually and collectively, shape the future. Indeed, this vision can also be grounded in the idea of "futures literacy," as it emphasises the ability to anticipate and act on multiple futures, by highlighting the capacity of individuals to effect larger societal change through bottom-up techniques (Miller, 2018). The need for futures-oriented pedagogies that promote ecological awareness and behavioural change from an early age is emphasised by this vision’s focus on education and cultural change (Beauchamp et al., 2023). Numerous participants emphasised how early exposure to nature elements could foster a deeper understanding of the environment and impact decisions in the future. Research indicates the need for transformative pedagogies that encourage critical thinking and the ability to predict possible futures (Beauchamp et al., 2023; Moreira et al., 2020). Furthermore, rather than being restricted to schools, environmental education should be incorporated into public policies that encourage initiatives for lifelong learning. This would increase opportunities for participation in sustainable practices and fortify communities’ ability to withstand environmental challenges.

These perceptions oscillating from structural to agency levels, relate to the perceptions of responsibility for driving the ecological transition. According to the findings, individuals and governments are the primary responsible parties, with the private sector receiving less attention. Participants emphasised the need for collaborative action, recognising that solo efforts are insufficient to address the complex issues of socioecological system transformation. They advocated for cooperation and shared responsibility, with the public sector leading and organising the transition process and implementing the desired improvements.

Another important aspect is that we have identified an apparent contradiction between what is meant by the idea of ’comfort’ and the necessary ecological transition, in the sense that Western consumption patterns are identified as a measure of well-being. In modern Western societies, comfort is often associated with convenience, material possessions, and a lifestyle of ease and luxury (Jackson, 2016). This symbolic link between consumption and well-being/comfort is deeply rooted in the model of Western society. The availability of products and services that maximise convenience and consumption is frequently linked to well-being, which might be at odds with the ecological transition’s tenets of thrift and little environmental effect. It has been explored in various fields of knowledge and by various authors who emphasise the material side of life, consumption, as an expression of social status, reflected in self-esteem, temporary satisfaction and social validation. In this context, ’comfort’, often associated with convenience and luxury, has become a defining aspect of the Western lifestyle, which Marcuse (1964) analysed as a tool used by the capitalist system to maintain control over individuals, reinforcing consumerist tendencies. This perspective highlights how this notion of comfort can act as a barrier to change and prevent the adoption of ’sustainable’ practices. The perceived contradiction between maintaining comfort and moving towards a more economical, sustainable lifestyle is a significant obstacle. It encourages us to re-evaluate and reinterpret the concept of comfort in an environmentally sustainable way. Can technological innovation and social change lead to a redefinition of desirable lifestyles? Technocentric ecomodernism, which contends that technology advancements may maintain the current standard of living while lessening their influence on the environment, is closely related to this conflict (Misawa, 2021). However, this model’s detractors contend that it maintains the false impression that sustainability can be attained without requiring major structural adjustments to systems of production and consumption as well as lifestyle (Jackson, 2016). Incorporating sustainable practices into everyday life may require technological breakthroughs and a change in societal attitudes and standards. For example, promoting the concept of ’sufficiency’ rather than excess, valuing experiences over material goods (Brown & Kasser, 2005; Jackson, 2009), and cultivating a sense of community and interconnectedness with nature can all help to reimagine comfort in a more sustainable setting (Beery & Wolf-Watz, 2014; Low & Altman, 1992).

In sum, from the empirical findings, three main arguments can be draw to be further explored in the future, emphasizing who the socio-economic, cultural and political constraints shape the engagement with the ecological transition:

1. The first one is related to the structural barriers to ecological engagement: Economic, institutional, and political frameworks have a significant impact on people’s capacity to engage in sustainability programs; it is not just a matter of personal drive. According to interview data, working-class participants frequently do not have access to sustainable purchasing options, green infrastructure, or policy influence, which exacerbates already-existing socioeconomic inequities;
2. The second is the existence of class-based differences in perceptions: While respondents with lower incomes voiced worries about job security and financial obstacles, those from higher socioeconomic origins tended to see ecological transition as a chance for economic innovation and individual lifestyle adjustments. This is consistent with previous research on environmental views based on class (Bell, 2019; Żuk, 2023);
3. The third one is the role of policy’s influence on ecological futures: Numerous participants highlighted that robust state engagement and well-defined redistributive policies are necessary for a genuine ecological transformation, an argument that challenges dominant neoliberal narratives of individual responsibility for climate action.

5.2. Implications for policy and practice in futures research

Recognising these multiple perspectives has important implications for practice and policy, especially when it comes to promoting pluralistic and democratic futures. A one-size-fits-all strategy for ecological transition is unlikely to be successful in Europe's diverse socio-cultural and political contexts, as the study shows. Instead, futures research highlights the importance of "participatory foresight" techniques that involve a range of stakeholders in collaborative development of future plans and scenarios (Rosa et al., 2021). By ensuring that many visions and values are represented in decision-making processes, this inclusive approach can enhance the legitimacy and social acceptability of transition policies (Wiek & Iwaniec, 2014).

The findings also suggest that addressing structural injustices and power dynamics that inhibit inclusive participation is necessary to promote ecologically just futures. In order to envision more possible futures, future studies highlight the need for "critical futures studies" that challenge dominant narratives and power systems (Inayatullah, 1990). The idea of "possible" is used to identify different coexisting strategies and to challenge conventional planning paradigms and hegemonic norms. It is linked to the generativity and creativity that lies dormant in a region and seeks to uncover the potentialities within a particular place (Bina & Pereira, 2021; Stengers, 2000). This study provides empirical insights into the structural barriers that need to be addressed in order to establish more democratic and equitable ecological transitions, by exposing the limitations imposed by corporate interests, financial constraints, and political lethargy. We also highlight the importance of challenging dominant ideologies, incorporating multiple viewpoints, and recognizing the fluid and unpredictable nature of possible futures. The idea of 'possible' serves as a mechanism to identify coexisting strategies and challenge traditional, linear notions of the future, promoting a broader and more dynamic understanding of what lies ahead.

The claim that ecological transition cannot be attributed to changes in individual conduct is one of this study's main contributions. Rather, it calls for economic restructuring and institutional transformation. In order to reduce class-based disparities in ecological transition, future policies must:

1. Give redistributive mechanisms top priority;
2. Deal with political and corporate lobbying that prevents significant reforms;
3. Encourage participatory governance by include under-represented perspectives in the planning of transitions (Fritz et al., 2021).

Critical futures studies, which oppose deterministic transition narratives and support pluralistic, context-sensitive approaches, are consistent with this methodology (Sardar, 2010).

5.3. Limitations of the research design and their implications

While the research design sought to capture different perspectives on the ecological transition across several European countries, and given the exploratory nature of this study, certain limitations should be addressed, as they may affect the interpretation and generalisability of the findings. However, we never intended to conduct a representative study. Therefore, the results are not meant to be generalizable to the entire population, but they are crucial for understanding and demonstrating the diversity we aimed to highlight.

Concerning the geographic and cultural context, while the study included a wide range of European countries, the distinctive geographic and cultural circumstances of each may not have been adequately reflected. Differences in political, economic, and social systems, as well as regional differences in environmental awareness and action, may have influenced participants' perspectives on the ecological transition. However, as noted above, the aim of this study was not to generalise the findings, but rather to reveal the diversity of perspectives on the ecological transition that can be found within European countries, recognising that the perspectives are not limited to those presented in this study. We now need more studies in different countries, as well as a triangulation of qualitative and quantitative methods that will give us an increasingly realistic view of the plurality of perspectives and the socio-cultural, economic and ecological factors that condition them. However, this study has the capacity to alert us to the error of wanting homogenised responses and policies, which will come up against the obstacle of the diversity of visions that populate the world of life, preventing the necessary transformations from being possible. Nevertheless, this study is relevant in this phase of discussion and deepening of policies for the ecological transition in Europe and worldwide, as it has significant implications for policies, practices and future research on sustainability and environmental governance. Its aim is to contribute to the ongoing discussion on transformative change towards a more sustainable futures by acknowledging the diverse understandings of ecological transition and highlighting major obstacles, difficulties, and strategies. These findings can help to inform more inclusive and successful approaches to advancing ecological transition, ultimately leading to greater collective action and shared responsibility in addressing serious environmental problems.

6. Conclusions

This study advances the field of futures studies by providing a conceptually grounded examination of the diversity of visions for ecological transition across several European contexts. The analysis of the multiple perspectives of stakeholders, ranging from citizens to policy makers, highlights the complexity of achieving sustainable futures and the importance of recognising and integrating different approaches and strategies.

The results show that ecological transition is not a static process but rather the result of a dynamic interaction between structural, economic, and personal changes, each of which has theoretical and practical implications. By linking empirical data to theories of

socio-technical transitions, anticipatory governance, and critical futures studies, the study broadens the conversation in futures studies. It argues for a more complex interpretation of ecological transitions that incorporates the views of many parties, including those calling for significant systemic change as well as those emphasising practical adaptation and individual agency. The study's findings support the necessity of taking a flexible and pluralistic approach to the ecological transition, acknowledging that various social actors will view the opportunities and difficulties associated with this process differently. In addition to enhancing scholarly and political discourse, the inclusion of other viewpoints enables the creation of more successful and culturally aware tactics. Future research should look more closely at the processes that help or impede these changes in various settings, such as the function of institutions and the impact of feelings and future-focused narratives on environmental decision-making.

Nevertheless, it highlights the urgent need to deepen the issues related to the apparent contradiction between comfort and the ecological transition, which is rooted in the Western model of society and the symbolic association between consumption and well-being, which may be a reductionist perspective that may undermine the success of this transition. As a result, while the visions identified provide valuable frameworks for understanding and managing the ecological transition, their dynamic nature requires constant discourse, collaboration, and creativity to overcome problems and achieve sustainable outcomes for all.

This study suggests that in order to advance ecological transitions, governance frameworks need to be flexible and adaptable enough to allow for alternative futures while still achieving broad goals of sustainability and solidarity. This is important information for policy makers and practitioners. Creating more inclusive and ecologically just futures requires challenging current power dynamics, promoting futures literacy, and engaging in participatory foresight. Future studies should further explore these themes, in particular by exploring the possibility of co-creating future scenarios that represent the diversity of stakeholder perspectives, and by analysing how culture and education shape sustainable futures. It will be essential to deepen the dynamics of institutional support and resistance to ecological change, with a focus on identifying which institutions, sectors, or levels of government are particularly resistant and why. This will help to identify underlying constraints and potential for institutional engagement in ecological transition.

The socio-political aspects of sustainability are critically examined in this work, which adds to the discussion of ecological transition. It shows that ecological transition is a highly contentious social transformation impacted by class structures, political differences, and institutional limits rather than just being a technological or commercial process. The interaction of political economy, governance, and environmental justice should be further investigated in future studies in order to create more equitable and successful transition plans.

CRediT authorship contribution statement

Fátima Alves: Writing – review & editing, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Diogo Guedes Vidal:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Helena Freitas:** Writing – review & editing, Visualization, Validation, Funding acquisition, Conceptualization.

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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

Alves, F., Costa, P. M., Novelli, L., & Vidal, D. G. (2023). The rights of nature and the human right to nature: An overview of the European legal system and challenges for the ecological transition. *Frontiers in Environmental Science, 11*(1175143), 1–10. https://doi.org/10.3389/fenvs.2023.1175143

Alves, F., & Vidal, D. G. (2024). Plural nature (s): An overview of their sociocultural construction. *Encyclopedia, 4*(1), 1–12. https://doi.org/10.3390/encyclopedia4010001

Avelino, F., Grin, J., Pel, B., & Jhagroe, S. (2016). The politics of sustainability transitions. *Journal of Environmental Policy and Planning, 18*(5), 557–567. https://doi.org/10.1080/1523908X.2016.1216782

Beauchamp, G., Adams, D., & Smith, K. (2023). *Pedagogies for the future: a critical reimagining of education*. Routledge.
Beery, T. H., & Wolf-Watz, D. (2014). Nature to place: Rethinking the environmental connectedness perspective. *Journal of Environmental Psychology, 40*, 198–205. https://doi.org/10.1016/j.jenvp.2014.06.006
Bell, K. (2019). Working-class environmentalism: an agenda for a just and fair transition to sustainability. *In Working-Class Environmentalism: An Agenda for a Just and Fair Transition to Sustainability*. Palgrave Macmillan Cham. https://doi.org/10.1007/978-3-030-29519-6
Bina, O., & Pereira, L. (2021). Possible beyond plausible: reimagining ourselves and our cities. *Planning Theory and Practice, 22*(4), 13–17. https://doi.org/10.1080/14649357.2021.1956815
Bourdieu, P. (1984). *Distinction: a social critique of the judgement of taste*. Harvard University Press.
Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research, 74*(2), 349–368. https://doi.org/10.1007/s11205-004-8207-8
Burch, S., Shaw, A., Dale, A., & Robinson, J. (2014). Triggering transformative change: A development path approach to climate change response in communities. *Climate Policy, 14*(4), 467–487. https://doi.org/10.1080/14693062.2014.876342
Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: choosing among five approaches*. SAGE Publishing.
Dator, J. (2009). Alternative futures at the Manoa School. *Journal of Future Studies, 14*(2), 1–18.
Descola, P. (1992). Societies of nature and the nature of society. In In. A. Kuper (Ed.), *Conceptualizing Society* (pp. 107–125). Routledge.
Dreborg, K. H. (1996). Essence of backcasting. *Futures, 28*(9), 813–828. https://doi.org/10.1016/S0016-3287(96)00044-4
Elahi, E., Li, G., Han, X., Zhu, W., Liu, Y., Cheng, A., & Yang, Y. (2024). Decoupling livestock and poultry pollution emissions from industrial development: A step towards reducing environmental emissions. *Journal of Environmental Management, 350*. https://doi.org/10.1016/j.jenvman.2023.119654
European Commission. (2019). Communication from the Commission to the European Parliament, the European. *Council, the Council, the European Economic and Social Committee and the Committee of the Regions the European Green Deal-Com/2019/640 Final*. European Commission. ⟨https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52019DC0640⟩.
European Union. (2020). *Territorial Agenda 2030: a future for all places*. European Union. ⟨https://territorialagenda.eu/wp-content/uploads/TA2030_jun2021_en.pdf⟩.
Fazey, I., Schäpke, N., Caniglia, G., Hodgson, A., Kendrick, I., Lyon, C., Page, G., Patterson, J., Riedy, C., Strasser, T., Verveen, S., Adams, D., Goldstein, B., Klaes, M., Leicester, G., Linyard, A., McCurdy, A., Ryan, P., Sharpe, B., … Young, H. R. (2020). Transforming knowledge systems for life on Earth: Visions of future systems and how to get there. *Energy Research and Social Science, 70*. https://doi.org/10.1016/j.erss.2020.101724
Fritz, M., Koch, M., Johansson, H., Emilsson, K., Hildingsson, R., & Khan, J. (2021). Habitus and climate change: Exploring support and resistance to sustainable welfare and social-ecological transformations in Sweden. *British Journal of Sociology, 72*(4), 874–890. https://doi.org/10.1111/1468-4446.12887
Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: A multi-level perspective and a case-study. *Research Policy, 31*(8–9), 1257–1274. https://doi.org/10.1016/S0048-7333(02)00062-8
Giddings, B., Hopwood, B., & O'Brien, G. (2002). Environment, economy and society: Fitting them together into sustainable development. *Sustainable Development, 10*(4), 187–196. https://doi.org/10.1002/sd.199
Gidley, J. M. (2017). *The future: a very short introduction*. Oxford University Press.
Guston, D. H. (2014). Understanding anticipatory governance. *Social Studies of Science, 44*(2), 218–242. https://doi.org/10.1177/0306312713508669
Homer-Dixon, T., Maynard, J. L., Mildenberger, M., Milkoreit, M., Mock, S. J., Quilley, S., Schröder, T., & Thagard, P. (2013). A complex systems approach to the study of ideology: Cognitive-affective structures and the dynamics of belief systems. *Journal of Social and Political Psychology, 1*(1), 337–363. https://doi.org/10.5964/jspp.v1i1.36
Inayatullah, S. (1990). Deconstructing and reconstructing the future. *Predictive, cultural and Critical epistemologies Futures, 22*(2), 115–141. https://doi.org/10.1016/0016-3287(90)90077-U
Inayatullah, S. (1998). Causal layered analysis: Poststructuralism as method. *Futures, 30*(8), 815–829. https://doi.org/10.1016/S0016-3287(98)00086-X
Jackson, T. (2009). *Prosperity without growth: economics for a Finite Planet*. Earthscan. ⟨http://archive.ipu.org/splz-e/unga13/prosperity.pdf⟩.
Jackson, T. (2016). In Prosperity without Growth. *Prosperity without Growth*. Routledge. https://doi.org/10.4324/9781315677453
Kajzer Mitchell, I., & Walinga, J. (2017). The creative imperative: The role of creativity, creative problem solving and insight as key drivers for sustainability. *Journal of Cleaner Production, 140*, 1872–1884. https://doi.org/10.1016/j.jclepro.2016.09.162
Loorbach, D. (2010). Transition management for sustainable development: A prescriptive, complexity-based governance framework. *Governance, 23*(1), 161–183. https://doi.org/10.1111/j.1468-0491.2009.01471.x
Low, S. M., & Altman, I. (1992). Place Attachment. In In. I. Altman, & S. M. Low (Eds.), *Place Attachment. Human Behavior and Environment*. Springer. https://doi.org/10.1007/978-1-4684-8753-4_1.
Marcuse, H. (1964). One-dimensional. *Man: Studies in the Ideology of Advanced Industrial Society*. Beacon Press.
Meadowcroft, J. (2009). What about the politics? Sustainable development, transition management, and long term energy transitions. *Policy Sciences, 42*(4), 323–340. https://doi.org/10.1007/s11077-009-9097-z
Mendonça, A., Leal Filho, W., & Alves, F. (2023). Public participation and climate change governance: Between political approach and local actors' perspective in two Macaronesian territories. *Frontiers in Environmental Science, 11*(1), 9–15. https://doi.org/10.3389/fenvs.2023.1094178
Milkoreit, M. (2017). Imaginary politics: Climate change and making the future. *Elementa, 5*. https://doi.org/10.1525/elementa.249
Miller, R. (2018). Ed. *Transforming the Future: Anticipation in the 21st Century* (1st ed.).). Routledge.
Misawa, K. (2021). The pervasiveness of the rational-conceptual: An educational-philosophical perspective on nature, world and 'sustainable development. *Ethics and Education, 16*(3), 289–306. https://doi.org/10.1080/17449642.2021.1908647
Moloney, S., & Strengers, Y. (2014). Going Green"?: The limitations of behaviour change programmes as a policy response to escalating resource consumption. *Environmental Policy and Governance, 24*(2), 94–107. https://doi.org/10.1002/eet.1642
Moreira, J., Alves, F., & Mendonça, A. (2020). Questioning nature and environmental ethics in schools. *In Oxford Research Encyclopedia of Education*. Oxford University Press. https://doi.org/10.1093/acrefore/9780190264093.013.687
Pereira, L., Frantzeskaki, N., Hebinck, A., Charli-Joseph, L., Drimie, S., Dyer, M., Eakin, H., Galafassi, D., Karpouzoglou, T., Marshall, F., Moore, M. L., Olsson, P., Siqueiros-García, J. M., van Zwanenberg, P., & Vervoort, J. M. (2020). Transformative spaces in the making: Key lessons from nine cases in the Global South. *Sustainability Science, 15*(1), 161–178. https://doi.org/10.1007/s11625-019-00749-x
Rosa, A. B., Kimpeler, S., Schirrmeister, E., & Warnke, P. (2021). Participatory foresight and reflexive innovation: Setting policy goals and developing strategies in a bottom-up, mission-oriented, sustainable way. *European Journal of Futures Research, 9*(1). https://doi.org/10.1186/s40309-021-00171-6
Rotmans, J., Kemp, R., & Van Asselt, M. (2001). More evolution than revolution: Transition management in public policy. *Foresight, 3*(1), 15–31. https://doi.org/10.1108/14636680110803003
Rotondo, F., Perchinunno, P., L'Abbate, S., & Mongelli, L. (2022). Ecological transition and sustainable development: Integrated statistical indicators to support public policies. *Scientific Reports, 12*(1). https://doi.org/10.1038/s41598-022-23085-0
Sandel, M. J. (2022). A Tirania do Mérito - O Que Aconteceu ao Bem Comum? *The Tyranny of Merit What Happened to the Common Good? Editorial Presença*.
Sardar, Z. (2010). The Namesake: Futures; futures studies; futurology; futuristic; foresight-What's in a name? *Futures, 42*(3), 177–184. https://doi.org/10.1016/j.futures.2009.11.001
Slaughter, R. A. (1996). Futures studies: From individual to social capacity. *Futures, 28*(8), 751–762. https://doi.org/10.1016/0016-3287(96)00009-2
Slaughter, R. A. (2004). *Futures beyond dystopia: creating social foresight*. Routledge.
Stengers, I. (2000). *The invention of modern science*. University of Minnesota Press.
Szerszynski, B. (2010). Reading and writing the weather: Climate technics and the moment of responsibility. *Theory, Culture and Society, 27*(2), 9–30. https://doi.org/10.1177/0263276409361915
Szulecki, K., Neerland, M. A., Tomter, H., Wæringsaasen, C. A. B., Żuk, P., & Żuk, P. (2024). Ageism, welfare, and the energy transition: A comparative analysis of the perceptions among the elderly in Poland and Norway. *Energy, Sustainability and Society, 14*(1). https://doi.org/10.1186/s13705-024-00468-x

Velicu, I., & Barca, S. (2020). The Just Transition and its work of inequality. *Sustainability: Science, Practice, and Policy, 16*(1), 263–273. https://doi.org/10.1080/15487733.2020.1814585

Vidal, D. G., Alves, F., Menezes, M., Gallo, E., & Tomé, P. (2024). Editorial: Possible nature(s) in urban spaces: Plurality and agency to tackle socio-ecological challenges. *Frontiers in Environmental Science, 12*. https://doi.org/10.3389/fenvs.2024.1495979

Wiek, A., & Iwaniec, D. (2014). Quality criteria for visions and visioning in sustainability science. *Sustainability Science, 9*(4), 497–512. https://doi.org/10.1007/s11625-013-0208-6

Woiwode, C., Schäpke, N., Bina, O., Veciana, S., Kunze, I., Parodi, O., Schweizer-Ries, P., & Wamsler, C. (2021). Inner transformation to sustainability as a deep leverage point: Fostering new avenues for change through dialogue and reflection. *Sustainability Science, 16*(3), 841–858. https://doi.org/10.1007/s11625-020-00882-y

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

Żuk, P. (2023). The sense of socio-economic threat and the perception of climate challenges and attitudes towards energy transition among residents of coal basins: The case of Turoszów Basin in Poland. *Resources Policy, 82*. https://doi.org/10.1016/j.resourpol.2023.103509

Żuk, P., Buzogány, A., Mišík, M., Osička, J., & Szulecki, K. (2023). Semi-peripheries in the world-system? The Visegrad group countries in the geopolitical order of energy and raw materials after the war in Ukraine. *Resources Policy, 85*. https://doi.org/10.1016/j.resourpol.2023.104046

Żuk, P., & Żuk, P. (2024). Ecology for the rich? Class aspects of the green transition and the threat of right-wing populism as a reaction to its costs in Poland. *Sustainability: Science, Practice and Policy, 20*(1). https://doi.org/10.1080/15487733.2024.2351231