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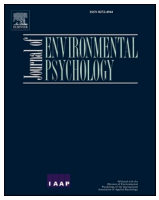

Effective, fair or Intrusive? The role of futures consciousness in environmental policy acceptance

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ABSTRACT

As the current environmental crisis unfolds, there is an increasing call for stronger governmental action to accelerate societal transformation. The challenge lies in better identifying and understanding the factors that influence public acceptance of new environmental policies, particularly those targeting consumer behavior. Future orientation is recognized as one of the factors that motivate individuals to protect the environment and promote transformation towards biodiversity-respecting futures. This article examines whether individual differences in futures consciousness – a multicomponent conceptualization of future orientation with special emphasis on considering collective futures – translate into greater acceptance of consumer-targeted environmental policies. Two preregistered studies, one involving a convenience student sample from the UK ($N = 266$) and the other a representative sample of the Finnish population ($N = 2005$), explored respondents' futures consciousness and their perceptions of the effectiveness, fairness, intrusiveness, and their acceptance of selected pro-environmental policies. Results showed that futures consciousness was positively related to policy acceptance, and this effect was fully mediated by perceptions of policy effectiveness and fairness (Studies 1–2), but not intrusiveness (Study 2). These results highlight the potential role of futures education in tackling political divides and supporting transformation towards sustainable planetary futures.

1. Introduction

Public support is crucial for the effective and successful implementation of any governmental policy. The current environmental crisis, in particular, poses a significant challenge to the existing societal systems, and calls for radical and transformative measures have increased (see e.g. IPBES &, 2024; Visseren-Hamakers & Kok, 2022). Governments must find ways to implement transformative and impactful policies that are simultaneously accepted by the larger public. Indeed, gaining public endorsement for new environmental policies plays a crucial role in transforming societies towards sustainable planetary futures. From a psychological perspective, acceptance of policy measures could be defined as either an attitude towards such policies or as a specific type of pro-environmental behavior (Schuitema & Jakobsson Bergstad, 2012).

Numerous studies have identified various psychological factors that contribute to public policy acceptance (see Grelle & Hofmann, 2023, for an overview). They have, for example, highlighted the critical role of biospheric values (Ingold et al., 2019; Steg et al., 2005), problem awareness (P. Bergquist, Marlon, et al., 2022), and political ideology (Ejelöv et al., 2022). In the neighboring field of futures research, future thinking or future orientation has long been recognized as one of the central factors motivating individuals to collectively promote transformation towards better futures (Bell, 1997; Polak, 1973). Accordingly, many empirical studies have shown that future orientation correlates with pro-environmental behavior (see e.g., Bruderer Enzler, 2015; Lalot et al., 2025; Milfont et al., 2012), but tests of a link with environmental policy acceptance remain scarce.

The present study examines the relationship between policy acceptance and future orientation from the perspective of futures consciousness (FC, Ahvenharju et al., 2021) – a multicomponent conceptualization of future thinking. Furthermore, it considers the role

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of various policy characteristics in influencing the acceptance of new environmental policies: perceived effectiveness, fairness, and intrusiveness – analyzing them as potential mediators of the link between FC and policy acceptance. Thus, the present work extends existing research on future thinking and, more specifically, on *collective* future thinking, by testing for the first time the relationship between futures consciousness and acceptance of environmental policy.

1.1. Future thinking and acceptance of environmental policies

Environmental issues often share the general feature of being 'future' problems, that is, issues whose impact will not be witnessed before some time but require immediate action (IPCC, 2023). At the aggregate level, motivating people to act on future problems can be difficult because they tend to focus on present issues (Sparkman, Lee, & Macdonald, 2021). However, the corollary at the individual level is that individuals who think more about the future and give it greater consideration should also care more about the environment.

This individual characteristic – the "tendency to engage in future thinking" (Seginer, 2009, p. 3) – has been studied under the terms of *future orientation* or *future time perspective* in a large body of research, highlighting its importance in influencing individuals' consideration of environmental impacts. Future orientation has been found to correlate, for example, with environmental attitudes (Beiser-McGrath & Huber, 2018), climate concern (Cipriani et al., 2024; Zhu et al., 2020), and various forms of pro-environmental behavior, such as environmentally friendly food choices (De Marchi et al., 2016), enhancing energy efficiency (Bruderer Enzler, 2015), and other similar activities (Milfont et al., 2012). In most of these studies, future thinking was measured with the Consideration for Future Consequences scale (CFC; Joireman et al., 2012; Strathman et al., 1994) or the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999).

This growing body of work, while examining a variety of environment-related outcomes, has only recently turned its attention to support for environmental policies specifically. Although many fields of public policy-making deal with long-term concerns, environmental policy is likely one of those where the policy goals are furthest in the temporal horizon. The policy choices involve intertemporal trade-offs that typically cause costs in the present and benefits in the future, near or distant (Jacobs, 2016), thus making future thinking a potentially crucial factor in supporting such policies.

We were able to identify only one study (Zhu et al., 2020) that specifically examined the relationship between individual future orientation (measured with the CFC scale; Strathman et al., 1994) and environmental policy support. The link, however, emerged as non-significant, leading the authors of that study to argue that future orientation is a personal characteristic that influences perception and behavior at the individual but not at the collective level.

More than providing evidence against the general hypothesis that future thinking matters for policy acceptance, we believe this null finding informs us about the specific types of beliefs that different scales may capture. Indeed, both the CFC and the ZTPI were initially developed to capture future thinking in the individual sphere, e.g., related to one's own academic work, health, or financial decision-making (see e.g., Joireman & King, 2016). Environmental issues, on the other hand, are primarily collective concerns. While they can be perceived or reframed as personal issues (e.g., by reducing the psychological distance; Keller et al., 2022), this may be easier when focusing on individual attitudes and pro-environmental behaviors in daily life rather than on policy support. In other words, we argue that future thinking may be a relevant antecedent of environmental policy support, but only if it captures a tendency to think about *collective futures*.

While earlier work on future thinking has primarily focused on capturing concerns about one's personal future, more recent approaches have turned their attention to collective futures and the link from the individual to the collective (see Bain et al., 2013; Chevrier et al., 2025; Kashima et al., 2025; Szpunar & Szpunar, 2015). For example, Syropoulos and colleagues have investigated perceived individual responsibility to future generations as a predictor of environmental action (Syropoulos et al., 2024a, Syropoulos et al., 2024c; 2025). Crucially for our present purpose, one of their studies showed that individuals with strong longtermism beliefs also express strong support for pro-climate policies in general (Syropoulos et al., 2024b). Ionescu et al. (2025) also highlighted the role of representations of the collective (national) future for engagement in collective action. Here, we adopt the framework of *futures consciousness*, an interdisciplinary, multicomponent conceptualization of future thinking spanning from futures studies and social psychology (Ahvenharju et al., 2018, 2021).

1.2. Futures consciousness and acceptance of environmental policies

The concept of futures consciousness (FC) builds on the idea that understanding future problems or challenges requires complex and abstract thinking that relies on more than just a temporal perspective towards the future. A multicomponent construct, it includes five dimensions: 1) *Time perspective* that orients thinking away from the present towards futures and long-term events, 2) *Agency beliefs* that increase one's faith in their own capacity and motivation to influence these future events, 3) *Openness to alternatives* that enables the changing of perspectives and recognition of potential alternative events and pathways that may unfold in the future, 4) *Systems perception* that broadens one's understanding of systemic connections and interdependencies resulting in future events and actions, and 5) *Concern for others* that emphasizes one's responsibility and motivation to find pathways towards better futures together with others (Ahvenharju et al., 2018, 2021). This theoretically-driven model has been empirically supported by the development and validation of the Futures Consciousness scale (Lalot, Ahvenharju, & Minkkinen, 2021a; Lalot et al., 2020).

Previous research has ascertained the relevance of futures consciousness for environmental attitudes and behaviors. Specifically, Lalot et al. (2020) observed positive correlations between FC scores and the General Ecological Behavior Scale (GEB; Kaiser & Wilson, 2004). A recent study (Lalot et al., 2025) also found FC to be a notably stronger predictor of pro-environmental behavior than both the ZTPI (Zimbardo & Boyd, 1999) and the CFC (Joireman et al., 2012). This finding supports our earlier point about the differences in focus between scales – some being more oriented towards personal rather than collective concerns. It also suggests that instruments designed to understand collective future thinking might be better suited for studying collective outcomes, such as policy support.

Thus, the concept of futures consciousness appears theoretically well-suited to address some of the central challenges of environmental policymaking: focusing on long-term goals and understanding complex interdependencies and also appreciating the importance of collective policy outcomes. Following the five dimensions of the concept, we suggest that understanding the complexity and appreciating the importance of environmental policy choices requires the public to: 1) employ long-term thinking to avoid discounting the future impacts of present actions, 2) have confidence in the possibilities of present actions to have an impact on the problems and of individuals to influence the policy choices that are being made, 3) be critical of the "mainstream" solutions and ready to consider new alternative policies, 4) apply a systemic mindset to understand the various interlinkages between policy options and their potential consequences on both humans and the planet, and 5) be concerned of the impacts of policies onto different groups of people in the present and the future.

Furthermore, futures consciousness has been shown to relate to various other types of *collective* future-oriented behaviors in several empirical studies, such as altruistic behavior, engaged citizenship, interest in politics, voting frequency, and engagement in collective action (Lalot, Abrams, et al., 2021b; Lalot, Ahvenharju, & Minkkinen, 2021a;

Lalot et al., 2020). Consequently, it seems sensible to expect that futures consciousness would be associated with greater environmental policy acceptance.

1.3. Perceived effectiveness, fairness and intrusiveness as proximal predictors of policy acceptance

With the ultimate goal of understanding and predicting policy support, it is not surprising that most research considers policy acceptance as the principal outcome. Other policy characteristics (and the psychological perception thereof) are thus often conceived as factors influencing policy acceptance. Of such, research has mostly highlighted the mediating role of perceived policy effectiveness and fairness (see e.g., M. Bergquist, Marlon, et al., 2022; Cherry et al., 2012; Clayton, 2018).

Perceived *effectiveness* refers to how well a given policy is expected to address the targeted problem. While effectiveness was often found to have an impact on environmental policy acceptance (see e.g., Eliasson & Jonsson, 2011), the challenge is that it seems to be closely related to individuals' policy preferences so far that these beliefs of effectiveness actually may change if opinions of the policies themselves change (Bostrom et al., 2012). Furthermore, if a suggested policy conflicts with one's moral views, estimations of effectiveness do not necessarily increase the acceptance of it, despite the projected benefits (Sacchi et al., 2014).

Perceived *fairness*, in turn, reflects how far a policy is considered fair – both distributionally and procedurally (see e.g., Maestre-Andrés et al., 2019); in other words, how the burden caused by the policies is distributed among different target groups and how the implementation of the policies in practice will impact them. Fairness has been identified as a key factor influencing environmental policy acceptance, notably more so than effectiveness or the costs induced by a policy (M. Bergquist, 2024).

Although less studied overall, perceived *intrusiveness* may also be a relevant antecedent of environmental policy acceptance. It might become even more relevant as policymakers move toward more stringent policies that would, to be effective, impede people's usual way of life. In studies of policy acceptance, perceived intrusiveness has typically not been included in surveys; instead, researchers have classified policies as more or less coercive, restrictive, or punishing. For example, *push measures*, such as taxation or regulation that increase the cost or burden of specific behavior, have been considered more coercive than *pull measures*, such as subsidies which make environmentally beneficial behavior more attractive (see e.g., Cherry et al., 2012; Drews & Van den Bergh, 2016; Ejelöv et al., 2022). Instead of deciding in a top-down manner the level of intrusion experienced by individuals, in this study, we asked respondents to evaluate the intrusiveness of each policy themselves – an approach that has been less used in environmental policy research (for an exception, see e.g., Huber et al., 2020).

Concerning futures consciousness and its potential influence on individuals' assessments of policy effectiveness, fairness and intrusiveness, we hypothesize the following. Individuals with high FC might consider environmental policies more efficient in general since they might better understand the systemic impacts and motivations behind the chosen policies. They could also be more concerned about the justice between different groups of people, species, and even the planet, hence evaluating environmental policies as intrinsically fair and necessary. Finally, high FC might be related to a higher willingness to make sacrifices for future gains, influencing their evaluation of policies: for example, if FC increases the perception of (future) benefits compared to (present) costs, it would then increase the perceived necessity of strong policies, lowering in contrast their relative perceived intrusiveness.

2. The present research

In light of the literature reviewed above, we expect that futures consciousness may be related to a greater acceptance of different environmental policies, an effect that is mediated by perceptions of greater policy effectiveness, fairness, as well as lower intrusiveness. The present work thus extends existing research in two respects. First, we provide the first test (to the best of our knowledge) of the link between futures consciousness and policy acceptance (Studies 1–2). This contributes to research on future thinking generally, and on futures consciousness as a form of collective future thinking more specifically. Second, we investigate the potential (and currently underexplored) role of policy intrusiveness alongside the better-understood dimensions of effectiveness and fairness as proximal antecedents of policy acceptance (Study 2). This leads us to state the following empirical hypotheses.

- **H1**: Futures consciousness is positively associated with environmental policy acceptance;
- **H2**: Futures consciousness is positively associated with perceived fairness (H2a) and effectiveness (H2b) and negatively associated with perceived intrusiveness (H2c) of environmental policies;
- **H3**: Environmental policy acceptance is positively associated with their perceived fairness (H3a) and effectiveness (H3b) and negatively associated with intrusiveness (H3c); and
- **H4**: Perceived fairness, effectiveness, and intrusiveness mediate the effect of futures consciousness on environmental policies acceptance (parallel mediation).

We conducted two cross-sectional studies that aimed to investigate these relationships. Study 1 relied on a convenience sample of UK university students, while Study 2 was conducted among a larger and representative sample of the Finnish population. Both studies were preregistered (links and details are provided below). All materials, data, and code for analysis are publicly available on the OSF: https://osf.io/ez329.

3. Study 1

Study 1 provides a first test of our hypothesis that (1) FC leads to greater acceptance of environmental policies, and (2) perceived effectiveness and fairness of the policies mediate this effect. The study design, sample size, rules for exclusion, and planned analyses were preregistered: https://aspredicted.org/KB2_S6L.[2] The research was approved by the ethics committee of the School of Psychology at the University of Kent.

3.1. Method

3.1.1. Participants and procedure

We invited university students from the faculty of psychology at a UK university to complete an online survey in exchange for course credits. Following Schönbrodt and Perugini's (2013) suggestion that correlations as small as .10 stabilize at $N = 252$ for a wide of the corridor of stability w = .10 (power = .80), we sought to recruit at least 250 participants, slightly oversampling to allow for exclusions. A total of 288 participants completed the study, but 26 failed attention checks embedded in the questionnaire and were excluded, as preregistered. The final sample, therefore, included $N = 266$ participants, among whom were 41 men, 218 women, 2 non-binary or other individuals, and 5 who did not disclose their gender ($M_{age} = 19.41$, $SD = 2.76$).

The questionnaire was introduced as an investigation into personality and future vision. Participants first informed their demographics and then filled out the Futures Consciousness scale. They then rated a list of eight policies regarding their effectiveness, fairness, and acceptance. Finally, participants were thanked and debriefed.

[2] As indicated in the preregistration, the study also included other measures that are beyond the scope of the present paper, specifically: future-related emotions and social desirability.

3.1.2. Materials

Futures Consciousness Scale. Participants filled out the 20-item Futures Consciousness scale (Lalot et al., 2020, 2021b) on a 5-point Likert scale (1 = Not at all like me, 5 = Very much like me). The scale includes four items for each subdimension of Time perspective (e.g., "*I think about how things might be in the future*"), Agency beliefs (e.g., "*I believe I can succeed at most any endeavor to which I set my mind*"), Openness to alternatives (e.g., "*I am often on the lookout for new ideas*"), Systems perception (e.g., "*I think that all the Earth's systems, from the climate to the economy, are interconnected*"), and Concern for others (e.g., "*When they are in need, I want to help people all over the world*").[3] As is customary when using this scale, we computed an average score that collapsed all subdimensions into a global score of Futures Consciousness for correlation analysis (Cronbach's $\alpha = .80$, McDonald's $\omega_T = .83$). The main analysis utilized a latent construct of FC tested in a structural equation model.

Policy Evaluation: Effectiveness, Fairness, and Acceptance. We used a list of eight policies addressing climate change drawn from Clayton (2018). These were designed to cover a range of policy types (regulatory, social, economic; e.g., "*Prohibit the use of devices that use excessive energy or generate excessive pollution, like inefficient air conditioners*", "*Provide people with information about the amount of energy they are using and the carbon emissions they are generating*") as well as different types of economic regulations (taxes, subsidies, incentives; e.g., "*Provide financial subsidies to encourage people to install or use energy-saving devices, like solar panels or energy-saving appliances*"; see Clayton, 2018, for more detail). Participants were introduced to each policy in turn and asked, "How fair do you think this policy is?" (*fairness*), "How effective do you think this policy would be?" (*effectiveness*), and "How acceptable is this policy to you?" (*acceptance*); all items used a 7-point Likert scale (1 = Not at all, 7 = Very much). All descriptive statistics and correlations between variables are reported in Table 1.

3.2. Results

3.2.1. Analysis strategy

We relied on structural equation modelling to test our hypotheses, including both the measurement model and regression model. The regression model specified FC as the main predictor and policy acceptance as the outcome, with policy effectiveness and fairness as parallel mediators. The measurement model defined each latent construct from the observed variables. Because we were interested in support for environmental policies in general rather than differences across policies, we created global latent scores of effectiveness, fairness, and acceptance across policies. However, to account for the shared variance between questions relating to the same policy, we allowed the three variables pertaining to the same policy to covary. Following recommendations (Yzerbyt et al., 2018), we ran a joint-significance test to examine the component paths, then relied on a bootstrap resampling method to examine the magnitude of the indirect effect (percentile bootstrap confidence intervals).

3.2.2. The Effect of Futures Consciousness on Policy Acceptance

Results from the SEM analysis are reported in Table 2 and illustrated in Fig. 1. For brevity purposes, here we only report the results from the regression model. The full measurement model can be found in Electronic Supplementary Material (ESM1). Results fully supported our hypothesis: FC was related to greater policy acceptance ($\beta = .36$, $p = .004$), as well as greater perceived fairness ($\beta = .37$, $p = .003$) and effectiveness ($\beta = .42$, $p = .003$). Fairness and effectiveness were both positively associated with policy acceptance ($\beta = .86$, $p < .001$; $\beta = .42$, $p < .001$, respectively). The parallel indirect effects of FC through fairness and effectiveness were both significant (i.e., the 95 % bootstrap confidence intervals did not include zero), and the direct residual effect was reduced to non-significance ($\beta = -.10$, $p = .10$), indicating full mediation.

3.2.3. Exploratory: correlations with the five dimensions of futures consciousness

Theoretically speaking, the five dimensions of futures consciousness are assumed to form a coherent multidimensional construct, best apprehended as an aggregate. However, this does not preclude that some dimensions may be more strongly correlated with pro-environmental views than others – something that would remain hidden behind the overall correlation. To explore this possibility, we analyzed the correlations between policy fairness, effectiveness, and acceptance, with the five dimensions of FC (Table 3). Results revealed significant correlations with agency beliefs, openness to alternatives, systems perception, and concern for others, which were of comparable size. Only the correlations with time perspective were not significant, although going descriptively in the same direction.

However, we note that the sample showed little variance on these scores, potentially related to its homogeneous nature (i.e., majority of young female psychology students). Indeed, as the comparison with Study 2 will highlight, the standard deviations are lower in Study 1 than Study 2, in spite of the sample size being 10 times smaller. A previous study had identified a similar nonsignificant correlation in a student sample that had then proved significant in a larger and representative sample (Lalot et al., 2025). We thus refrain from overinterpreting this nonsignificant correlation and turn to it again in the general discussion in light of the findings of Study 2.

3.3. Discussion

The first study provides initial evidence that Futures Consciousness (FC) is associated with a greater acceptance of environmental policies aiming at tackling climate change. It further shows that the positive effect of FC is fully explained by more positive perceptions of the policies in terms of effectiveness and, even more so, of fairness. The indirect effect through fairness was indeed twice as big as the one through effectiveness.

However promising, these results are limited by the nature of the sample, which is a convenience sample of students, predominantly female, and with low variance in terms of age and political orientation. Therefore, we sought to replicate these preliminary findings on a more extensive and diverse sample.

4. Study 2

Study 2 aimed to replicate the initial findings from Study 1 while extending them in three ways. First, Study 2 relied on a larger and more representative sample, allowing us to test the generalizability of the findings to a non-student population. Second, as discussed in the introduction, we here considered a further quality of environmental policies that may influence their acceptance: intrusiveness. Third, we considered a different set of environmental policies. While the first set of policies included both push and pull policy measures as well as information-based measures, the second study concentrated mainly on push measures, since these are usually considered less acceptable.

The data were collected as part of a large-scale project aimed at assessing the views of the Finnish population on biodiversity and other environmental-related topics. The study design, sample size, rules for exclusion, hypotheses, and planned analyses were preregistered: https://aspredicted.org/3Y2_YCY. The research was conducted in compliance with the Declaration of Helsinki, as well as with the ethical principles of research involving human participants and ethical review in the human sciences in Finland defined by the Finnish National Board on

[3] One may note that not all items of the FC scale explicitly pertain to 'the future'. This is in line with the theoretical assumption that while FC requires a specific set of tendencies or capacities (the five dimensions), these capacities are not solely future-dependent and may be utilized in other contexts as well.

Table 1
Study 1: Descriptive statistics and correlations between variables.

#	Variables	Descriptive statistics		Pearson's correlations					
		Cronbach's α	*M* (*SD*)	2	3	4	5	6	7
1	Gender	–	82 % women	.01	−.15*	.02	.03	.05	.05
2	Age	–	19.41 (2.76)	–	.11	.14*	−.07	−.03	−.10
3	Political orientation	–	2.97 (1.14)		–	.00	−.19**	−.12*	−.19**
4	FC	.80	3.64 (.43)			–	.23***	.29***	.20***
5	Fairness	.77	4.83 (.90)				–	.66***	.88***
6	Effectiveness	.71	4.27 (.89)					–	.69***
7	Acceptance	.76	4.72 (.97)						–

Note. Gender is coded as Man = −1, Woman = +1, with non-binary and undisclosed responses recoded as missing values. Political orientation is measured on a 7-point scale (1 = Left, 7 = Right). Futures Consciousness (FC) is measured on a 5-point scale, while policy fairness, effectiveness, and acceptance are measured on a 7-point scale. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 2
Study 1: Structural equation model testing the effect of futures consciousness on policy acceptance, parallelly mediated through perceived effectiveness and fairness.

Regression	Estimate	*SE*	95 % CI	*z*-test	*p*-value	Standard. β
Fairness ~						
FC	1.402	.470	[.481, 2.324]	2.98	.003	.366
Effectiveness ~						
FC	1.424	.475	[.494, 2.355]	3.00	.003	.421
Acceptance ~						
Fairness	.794	.059	[.678, .910]	13.36	<.001	.859
Effectiveness	.358	.068	[.224, .491]	5.24	<.001	.342
FC: direct	−.341	.206	[-.746, .064]	−1.65	.10	−.096
Indirect (through fairness)	1.113	.381	[.366, 1.861]	–	–	.315
Indirect (through effectiveness)	.509	.186	[.144, .875]	–	–	.144
Total effect	1.282	.439	[.144, .875]	2.92	.004	.362

Note. FC = Futures Consciousness. Fully left justified constructs (~) are dependent variables. 95 % confidence intervals are percentile bootstrap confidence intervals.

Research Integrity (TENK, 2019).

4.1. Method

4.1.1. Participants and procedure

We aimed to recruit a representative sample of the Finnish population, with quotas set to match demographics by gender, age groups, and regions (NUTS 2: large areas). The target sample size was determined by available funding (N = 2000). An independent polling company collected the data and was directly responsible for data exclusion. Low-quality responses (more than 10 % missing values, unrealistically quick completion time, and failed attention checks) were removed, with slots reopening to new participants on a rolling basis. The final sample included 2005 participants (931 men, 1049 women, 17 non-binary or others, and 6 undisclosed) with a mean age of 47.32 years (SD = 16.12).

Sensitivity power analysis showed this sample would allow detecting

Table 3
Study 1: Correlations between policy perceptions and the five dimensions of futures consciousness.

Descriptive statistics		Pearson's correlations with policy …		
Variable	*M* (*SD*)	Fairness	Effectiveness	Acceptance
Time perspective	3.79 (.58)	.11	.12	.07
Agency beliefs	3.27 (.68)	.11	.20***	.09
Openness to alternatives	3.60 (.65)	.15*	.21***	.14*
Systems perception	3.58 (.62)	.21***	.20***	.19**
Concern for others	3.96 (.61)	.21***	.23***	.19**
Futures consciousness (global)	3.64 (.43)	.23***	.29***	.20***

Note. *$p < .05$, **$p < .01$, ***$p < .001$.

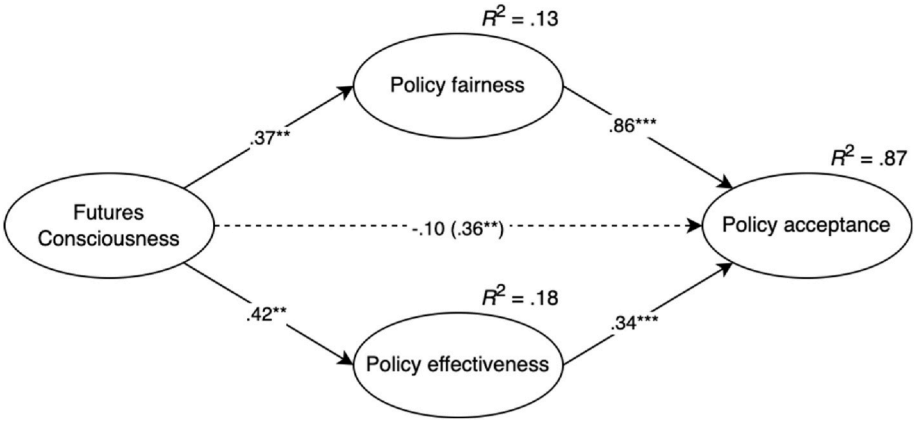

Fig. 1. Study 1: Effect of Futures Consciousness on Policy Acceptance, Parallelly Mediated Through Perceived Effectiveness and Fairness
Note. All constructs are introduced as latent variables, although the measurement model is not depicted here (see ESM1). The numbers reported are standardized loadings. The dotted lines represent non-significant regression paths. **$p < .01$, ***$p < .001$.

an effect as small as Cohen's $d = .01$ in a multiple linear regression with 80 % power (alpha = .05). The study took the form of an online questionnaire including measures of Futures Consciousness and evaluation of different environmental policies (see below) as well as demographics.[4]

4.1.2. Materials

Demographics. In addition to age (in years) and gender (man/woman/non-binary or other/prefer not to say), we also assessed participants' *education* (highest level of education achieved; 10 levels), *income* (monthly household income; 10 bands), and *political orientation* (2 items on an 11-point scale: "Where would you place yourself on a scale from left to right?", 0 = Left, 10 = Right; "Where would you place yourself on a scale from liberal to conservative?", 0 = Liberal, 10 = Conservative). As both items were strongly correlated ($r(1991) = .52$, $p < .001$), we aggregated them in a single indicator of political orientation.

Futures Consciousness Scale. Participants filled out a shorter version of the Futures Consciousness scale (Lalot et al., 2020, 2021a), including 15 items (i.e., 3 items per subdimension of FC, 5-point scale, 1 = *Not at all like me*, 5 = *Very much like me*). Items were selected based on a pilot study ($N = 203$) to ensure the validity and reliability of the shorter instrument. As in Study 1, we computed an average score that collapsed all items into a global score of Futures Consciousness for correlational analysis (Cronbach's $\alpha = .89$, McDonald's $\omega_T = .91$). The main analysis relied again on a latent construct in SEM analysis.

Policy Evaluation: Effectiveness, Fairness, Intrusiveness, and Acceptance. For this study, we developed a list of 12 policies that covered a range of measures, mainly regulatory and financial disincentives. Four policies addressed environmental protection in general (e.g., "*Products and services are taxed based on the environmental damage they cause*"), four addressed limitations to flying (e.g., *Discount pricing of flights is limited*), and four addressed limitations to meat consumption (e.g., *"The consumption of meat products will be limited to no more than half of the current consumption"*). Similar to Study 1, participants were introduced to one policy at a time and asked, "How fair do you think this policy is?" (*fairness*), "How effective do you think this policy would be?" (*effectiveness*), and "How acceptable is this policy to you?" (*acceptance*). Unlike Study 1, we introduced an additional quality for each policy: *intrusiveness* ("How intrusive do you think this policy is?"); all items used a 7-point Likert scale. All descriptive statistics and correlations between variables are reported in Table 4.

4.2. Results

4.2.1. The Effect of Futures Consciousness on Policy Acceptance

We employed the same analysis strategy as in Study 1, computing a structural equation model (including both the measurement model and regression model) where FC served as the main predictor, policy acceptance was the outcome, and perceived effectiveness, fairness, and intrusiveness were introduced as parallel mediators. Results from the SEM analysis are reported in Table 5 and illustrated in Fig. 2. Again, we only report the results from the regression model here. The full measurement model can be found in ESM2.

Results again supported our hypothesis: first, greater perceived fairness ($\beta = .93$, $p < .001$) and effectiveness ($\beta = .17$, $p < .001$) as well as lower perceived intrusiveness ($\beta = -.08$, $p < .001$) were all related to greater policy acceptance. FC was related to greater policy acceptance (total effect; $\beta = .55$, $p < .001$), as well as greater perceived fairness ($\beta = .52$, $p < .001$) and effectiveness ($\beta = .52$, $p < .001$). It was not, however, significantly related to perceived intrusiveness ($\beta = .02$, $p = .56$). The parallel indirect effects through fairness and effectiveness were both significant (the indirect effect through intrusiveness was of course not). The direct residual effect was reduced to non-significance ($\beta = -.02$, $p = .051$), indicating full mediation.

This second study thus provides further evidence that Futures Consciousness (FC) is related to greater acceptance of environmental policies. It further shows that the positive effect of FC is fully explained by more positive perceptions of the policies in terms of effectiveness and even more so in terms of fairness, but not through a differential perception of policy intrusiveness.

4.2.2. Exploratory: analysis controlling for demographics

Given that FC correlated with the demographic profile of respondents (see Table 4), we aimed to ensure its effect on policy acceptance holds when accounting for demographics, taking advantage of the larger and more diverse sample of Study 2. We conducted a separate SEM that regressed policy acceptance on FC as well as age, gender, education, income, and political orientation. This showed that policy acceptance was related to higher education, $z = 4.25$, $p < .001$, $\beta = .10$, lower income, $z = -2.65$, $p = .008$, $\beta = -.06$, a more left-wing orientation, $z = -8.00$, $p < .001$, $\beta = -.18$, and being female, $z = 2.35$, $p = .019$, $\beta = .05$. The effect of age was not significant, $z = -.69$, $p = .49$, $\beta = -.02$. Importantly for the present purpose, the effect of FC remained significant, $z = 13.56$, $p < .001$, $\beta = .39$, and larger in magnitude than any of the demographics.

4.2.3. Exploratory: correlations with the five dimensions of futures consciousness

Similar to Study 1, we finally explored the correlations between policy perceptions and the five dimensions of futures consciousness considered separately (Table 6). All five dimensions were significantly related to perceived policy fairness and effectiveness as well as acceptance. The links with time perspective, systems perception, and concern for others were comparable in size and slightly larger than those with agency beliefs and openness to alternatives. Consistent with the results of the SEM analysis, correlations with policy intrusiveness were non-significant or very small.

5. General discussion

The study of public acceptance of environmental policies has gained increasing interest following the escalating environmental crises. Various psychological factors, such as norms, values, and ideology, among others, have been identified as influencing individuals' assessment of policy acceptance (see e.g. Ejelöv et al., 2022; Grelle & Hofmann, 2023). The present paper contributes to this growing discussion by assessing whether and to what extent interindividual differences in future thinking contribute to greater policy acceptance. We focused our investigation on futures consciousness (FC), a multidimensional conceptualization of collective future thinking (Ahvenharju, 2022; Ahvenharju et al., 2018, 2021; Lalot et al., 2020).

Two cross-sectional studies, one conducted on a convenience sample of university students and the second on a large, representative sample of the Finnish population, revealed a positive relationship between FC and acceptance of various pro-environmental policies. This effect was fully mediated by increased perceptions of policy fairness and effectiveness (Studies 1 and 2), but not by policy intrusiveness (Study 2). The indirect impact through fairness was notably higher than through effectiveness. Moreover, when compared with political ideology, FC was found to have a stronger relationship with policy acceptance.

5.1. Relevance of futures consciousness for the study of policy acceptance

The present study thus extends past research on futures consciousness by demonstrating the utility of the construct to study not only individual pro-environmental behavior (Lalot et al., 2020, 2025) but also pro-environmental policy support. More broadly, it demonstrates the

[4] As noted above, this study is part of a larger investigation and the questionnaire also included other measures that are not discussed here (see preregistration for the full list).

Table 4
Study 2: Descriptive statistics and correlations between variables.

#	Variables	Descriptive statistics		Pearson's correlations								
		Cronbach's α	*M* (*SD*)	2	3	4	5	6	7	8	9	10
1	Gender	–	52 % women	−.04	−.19***	.10***	−.01	.12***	.12***	.16***	−.09***	.13***
2	Age	–	47.32 (16.12)	–	.10***	.05*	−.02	−.02	−.03	.02	−.12***	−.02
3	Political orientation	*r* = .52***	4.72 (2.16)		–	−.05*	.12***	−.11***	−.21***	−.22***	.21***	−.24***
4	Education	–	5.99 (2.15)			–	.34***	.19***	.13***	.12***	−.05*	.15***
5	Income	–	4.26 (2.36)				–	.13***	−.02	.00	.05*	−.01
6	FC	.89	3.51 (.61)					–	.39***	.39***	.06**	.38***
7	Fairness	.91	3.98 (1.25)						–	.75***	−.12***	.96***
8	Effectiveness	.91	4.34 (1.22)							–	.04	.76***
9	Intrusiveness	.90	3.80 (1.21)								–	−.16***
10	Acceptance	.92	4.07 (1.30)									–

Note. Gender is coded as Man = −1, Woman = +1, with non-binary and undisclosed responses recoded as missing values. Political orientation is measured on an 11-point scale (0 = Left, 10 = Right). Education and income are measured on a 10-point scale. Futures Consciousness (FC) is measured on a 5-point scale, while policy fairness, effectiveness, intrusiveness, and acceptance are measured on a 7-point scale. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 5
Study 2: Structural equation model testing the effect of futures consciousness on policy acceptance, parallelly mediated through perceived effectiveness, fairness, and intrusiveness.

Regression	Estimate	*SE*	95 % CI	*z*-test	*p*-value	Standard. β
Fairness ~						
FC	.782	.047	[.690, .874]	16.66	<.001	.516
Effectiveness ~						
FC	.757	.048	[.663, .851]	15.80	<.001	.522
Intrusiveness ~						
FC	.019	.031	[-.043, .080]	.59	.56	.015
Acceptance ~						
Fairness	.866	.026	[.815, .917]	33.27	<.001	.930
Effectiveness	.165	.012	[.141, .188]	13.80	<.001	.169
Intrusiveness	−.085	.010	[-.104, −.066]	−8.87	<.001	−.075
FC: direct	−.029	.015	[-.059, .000]	−1.96	.051	−.021
Indirect (through fairness)	.677	.043	[.593, .761]	–	–	.480
Indirect (through effectiveness)	.125	.010	[.105, .145]	–	–	.088
Indirect (through intrusiveness)	−.002	.003	[-.007, .004]	–	–	−.001
Total effect	.771	.047	[.679, .863]	16.44	<.001	.547

Note. FC = Futures Consciousness. Fully left justified constructs (~) are dependent variables. 95 % confidence intervals are percentile bootstrap confidence intervals.

relevance of future thinking for the study of individuals' attitudes toward pro-environmental policies. While an earlier study had not found any significant correlation between policy acceptance and future orientation (measured with the CFC; Zhu et al., 2020), the present study provides evidence to the contrary. We suggest that the difference may lie in the instrument utilized: it seems that the FC scale performs quite differently when it comes to collective issues compared to more traditional measures of future orientation, specifically the often-used ZTPI (Zimbardo & Boyd, 1999) and CFC (Joireman et al., 2012). In an earlier comparative study, the FC scale proved to be a more accurate predictor of pro-environmental behavior than the ZTPI and CFC (Lalot et al., 2025). As discussed above, the FC scale seems to capture a more collective-oriented form of future thinking, whereas the CFC and ZTPI focus on more personal concerns.

These findings align with and extend a growing body of research on collective future thinking (e.g., Chevrier et al., 2025; Syropoulos et al., 2024b; Szpunar & Szpunar, 2015; Zaval et al., 2015) that considers future orientation as not merely a personal disposition but a socially embedded and policy-relevant phenomenon, highlighting different mechanisms by which future thinking motivates collective engagement. Szpunar and Szpunar (2015), for example, emphasized the dynamic interplay between collective memory and imagined futures, suggesting that collective future thought is shaped by and reshapes a group's understanding of its past, operating at both individual and group levels. Zaval et al. (2015) highlighted legacy motivation, referring to the desire to be remembered positively by future generations, as a driver for pro-environmental behavior, and illustrated how concern for social and moral identity can increase support for future-oriented decision-making. Syropoulos et al. (2024a) discussed longtermism as an ethical framework that grants equal moral value to future and present lives and suggested that such a worldview may predict stronger climate concern and policy support. In an even more recent study, Chevrier et al. (2025) emphasized collective positive prospection (imaginative and hopeful visions of the future) as a vehicle for social change. They argued that shared utopian thinking can inspire action and narrow the perceived gap between the present and desirable futures.

Compared to traditional future orientation measures concentrating on individual temporal preferences, these collective approaches focus on intergenerational concern, group identity, and shared imaginaries as central aspects of future-oriented thinking. Therefore, futures consciousness and the corresponding FC scale may also be better suited for studying collective future thinking phenomena such as support for policy-level responses to global challenges.

Another specificity of the construct of futures consciousness is its multidimensional nature. As Ahvenharju et al. (2021) argue, the temporal perspective may be best understood as intertwined with other capacities such as systemic understanding, agency, openness, or responsibility – an approach relatively less common in psychology but well accepted in the field of future studies (see Godet & Roubelat, 1996; Miller, 2007; Mische, 2009). Indeed, where psychology has considered the effects of time perspective, agency, systemic thinking, openness, and collective concern separately, the futures consciousness framework conceives those as five related dimensions that must be mobilized together to drive action (Ahvenharju et al., 2021).

In the present research, an exploratory analysis of correlations between each dimension of FC and policy perceptions revealed significant relationships with all five subdimensions (especially in the larger and more diverse sample of Study 2). Links with time perspective, systems perception, and concern for others were of similar magnitude. Agency beliefs showed less strong relationships, which was already observed elsewhere (Lalot et al., 2025). Yet, it is the overall construct of FC that

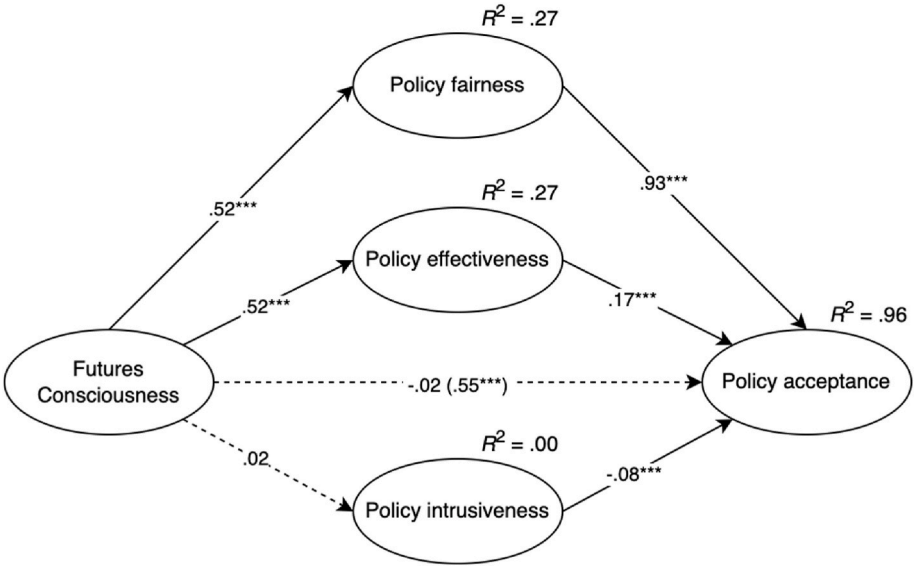

Fig. 2. Study 2: Effect of Futures Consciousness on Policy Acceptance, Parallelly Mediated Through Perceived Effectiveness, Fairness, and Intrusiveness
Note. All constructs are introduced as latent variables, although the measurement model is not depicted here (see ESM2). The numbers reported are standardized loadings. The dotted lines represent non-significant regression paths. $^{**}p < .01$, $^{***}p < .001$.

Table 6
Study 2: Correlations between policy perceptions and the five dimensions of futures consciousness.

Descriptive statistics		Pearson's correlations with policy …			
Variable	*M* (*SD*)	Fairness	Effectiveness	Intrusiveness	Acceptance
Time perspective	3.56 (.80)	.35***	.34***	.03	.34***
Agency beliefs	3.34 (.83)	.18***	.16***	.10***	.15***
Openness to alternatives	3.53 (.78)	.22***	.25***	.09***	.22***
Systems perception	3.68 (.77)	.40***	.40***	−.01	.41***
Concern for others	3.45 (.77)	.37***	.37***	.01	.37***
Futures consciousness (global)	3.51 (.61)	.39***	.39***	.06**	.38***

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

often yielded the strongest correlation, highlighting the importance of apprehending future orientation as a broader construct than a mere time perspective – especially for collective issues. Be as it may, it remains possible that a combination of only few of the five dimensions, or of related existing concepts, leads to similar effects. Further work on the comparison between the overall construct of FC and its subdimensions or related concepts would be beneficial in exploring the value of this multidimensional and holistic approach.

The relationship between FC and policy acceptance was mediated to a small extent by the perception of policy effectiveness, but mostly by policy fairness. In other words, individuals with higher futures consciousness perceive environmental policies in general as fairer and more effective. We suggest this could be due to an ability to understand more thoroughly and diversely the problems and their potential consequences that these policies try to prevent. The increased perception of fairness, specifically, may reveal a deeper understanding and concern for environmental impacts, both short- and long-term, that cause a burden on current and future generations as well as the planet. Thus, high-FC individuals may perceive that policies that aim to tackle environmental problems are essentially attempts to produce fairer outcomes for all.

Perceived policy intrusiveness, on the other hand, was not related to futures consciousness. We tentatively hypothesized that futures consciousness might increase the perceived future benefits of the presented policies, hence increasing their necessity and decreasing their relative intrusiveness. Our results suggest this is not the case. The investigation of perceived intrusiveness thus needs to be pursued further, potentially by comparing policies that differ in their (objective) level of intrusiveness to assess whether futures consciousness may still influence perceptions but only at certain levels of intrusiveness. Alternatively, it might be that intrusiveness is, after all, not such a direct factor in policy acceptance – as similar results with weak correlations have also been found regarding the role of intrusiveness in the acceptance of mobility and aviation policies (Thaller et al., 2023; Larsson et al., 2020). In any case, the different pattern of findings pertaining to intrusiveness also suggests that participants treated the questions on the three policy characteristics as distinct constructs, which incidentally strengthens our confidence in the face validity of the measures and, thus, our interpretation of the findings.

5.2. Limitations and Future directions

The present research presents several strengths, including the replication of the findings across two preregistered studies that approached two different populations (students and laypeople) in different countries. Nevertheless, there are also some limitations that open avenues for future research.

Firstly, the cross-sectional nature of the data limits its causal interpretation. Our analysis was informed by previous work and theoretical assumptions about the expected antecedents of policy acceptance. Futures consciousness is conceived as a relatively stable variable (as demonstrated by satisfactory test-retest reliability of the FC scale over one month; Lalot et al., 2020; and the use of FC as a longitudinal predictor of COVID-19-related behavior over 1–2 months; Lalot, Abrams, et al., 2021b). Thus, theoretically, it seems more likely that FC (as measured with the FC scale) influences people's perceptions of policies rather than the other way around. Nonetheless, we can only comment on

relationships between variables and not claim causality.

Our pattern of results was replicated in two different populations and two national contexts, suggesting at least some generalizability of the findings. However, both samples represent populations with relatively high levels of environmental awareness. Indeed, university students often show above-average pro-environmental attitudes and engagement (Kirby & Zwickle, 2021). Compared to other countries, the population of Finland is similarly more aware of environmental problems than average (EIB, 2024). Thus, the generalizability of the findings may be somewhat limited, and future studies are needed to replicate them in other national contexts and other populations.

Following a growing body of literature, the present study focused on policy acceptance. Yet, it is worth noting that policy acceptance does not necessarily translate into actual behavior. First, it remains unclear whether a given level of self-reported acceptance would translate into actual support for a policy if it were subjected to a popular vote. Second, policy acceptance does not mean compliance. A survey respondent might indicate they would accept a suggested policy on an abstract level, yet they may be unwilling to comply with it once it is implemented and the implications become concrete. Future research is needed to investigate further how policy acceptance may or may not translate into actual behavior (Schnell et al., 2022).

Relatedly, we assessed participants' *perceptions* of policy fairness, effectiveness, and intrusiveness, but we did not put this in relation to objective differences. Driven by a concern to inform policymakers, we also focused our investigation on policies that (should) be objectively effective. As such, it remains an open question whether individuals with higher futures consciousness are actually more accurate when assessing policies, so that they correctly evaluate the ones that would be effective (and fair), or whether the effect we observed indicates greater positivity toward policies in general; i.e., a difference in subjective perceptions only. Recent work suggests that laypeople have considerable difficulty assessing the actual impact of pro-environmental actions, behaviors and policies alike (Johnson et al., 2024). Thus, future work should investigate further whether futures consciousness creates differences in subjective perceptions only or also in actual accuracy in evaluating the impact of policies, contrasting objectively more effective policies with less effective ones.

5.3. Practical implications and conclusions

This study demonstrates how futures consciousness serves as a facilitator for the adoption of new environmental policy initiatives. It thus highlights the potential role of futures education in supporting governmental transformation towards sustainable planetary futures. As mentioned above, while future orientation has generally been considered a relatively stable personal characteristic, futures consciousness still relies on dispositions that can be malleable and abilities that can be flexible (Ahvenharju et al., 2021). These dispositions and abilities may thus be developed through educational and awareness-raising interventions (See e.g., Bol & de Wolf, 2023), which could ultimately increase popular support for ambitious policies. However, more research on the impacts of these interventions – such as futures workshops, courses on futures thinking or media campaigns – would be necessary to establish best practices and further development (see e.g. Armanto, 2024; Syropoulos et al., 2024c).

Environmental issues are increasingly contested in the current polarized political environment (see e.g., Chinn et al., 2020; Cruz, 2017). Initiatives to raise environmental awareness or develop new policies thus meet backlash with some audiences. The present results offer an alternative way forward: Framing environmental issues as questions of potential alternative futures – and environmental policies as means to access these futures – might be perceived as politically more neutral and hence gain wider support among the public. Empirical studies in the US have already demonstrated that concern for future generations is not associated with political ideology (Syropoulos et al., 2021; Zaval et al., 2015). Therefore, the various methods to study, measure and develop collective future orientation and futures consciousness may well be crucial in providing us with tools to find common grounds, joint perspectives, and united interests to protect sustainable planetary futures.

CRediT authorship contribution statement

Sanna Ahvenharju: Writing – review & editing, Writing – original draft, Resources, Project administration, Methodology, Investigation, Conceptualization. **Fanny Lalot:** Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Juulia Räikkönen:** Writing – review & editing, Resources, Project administration, Methodology, Funding acquisition.

Data Availability statement

All materials, data, and code for analysis are publicly available on the OSF: https://osf.io/ez329/?view_only=f4281e3b07ee4776811649e0cc1480ec.

Both studies were preregistered; Study 1: https://aspredicted.org/KB2_S6L, Study 2: https://aspredicted.org/3Y2_YCY.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used Scopus AI and Copilot in order to search for scientific articles and Grammarly to correct the language. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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Declarations of interest

None.

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Appendix A. Supplementary data

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