# The Reach of Digital Games and Their Potential as Global Communication Tools

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**Abstract:** This paper examines the potential of digital games as communication tools to reach global audiences, extending beyond established cultural and geopolitical divides. It shows the empirical data gathered in our EU and UKRI-funded Games Realising Effective and Affective Transformation (GREAT) project, where we collaborated with several organizations to investigate this potential. Namely, a significant case study called Play2Act was undertaken in collaboration with the United Nations Development Programme (UNDP), which forms the focus of this paper. The aims of this study were to find out how much of the world's population could be reached via digital games and how many citizens would be willing to communicate their climate attitudes in a simple and short survey that was inserted into popular mobile games. Currently, there are 3 billion gamers in the world and the idea of reaching citizens via games to understand their opinions on critical global issues and then passing this information to policy-makers emerged. This is the main objective of our project, as to whether games can act as an effective communication channel between citizens and policy-makers, the context being the climate emergency. Governments do not typically have the opportunity to understand their citizens' needs fully. The aim of this project is to decrease the barrier and increase representation and democracy. The findings obtained from the Play2Act study suggest that games, moreover their ability to engage, and inherent social dynamics create a unique opportunity to support meaningful dialogue with a large proportion of citizens reached, engaged and completed the surveys. The study engaged with almost 1 million players from every UN recognised country, with only two exceptions, and ca. 181,000 surveys completed, confirming the global reach of games. The next steps are for UNDP to take this information to individual countries with recommendations of appropriate climate policies based on their citizens' voices, this having huge potential for digital games being policy transformational tools. This research contributes to knowledge on the intersection of technology, culture, and communication and offers valuable insights for policymakers, researchers, and stakeholder groups seeking to leverage digital games for social impact.

**Keywords**: Digital games, Citizen participation, Social impact

## 1. Introduction

Digital technologies have transformed how individuals communicate, engage with content, and participate in civic and political life. Among these technologies, digital games have emerged as a dominant global medium, not only as a source of entertainment but also as a potential vehicle for meaningful communication and social engagement. With an estimated three billion players worldwide (Costello, 2025), digital games possess unparalleled global reach, cutting across cultural, linguistic, and geopolitical boundaries. As such, they represent a promising yet underexplored channel for engaging citizens in dialogue around complex and urgent global issues, such as the climate crisis. This paper investigates the communicative potential of digital games through the lens of the Games Realising Effective and Affective Transformation (GREAT) project, funded by the European Union (EU) and UK Research and Innovation (UKRI). The study focuses on a significant case study, Play2Act, developed in collaboration with the UNDP. The initiative aimed to explore whether digital games could serve as effective conduits for citizen engagement and data collection on climate attitudes, ultimately informing policy at national and international levels.

By embedding a short climate-focused survey within popular mobile games, the Play2Act study sought to overcome traditional barriers to civic participation, particularly among demographics that may be underrepresented in conventional public consultation processes. The project reached over one million players globally—representing nearly every UN-recognized country—and generated approximately 181,000 completed surveys. These findings underscore the capacity of digital games not only to attract attention and foster engagement, but also to function as participatory platforms through which citizens can communicate their views to policymakers. In positioning games as instruments for policy-oriented dialogue, this paper contributes to

interdisciplinary research at the intersection of digital media, cultural studies, and political communication. It examines the implications of engagement strategies using digital games for enhancing democratic representation and participatory governance, especially in contexts where institutional mechanisms for citizen input are limited or inaccessible. Furthermore, it addresses the broader question of how emerging technologies can be leveraged to facilitate inclusive and scalable communication in response to global challenges.

This paper investigates the central research question – "**Can digital games function as effective communication channels between citizens and policymakers?**" By addressing this question, our research seeks to contribute to a growing body of knowledge on democratic innovation and inclusive governance. The overarching aim is to reduce barriers to participation and amplify the voices of underrepresented populations, with a particular focus on Europe while remaining attentive to broader global applications. In doing so, we position digital games as emerging tools in the effort to strengthen democratic processes, improve policy responsiveness, and promote more equitable forms of engagement in the face of complex global challenges. Our project also supports the European Democracy Shield (Bentzen, 2024). This is an initiative by the European Commission aimed at safeguarding democratic processes within the EU which focuses on enhancing media literacy and promoting citizen engagement. Our project supports this initiative by using an innovative approach to increasing citizen participation and collecting valuable data for policymakers, and our method exemplifies how digital platforms can be leveraged to foster democratic engagement and inform policy decisions.

## 2. Literature Review

Prior to the commencement of the GREAT project, our team (primarily PlanetPlay, previously PlayMob) launched *Mission 1.5*, an online game-based campaign designed to educate the public about climate change solutions while simultaneously gathering their opinions on the actions governments should prioritize in response to the climate crisis. This initiative formed the basis of the *People's Climate Vote*, which successfully engaged 1.2 million respondents, making it the largest survey of public opinion on climate change to date (Flynn et al, 2021). Conducted across 50 countries and covering 56% of the global population, the campaign demonstrated the potential of interactive digital platforms to combine public education with meaningful policy-oriented data collection on an international scale.

In our literature review, we identified that a range of climate-related games is expanding, with over a hundred identified across various genres and formats. However, many still prioritize educational goals over civic engagement or policy influence (Gerber et al., 2021). Despite this growth, there is limited empirical evidence on the effectiveness of climate games, especially in large-scale, cross-cultural, or policy-relevant settings. Key design features—such as credibility, social integration, and actionable feedback loops—are often applied inconsistently, and the line between serious and entertainment-oriented games remains largely unexamined (Fernández Galeote & Hamari, 2021). To our knowledge, indeed no previous study has leveraged the global reach of digital games at this scale to directly engage citizens in policy-relevant discourse across 188 countries. It represents a significant advancement in the field by demonstrating, for the first time, the feasibility of embedding large-scale attitudinal surveys within digital games to reach a truly global audience and channel civic input to policymakers. Our project pioneers a novel methodology that integrates real-time data collection into game platforms, offering an unprecedented model for participatory democracy in digital contexts, positioning it as the first of its kind in the context of global digital communication and climate policy. Our project has achieved the following milestones:

- **Global Reach**: Engaging over one million citizens from 188 countries, demonstrating unprecedented international participation.
- **Integration with Popular Mobile Games**: Embedding surveys within widely played games to seamlessly collect data on climate attitudes.
- **Direct Policy Impact**: Collaborating with the UNDP to inform national climate policies based on citizen input gathered through games.

## 3. Methodology and Data Sample

The Play2Act case study utilised a quantitative approach, combining in-game surveys with data collection to assess player engagement with climate-related content in digital games. The goal was to determine whether this engagement increased awareness and intent to act on environmental issues. Surveys, located here (were available in 10 languages - English, Spanish, German, Chinese, Japanese, Portuguese, French, Russian, Arabic, Italian - which was automatically translated according to the browser setting of the user's device), were embedded in widely played mobile games participating in the Playing for the Planet initiative, which integrates

sustainability themes. Game studios involved aimed to gather data to refine their approach to incorporating environmental messaging within their platforms. Surveys were integrated into the gaming ecosystem using each platform's existing communication tools, ensuring organic and non-intrusive player engagement. The Play2Act surveys engaged 933,852 players across 228 countries & territories, including 188 UN-recognised nations (exceptions being North Korea and Eritrea). The primary data collected was quantitative, focusing on demographics, climate awareness, and self-reported behavioural intentions regarding sustainability. This enabled the identification of engagement patterns, attitude shifts, and potential links between in-game climate messaging and real-world intentions. A total of 204,796 respondents answered at least one question, yielding a 90.7% response rate. Among engaged users, 77.2% completed the survey, and 181,087 players finished it, resulting in a 15.2% overall completion rate. Participants were offered a reward in the form of a discount on a PlanetPlay marketplace purchase, with a portion supporting sustainability initiatives. This case study demonstrates the potential of large-scale digital games as tools for collecting behavioural and attitudinal data. It demonstrates how digital engagement can effectively address social and environmental issues. The targeted placement strategy within mobile games such as Pokémon GO, Subway Surfers or F1 Clash, provides valuable insights for future research using high-reach platforms for data collection and assessing social impact.

## 4. Key Findings

The Play2Act case study examines digital gaming as both a large-scale data collection tool and an engagement mechanism in climate discourse. With 181,087 completed surveys across multiple gaming platforms (mobile games as well as gaming consoles), the study highlights gaming's potential to expand research access while revealing tensions between reach, representativeness, and engagement depth. Chi-square analysis ($X^2 = 45.62$, $p < 0.05$) confirms significant demographic differences in participation, illustrating the need for targeted strategies.

### 4.1 Engagement and Reach: Expanding Access or Replicating Existing Biases?

Play2Act's large-scale engagement aligns with research suggesting digital gaming can expand participation beyond traditional survey methods (Reddie et al, 2018; Pietilä et al, 2019). By reducing barriers such as literacy levels, financial constraints, and geographic isolation (Ramirez Aranda & Vezzoni, 2022; Raeburn et al, 2022), digital platforms have been identified as tools for enhancing inclusivity in climate-related research. Play2Act achieved a 77.2% completion rate among engaged users and 19.7% relative to total survey sessions. Chi-square analysis ($X^2 = 32.85$, $p < 0.05$) indicates statistically significant regional differences, with European participants more likely to complete the survey than those from Africa and Asia. Prior studies have demonstrated that factors such as survey length, display format, and recruitment strategies influence response rates (Liu & Wronski, 2018; Tangmanee & Niruttinanon, 2019). While web-based surveys often require email reminders or incentives to sustain participation (LaRose & Tsai, 2014), Play2Act embedded surveys directly within gaming environments, maintaining engagement without external prompts. However, as with other web-based research, non-response bias remains a critical limitation when assessing the survey's reach and representativeness.

Play2Act highlights the potential of digital games as both an alternative and complementary method for public opinion research, demonstrating significant geographic reach and scalability. However, chi-square analysis ($X^2 = 27.94$, $p < 0.05$) indicates participant demographics were not entirely uniform, raising questions about whether this reach extended to underrepresented groups. The study achieved a relatively balanced gender distribution, with 51.7% of respondents identifying as male, 36.1% as female, 10.1% preferring not to disclose their gender, and 2.9% identifying as non-binary. Despite this inclusivity, gender significantly influenced response rates and engagement levels, particularly in self-reported climate awareness and behavioural intent. These findings align with research indicating gendered differences in environmental engagement (Bloodhart & Swim, 2020; Zhao et al, 2021). While Play2Act's gender distribution is more representative than historical disparities in gaming participation (Leonhardt & Overå, 2021; McLaren-Gradinaru et al, 2023), it remains unclear whether these proportions reflect gaming populations or broader climate discourse participants.

Age significantly influenced engagement, with younger participants displaying higher participation levels, consistent with research indicating that digitally literate individuals are more likely to engage in game-based studies (Passmore et al, 2018; Kaye, 2018). Welch-ANOVA ($p < 0.05$) confirmed a significant relationship between age and survey completion time, with younger respondents completing surveys more quickly, raising concerns about attention span and response bias. Completion time also varied by education level, indicating differences in cognitive engagement. Welch's ANOVA (Welch's $F(6, 13{,}128.56) = 78.80$, $p < 0.001$) confirmed statistically significant differences, with post hoc Dunnett's T3 analysis showing participants with no formal education completed the survey faster than those with any level of schooling ($p = 0.001$). Completion time increased with

education level, suggesting more deliberate engagement. However, 3.8% of respondents exceeded five minutes per question, with some taking over 30 minutes, likely due to external distractions, multitasking, or disengagement rather than deeper reflection. Despite these insights, the study had limitations. While data was collected on the age at which participants left formal education, the survey did not assess income, occupation, or other socio-economic factors. As education level is often correlated with climate discourse engagement (Ballew et al, 2020), the absence of more detailed demographic data limits the ability to determine whether Play2Act reached a socio-economically diverse audience, raising concerns that digital gaming research may reinforce existing biases, engaging those already inclined toward climate action rather than expanding participation to underrepresented groups.

### 4.2 Measuring Depth of Engagement in Digital Research

A key concern in digital research is whether participants meaningfully engage with survey content or treat it as a secondary activity (Vecchio et al, 2020; Martins & Lavradio, 2020). Chi-square analysis identified response patterns, with 98.6% of completed sessions lasting between 10 seconds and 10 minutes, and an average dwell time of 1 minute and 43 seconds per question. Welch-ANOVA ($F = 5.63$, $p < 0.05$) confirmed significant variation in response times by education level, indicating that more highly educated participants engaged with greater deliberation. These findings underscore two key issues: the need for digital survey methodologies to distinguish between genuine engagement and passive responses through mechanisms such as attention checks and response consistency analysis, and the trade-off between maximising reach and ensuring engagement depth in game-based research. While Play2Act demonstrates the feasibility of large-scale research within gaming ecosystems, refining engagement metrics will be essential for ensuring data validity and actionable insights. Further statistical tests offer a nuanced view of demographic differences in engagement and perception. Variation in response times by education level supports environmental psychology research suggesting education fosters more reflective engagement with sustainability issues (Poškus, 2020; Sun et al, 2020), although it remains unclear whether this translates into more accurate or informed responses. Chi-square analysis ($X^2 = 38.27$, $p < 0.05$) also indicates significant gender-based differences in perceptions of climate gaming. Male and non-binary respondents were more likely to view games as active contributors to climate solutions, whereas female respondents emphasised their role in education and awareness, aligning with broader gender trends in environmental engagement, where women often prioritise community-based solutions, while men favour technological interventions (McCright, 2010; Patnaik, 2021).

### 4.3 Gender-Based Variations in Climate Change Emotions

Chi-square analysis identified significant variations in climate change emotions across gender identities and global regions. Males reported feeling more informed but also expressed greater scepticism, while females exhibited higher levels of hope and motivation for action. Non-binary individuals and those who did not disclose their gender were more likely to experience powerlessness and uncertainty. Females were also less likely to report unchanged climate-related emotions after engaging with Play2Act, suggesting greater responsiveness to environmental narratives in gaming. Notably, those who did not disclose their gender were most likely to believe games play no role in addressing climate change, underscoring the need for tailored engagement strategies.

### 4.4 Regional Disparities in Climate Policy Awareness

Chi-square analysis ($X^2 = 42.61$, $p < 0.05$) identified significant discrepancies in climate policy awareness by education level, region, and income group. While over 50% of European respondents recognised The Paris Agreement, awareness fell to 41% in Asia and 37% in Africa, highlighting regional disparities in climate literacy. Policy familiarity correlated strongly with education, reinforcing concerns that digital gaming research may primarily engage those already involved in climate discourse rather than reaching new audiences. Awareness of Nationally Determined Contributions (NDCs), the Kunming-Montreal Framework, and National Biodiversity Strategies and Action Plans (NBSAPs) remained consistently low across all regions, with over 80% of respondents unfamiliar with these mechanisms.

Europe had the highest recognition of The Paris Agreement (37%), while Oceania showed the highest unawareness (40%) and the lowest recognition of biodiversity frameworks (7%). Asia exhibited higher awareness of NDCs and NBSAPs (14%), yet also had elevated climate scepticism, reflecting a disconnect between policy knowledge and belief in climate action. Research suggests political narratives, economic priorities, and media framing influence public trust in climate governance, which may explain this trend (Stecula & Merkley, 2019). Among income groups, lower-middle-income respondents had the highest awareness of NDCs (15%) and NBSAPs (14%), possibly due to exposure to sustainability-focused development initiatives. However, high- and

low-income respondents reported the greatest unawareness (34–36%), raising concerns about the effectiveness of policy communication across socio-economic groups.

### 4.5 The Disconnect Between Climate Gaming and Policy Literacy

Play2Act highlights a critical gap between general environmental engagement and knowledge of climate policies. Despite strong engagement with climate-themed gaming content, significant associations ($p < 0.05$) between education and policy awareness suggest while games introduce environmental themes, they do not provide the policy literacy needed for systemic action. Without an understanding of frameworks such as The Paris Agreement or NDCs, players may struggle to translate awareness into advocacy. Many digital interventions focus on awareness or individual behaviour change but neglect policy comprehension, limiting their impact. Embedding policy education more explicitly into gameplay could address this gap, equipping players with the knowledge to advocate for structural change. While digital games can introduce players to environmental themes, they must go further in fostering meaningful policy engagement. Many interventions focus on raising awareness but fail to provide the necessary policy comprehension. Research is needed to test approaches that integrate policy literacy into games, ensuring that they move beyond informing players toward actively equipping them with the tools to advocate for systemic change.

### 4.6 Gaming and Climate Action: Potential and Limitations

Across all regions, video games are widely viewed as tools for climate advocacy. Most respondents (77.6%) believe games raise climate awareness, with significant regional differences ($\chi^2 = 559.001$, $df = 4$, $p < 0.001$), though weak correlation (-0.023) suggests minimal impact on overall belief patterns. Similarly, 77% agreed games can educate players on environmental actions ($\chi^2 = 1450.321$, $df = 4$, $p < 0.001$), but correlation remained negligible (0.003). Support for using games to fund green projects was also high (75.7%), with significant regional variation ($\chi^2 = 1671.279$, $df = 4$, $p < 0.001$) but weak correlation (0.016), indicating broad consensus. However, 27.9% rejected gaming's role in climate action, a belief with the strongest regional correlation (0.094), suggesting scepticism varies more by region. Post-hoc analysis showed Oceania and Asia were the most optimistic, while Africa and the Americas were more sceptical ($p < 0.05$).

The link between gaming engagement and climate risk exposure is complex. A one-way ANOVA found significant differences in green gaming engagement based on climate-related fatality rates ($F = 42.698$, $p < 0.001$), though the effect size was minimal ($\eta^2 = 0.001$). Players in high-risk regions engaged less with green games (mean difference = -3.311, $p < 0.05$). A similar pattern emerged for financial losses due to climate change ($F = 76.327$, $p < 0.001$, $\eta^2 = 0.004$). Players from regions with higher losses were more motivated by contributing to environmental causes (mean difference = 2.002, $p < 0.001$), whereas those in lower-risk regions engaged for educational reasons, reflecting different drivers of participation.

Economic context shaped climate engagement patterns. Respondents from lower-income regions were the most purpose-driven, with 40% playing beyond entertainment and 18% citing environmental learning. However, they also exhibited higher scepticism (23%) and uncertainty (24%), supporting theories that financial constraints foster eco-conscious attitudes without necessarily enabling action (Moser & Kleinhückelkotten, 2018; Petev & Coulangeon, 2021). Participants from upper-middle-income regions reported the highest behavioural changes (38%), altered consumption patterns (28%), and the lowest powerlessness (3%), suggesting they may be the most receptive audience for climate interventions, combining awareness, financial flexibility, and willingness to act. However, the long-term sustainability of these changes remains uncertain. Chi-square analysis revealed a significant gender-based difference in behaviour change. Females were more likely to adopt sustainable consumption habits, while males more often expressed general concern without specifying actions, aligning with research indicating sustainable behaviours are more likely to be adopted when they integrate seamlessly into daily routines (White et al, 2019; MacInnes et al, 2022).

Preliminary analysis suggests genre conventions and gameplay mechanics may shape how players emotionally and behaviourally respond to climate-related content. Games incorporating strategic decision-making, real-world contextualisation, or augmented reality appear to foster comparatively higher levels of climate engagement. Notably, Pokémon Go players reported the highest rates of climate optimism (31%), feeling well-informed (22%), and self-reported behavioural change (41%). These findings are consistent with prior scholarship indicating that augmented reality and place-based interaction can enhance environmental commitment (Georgiou & Kyza, 2017; Coen et al, 2019). Likewise, games such as F1 Clash, which blend real-world themes with tactical gameplay, were associated with more frequent expressions of motivation and action. Conversely, titles characterised by casual or arcade-style mechanics, such as Subway Surfers, were less

frequently linked to pro-environmental dispositions. This divergence suggests genre-specific affordances may either enable or constrain the player's sense of agency, connection to real-world issues, and perceived relevance of climate messaging.

### 4.7 Answering our Central Research Question "Can Digital Games Function as Effective Communication Channels Between Citizens and Policymakers?"

This case study demonstrates several methods for facilitating information exchange, notably embedding surveys within gameplay to capture real-time citizen feedback on climate issues. By using interactive, global platforms, Play2Act provides citizens a space to voice concerns and policymakers access to this data. However, the challenge remains in translating this data into actionable policy changes, as clear pathways to policy influence are not yet evident. Additionally, digital games can offer significant affordances for informing policy by engaging large, diverse audiences and enabling policymakers to access extensive citizen feedback. However, the case study reveals that while this feedback is valuable, it does not always translate into actionable policy insights. To enhance effectiveness, the methodology must be more closely integrated with existing policy frameworks, and longitudinal data tracking should be implemented to capture evolving citizen preferences over time.

## 5. Conclusion and Limitations

This study illustrates both the potential and limitations of integrating surveys into gaming. While response rates were high (90.7% answered the first question, 77.2% completed the survey), overall participation remained low, with only 15.2% of those who viewed the introduction completing the survey. This highlights gaming's broad reach but also the challenge of converting passive exposure into active engagement. Despite its strengths, the study had limitations. The structured survey format restricted insight into player motivations, and self-selection bias likely skewed responses toward those with existing pro-environmental attitudes. Additionally, some players may have viewed the survey as an interruption, raising concerns about data integrity. Future studies should incorporate qualitative methods to capture deeper perspectives. Findings suggest climate engagement varies by region, socioeconomic factors, and gaming context, though statistical analyses indicate weak correlations. While Africa and the Americas showed greater optimism and Asia and Oceania more scepticism, broader socio-political influences appear more significant than gaming itself. Although gaming can raise awareness, its measurable impact on behaviour remains limited. To enhance effectiveness, developers should embed climate policy education into gameplay, while policymakers should integrate digital media into broader environmental strategies. Research should prioritise longitudinal studies and cross-regional comparisons to refine gaming's role in climate advocacy. Without these targeted efforts, games will remain valuable for awareness but insufficient for driving lasting behavioural change.

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