SAFEGUARD
Safeguarding European wild pollinators

Integrated assessment of policy interventions for pollinators: A game-based dialogue

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Summary

This workshop created a space for a game-based dialogue. Participants were able to explore the intersection of policy and scientific evidence in responding to the pressures facing pollinators. Stakeholders from policy, business, NGOs and researchers played out in virtual landscapes various pollinator management interventions in agricultural, urban, and nature conservation contexts. The game revealed the expected impacts on biodiversity, ecosystem services and human well-being, as assessed by Safeguard pollinator experts.

WHO: co-organised by the National Institute for Agriculture, Food and the Environment (INRAE), the University of Stirling, BioAgora and the Institute for European Environmental Policy (IEEP).

WHEN: 10 September 2025 at the Maison Irène et Frédéric Joliot-Curie, 14:30-16:30 CEST.

Number of participants: 24 participants

Context

Pollinators are essential for biodiversity and to support food production, yet their decline in recent years has been alarming across Europe. In response to this crisis, the European Commission launched the EU Pollinators Initiative in 2018. This Initiative, aligned with the EU's Biodiversity Strategy for 2030 aim to reverse the decline of pollinators by 2030.

Among its strategic priorities, the EU Pollinators Initiative highlights the urgent need to develop an Integrated Assessment Framework (IAF) to: (i) evaluate pollinator biodiversity, (ii) link causes and consequences of decline, and (iii) evaluate systemic outcomes of policy aiming to improve pollinator conservation. To fill this gap, the Safeguard project was established under the EU Horizon programme. Running from 2021 to mid-2026, the project aims to provide robust scientific data and tools to inform policy, conservation strategies, and public awareness related to pollinator conservation. More specifically, its work package 5 titled: Integrated Assessment Framework (IAF) socio-ecological, concepts, tools and solutions aim to support that component of the Initiative.

Introducing the pollinator-friendly landscapes game

The session was opened by Dr Adam Vanbergen (INRAE), who welcomed the participants and introduced the workshop's aim.

Game description

Dr Nils Bunnefeld (University of Stirling) introduced a gaming approach focused on designing a pollinator-friendly landscape. The game simulates a virtual environment made up of either semi-natural, agricultural or urban habitats, each represented by cells on a digital landscape (figure 1). The landscape begins in one of two conditions, either restored or degraded, allowing participants to explore the impact of different interventions from contrasting starting points.

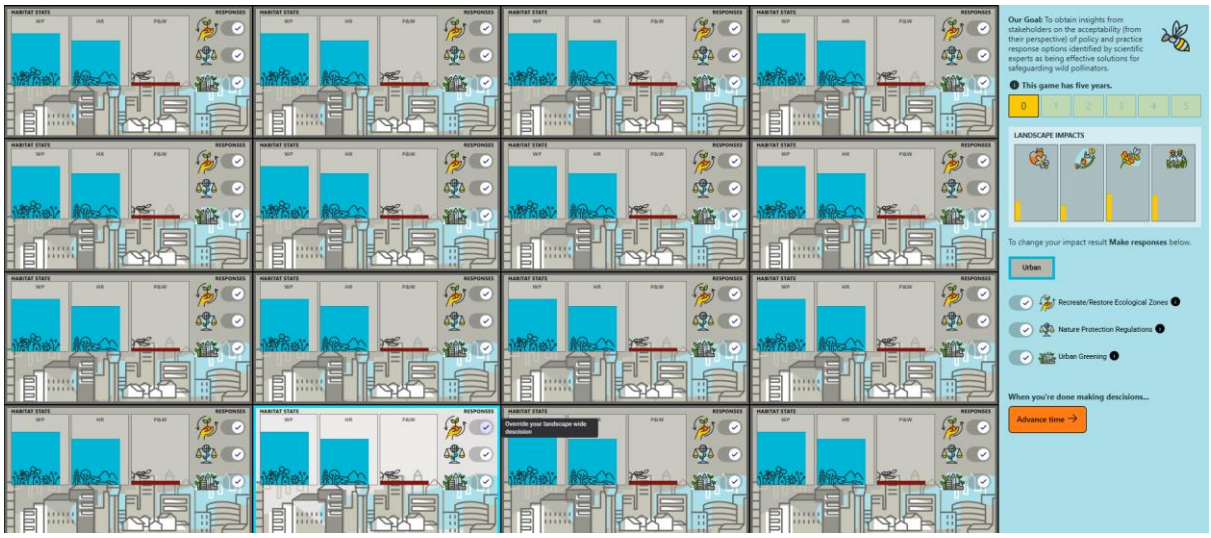

Figure 1. Screen capture of the application 'Gaming policies for a pollinator-friendly landscape' showing a degraded urban landscape. Responses (interventions) can be implemented or not (ticked/unticked) in the separate zones (sub-rectangles). The player advances year after year to see the state of the landscape and the overall impact.

Gamers select and combine different interventions, such as implementing nature protection regulations and recreating/restoring ecological zones, to influence these habitats. As decisions are made, a visual tracker displays the ecological and socio-economic outcomes of those decisions. For example, these **responses** (restoring ecological zones) create changes to the **state** of the habitat by increasing wild pollinator abundance and diversity, and that leads to specific **impacts** like crop pollination and production and aesthetic values.

Table 1. The subset of Responses scored as being effective at improving (directly or indirectly by reducing the level of pressure) the State of wild pollinators and the resulting Impacts on benefits to ecosystems and human well-being. These variables were used to parameterise the online simulation game and informed by expert scoring during a Delphi-type assessment of the Pressures-State-Impact-Response of wild pollinators in Europe (Safeguard Deliverable 5.3).

Response	State	Impact
Recreate/restore ecological zones Nature protection regulations Ecological intensification (agriculture only) Urban greening (urban only)	Wild pollinator abundance and diversity Habitat resources Pests and weeds	Crop pollination and production Economic value chain (Farm2Fork) Wild plant pollination services Aesthetic values

Workshop process

Prior to the workshop, participants received an email containing detailed information about the game and the associated research. This included a background document on relevant policies (EU Biodiversity Strategy for 2030 and EU Pollinators Initiative) and the Safeguard project, an overview of the expert elicitation exercise conducted by scientists, and selected results from that process, which were used to parameterize the game. The game itself was designed by a team from the University of Stirling (Ms Rose McKeon, Dr Nils Bunnefeld, and Dr Brad Duthie) drawing directly on the expert elicitation findings and with inputs on pollinators and the issues from Adam Vanbergen. This advance reading enabled participants to spend more time playing the game and engaging in meaningful discussion during the workshop.

Following the introductory presentation, the participants (Table 2) were divided across three tables, each focused on one of the three landscape types: urban, semi-natural and agricultural. The workshop attracted a wide range of stakeholders coming from different sectors, either in terms of policy making itself or industries and NGOs that respond or react to policy decisions. Within these groups, they were encouraged to discuss their choices, share insights, and provide feedback on the gaming tool.

A key component of the workshop was to gather data on the “acceptability” of participants’ choices made during the game. Players were given the opportunity to experiment with different combinations of interventions over five rounds, each representing one year. At the end of each five-year cycle, participants were asked to reflect on the feasibility and acceptability of their decisions, as well as their overall satisfaction with the outcomes.

Table 2. Stakeholder organisations that participated in the workshop and their allocation to playing the online simulation game in the different urban, agricultural or semi-natural landscape contexts.

Landscape	Participants		
Urban	European Environment Agency	City of Rotterdam	INBO - Flanders
	IUCN European Regional Office	Buglife	Sweco
Agriculture	Corteva Agriscience	Bayer AG	DG AGRI
	Bee Life	IUCN	Institute for European Environmental Policy
Semi-natural	IUCN European Regional Office	Promote Pollinators	Institute for European Environmental Policy
	NFU	FACE	Bumblebee Conservation Trust

Discussion and reflections on the role of gaming in policy dialogues

After a lively gaming session, participants were invited to share their experiences and provide feedback. The discussion, moderated by Evelyn Underwood (Institute for European Environmental Policy), revealed a range of insightful observations about the game's design, purpose, and impact.

Participants responded to the opportunity to explore policy scenarios in a dynamic and participatory format. The game stimulated in-depth discussion on a wide range of environmental policy dimensions, including the role of evidence-based decision-making, the scale and design of policy interventions, and the trade-offs between ecological and socio-economic outcomes. Many participants asked detailed questions about the science behind the game, including the underlying evidence, parameterization, and expert assessment process. This indicated a strong level of critical engagement and curiosity, highlighting the game's potential to support dialogue across diverse stakeholder groups.

One of the first points raised was the critical role of how much interventions cost in shaping decision-making and determining the feasibility of the interventions in real life. Several participants emphasized that without incorporating cost parameters, the game lacked a fundamental constraint faced by real-world policymakers and landowners. The need to understand how much different interventions cost, and who bear those costs, was highlighted as essential for generating meaningful insights.

Participants also drew attention to the complexity of policy implementation. Some expressed concern that the game is too abstract, lacking sufficient disaggregation at

the policy level. Participants raised concerns about the “all or nothing” design of the policy interventions in the game which oversimplifies the reality where policy interventions often do not trigger action on all land areas or have varying levels of effectiveness. Suggestions were made to incorporate more flexible parameters, such as a sliding scale that reflects varying levels of interventions. A more nuanced integration of policies could improve the game’s capacity to simulate real-world governance and guide more targeted biodiversity outcomes.

Questions were raised about whether the game adequately reflects the scale at which policies are applied, either at regional, national or EU level. Dr Adam Vanbergen clarified that the expert assessments used to inform and parameterize the design of the game were conducted at the EU level, which may not fully capture national and regional differences. This was an intrinsic limitation to this particular game.

Although the game results dashboard and the scientific assessment behind it take account of important ecological specifics of pollinator populations such as pollinator nesting habitats or landscape heterogeneity, participants did not feel that this came across clearly to the game players. One participant emphasized the need for more ecological detail to allow for informed decisions about how to design policy interventions that address habitat requirements and landscape-level impacts.

Importantly, participants discussed the role and purpose of the game itself. While some initially viewed the session through an educational lens, the game was explicitly designed as an engagement tool, to stimulate discussion around policy acceptability, not to deliver defined learning outcomes. Unlike a traditional educational game, this tool does not provide feedback on “correct” or “incorrect” choices, nor does it incorporate staged learning complexity or assessment of success. Clarifying this distinction in the discussion helped align expectations.

Lastly, several participants noted the game’s value as a facilitation tool, especially in the context of the upcoming submission for Member States’ Nature Restoration Plans approaching in August 2026. With refinement, the game could support internal dialogues, stakeholder consultations, or cross-sectoral policy workshops, offering an engaging way to explore trade-offs and stimulate reflection.