



Rooftops Re-imagined

GREEN ROOFS CYPRUS
INSIGHT REPORT 2025

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Frederick University Cyprus

ACKNOWLEDGMENTS

This study is part of the ongoing research project GREAT. Co-funded by the European Union under the Horizon Programme – Culture, Creativity and Inclusive Society: GREAT – Games Realising Effective and Affective Transformation (societal and cultural domains), Grant agreement ID 101094766; and the UKRI, Grant agreement ID 10054160. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

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<https://zenodo.org/records/14925762>

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Co-funded by
the European Union



UK Research
and Innovation



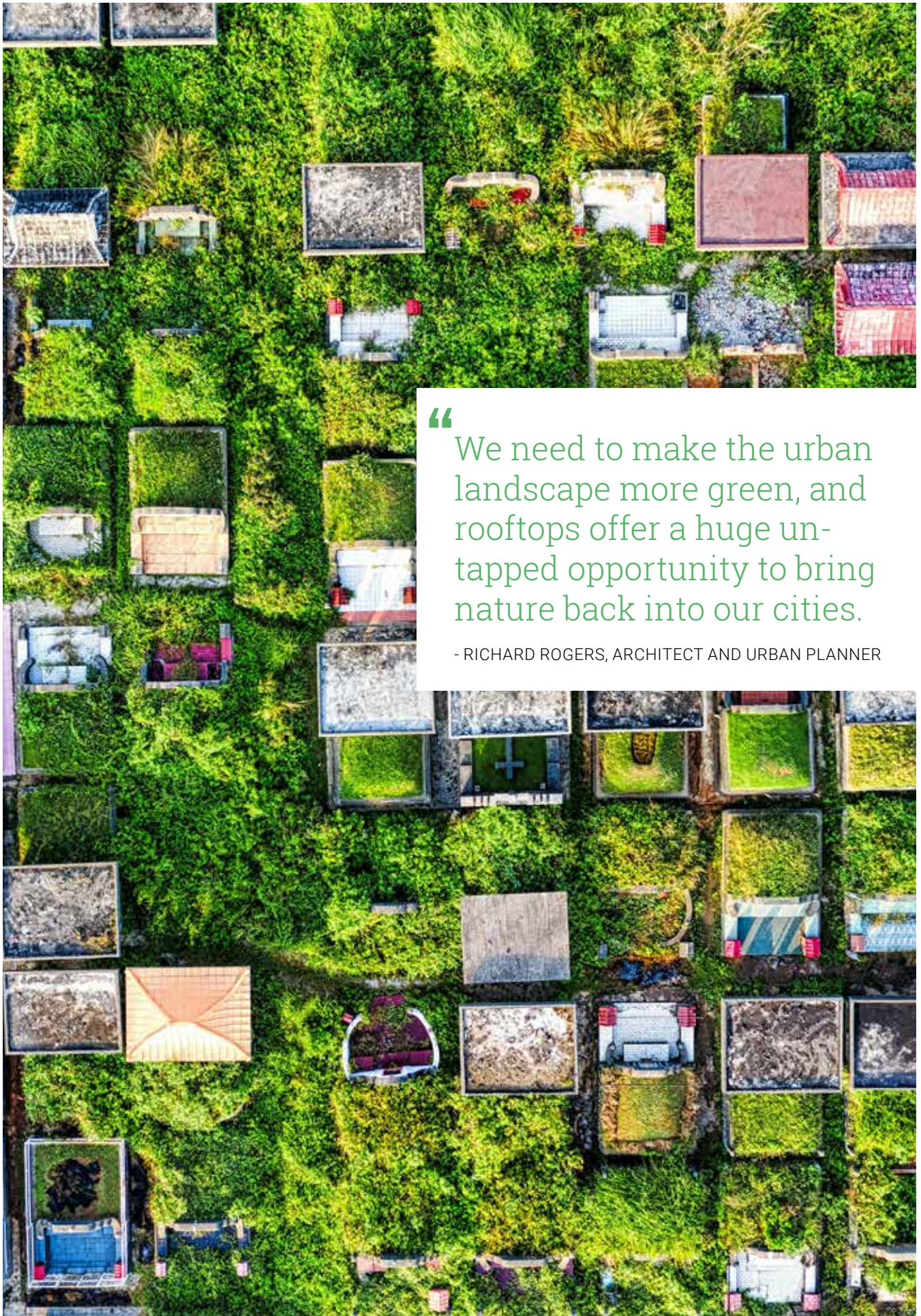
Frederick University



ROOFTOPS REIMAGINED:

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“ We need to make the urban landscape more green, and rooftops offer a huge untapped opportunity to bring nature back into our cities.

- RICHARD ROGERS, ARCHITECT AND URBAN PLANNER

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“ A building should give back the space it takes up on the ground by replacing it with a garden in the sky.

-LE CORBUSIER



INTRODUCTION:

This insight report explores citizen perspectives towards a green roof policy in Cyprus. Green roofs provide energy efficiency, support biodiversity, improve air quality, and support climate resilience, yet, their adoption faces obstacles, including policy gaps, limited financial incentives, and low public awareness.

A recent case study, co-designed by Frederick University and the Urban Gorillas NGO through the GREAT project (Games Realizing Effective and Affective Transformation), co-funded by the EU's Horizon Programme and UKRI, utilized an interactive game to gather community input on approaches to green roofs and proposes strategies for policy makers. This report offers evidence-based recommendations to guide policymakers, urban planners, and stakeholders in promoting green roof initiatives



Can games impact climate change?

Three hour
session
dedicated to
architects



The case study highlights how games can serve as a valuable bridge between public aspirations and policymaking, creating a foundation for long-term, inclusive urban planning in response to the climate crisis.



Three hour
session
dedicated to
citizens

BACKGROUND:

Can games impact climate change?

To achieve carbon neutrality by 2050, it is essential to foster active collaboration between citizens and policymakers in embracing sustainable urban solutions.

Developed by Frederick University and case study sponsor Urban Gorillas NGO, the approach leverages the power of digital gaming to explore the potential of urban rooftops transforming into green, climate-resilient spaces, the method enhances both awareness and public engagement.

The GREAT initiative positions games as effective tools for engaging citizens in policy-related activities. Within the green roof case study, the use of a “serious dilemma game”¹ is utilized to engage citizens and stakeholders in simulation scenarios surrounding green rooftop projects. This approach allows participants to engage in the benefits of green roofs as well as exploring incentive structures to overcome common barriers.

Urban Gorillas, a member of the European Creative Rooftop Network Foundation, identified the complexities of rooftop utilization as a policy area, which led to the creation of a “serious dilemma game.” The game fosters role-playing and problem-solving, giving participants a realistic view of the challenges and advantages involved in implementing green roofs as a climate solution.

In Cyprus, this initiative draws on both local and international insights, including the first green roof pilot on a mixed-use building established by the Cyprus Energy Agency. This rooftop project set a precedent, illustrating the potential for widespread green roof adoption across urban centers like Nicosia. Through face-to-face game sessions, the project enables citizens to voice their opinions and learn through the benefits of such an initiative.

The format facilitates two-way knowledge transfer, allowing citizens to better understand sustainable initiatives and the potential for policymakers to gain insights into public perspectives.

Five in depth 3-hour sessions have been held, including three with a diverse range of citizens, one dedicated to architects, and one dedicated to Urban Planning Students in their final year of studies, revealing the game’s effectiveness in promoting sustainable urban planning practices. Feedback from participants indicates that these sessions have deepened their understanding of green roofs’ social and environmental impact, and enhanced their openness to green initiatives. Ultimately, the case study highlights how games can serve as a valuable bridge between public aspirations and policymaking, creating a foundation for long-term, inclusive urban planning in response to the climate crisis.

¹ A tool to immerse players in complex, real-world scenarios that require critical thinking and decision-making, helping them understand multifaceted issues more deeply.

Collaboration with
the Cyprus Eergy Agency
for the European Climate Pact



Participants included
Academics, Urban
Planners, Members
of the Cyprus Energy
Agency, Design and
Urban Planning students,
Members of the Nicosia
Municipality and Ministry
of Agriculture.



Dissemination event on the Cyprus
Energy Agency green rooftop: Taking
the case study almost full circle,
the event gathered together over 30
participants on the green roof which
inspired the 'Rooftop Revolution
Case Study'. During the event case
study results were discussed and
participants were able to play a
shortened version of the DiBL game.





GREEN ROOFS DILEMMA GAME:

Rooftops Reimagined

Built on the 'DiBL' platform developed by Serious Games Interactive², “Rooftops Reimagined” is a multiplayer facilitator driven game which is designed to enable in-depth discussion and exploration. The game is divided into two parts.

PART 1

This presents the benefits of green rooftops, introduces various stakeholder perspectives—such as building managers, residents, and investors—and outlines challenges like safety, maintenance, and costs. Participants are also invited to propose and discuss incentives to overcome these barriers, considering the fairness of these incentives.

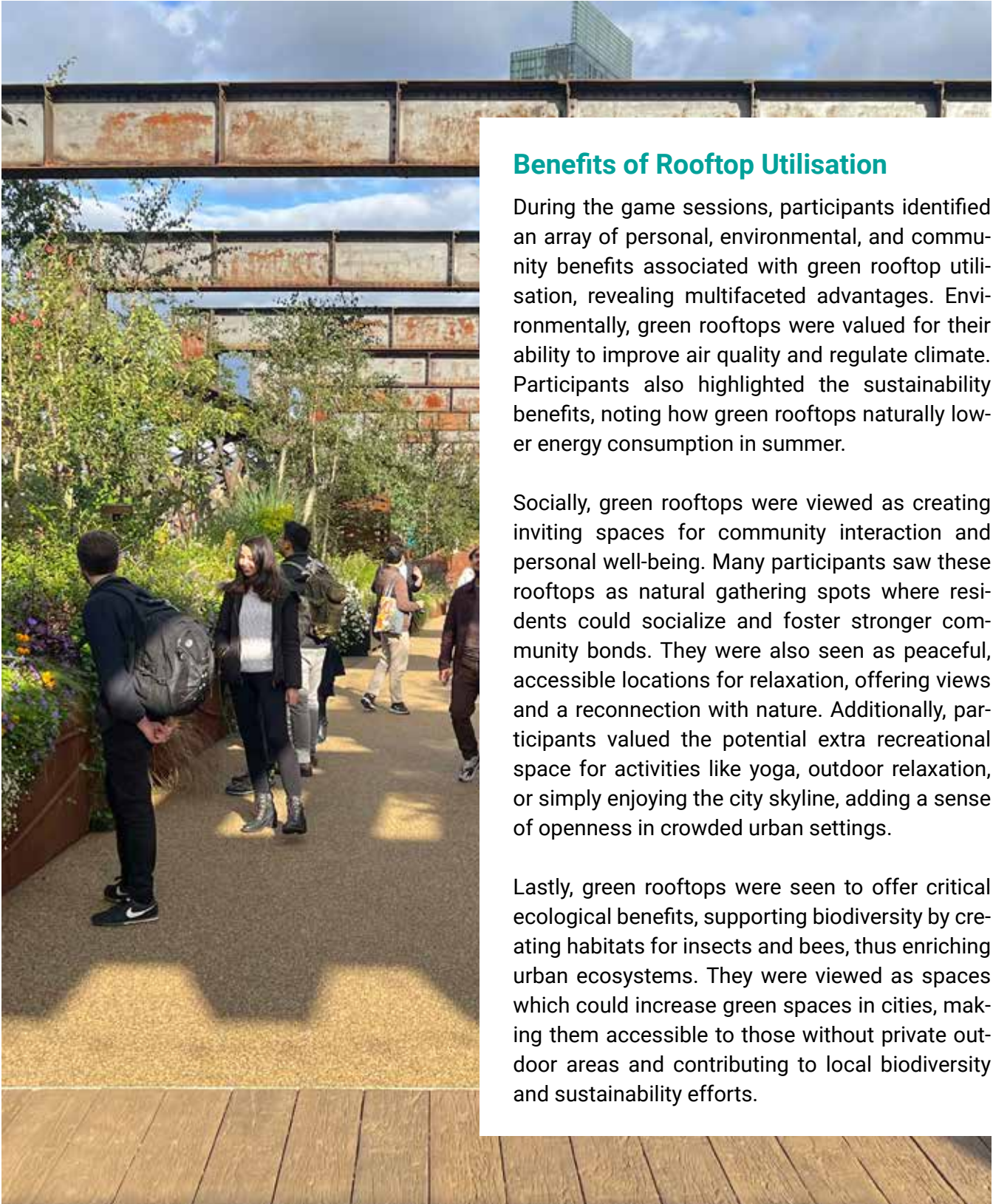
PART 2

Participants are assigned roles that differ from their own real-life positions, allowing them to explore viewpoints from different stakeholder perspectives. They debate, negotiate, and vote on policy incentives to achieve a fair consensus. A second dilemma round further develops this perspective-shifting approach, enhancing empathy and cooperative problem-solving.

Throughout gameplay, participants balance personal views with their assigned roles, debating and advocating for incentives they believe will be most effective. This structure encourages mutual understanding, demonstrating how inclusive incentives can drive successful projects centering around green infrastructure.

² DiBL. (n.d.). Retrieved from <https://dibl.eu/> (Accessed 10 September 2023)

FINDINGS:



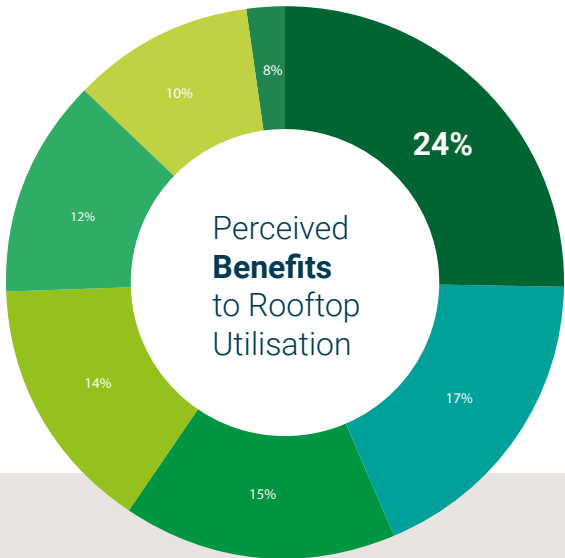
Benefits of Rooftop Utilisation

During the game sessions, participants identified an array of personal, environmental, and community benefits associated with green rooftop utilisation, revealing multifaceted advantages. Environmentally, green rooftops were valued for their ability to improve air quality and regulate climate. Participants also highlighted the sustainability benefits, noting how green rooftops naturally lower energy consumption in summer.

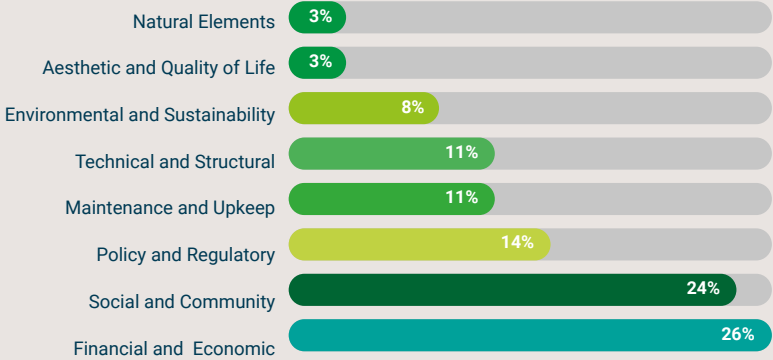
Socially, green rooftops were viewed as creating inviting spaces for community interaction and personal well-being. Many participants saw these rooftops as natural gathering spots where residents could socialize and foster stronger community bonds. They were also seen as peaceful, accessible locations for relaxation, offering views and a reconnection with nature. Additionally, participants valued the potential extra recreational space for activities like yoga, outdoor relaxation, or simply enjoying the city skyline, adding a sense of openness in crowded urban settings.

Lastly, green rooftops were seen to offer critical ecological benefits, supporting biodiversity by creating habitats for insects and bees, thus enriching urban ecosystems. They were viewed as spaces which could increase green spaces in cities, making them accessible to those without private outdoor areas and contributing to local biodiversity and sustainability efforts.

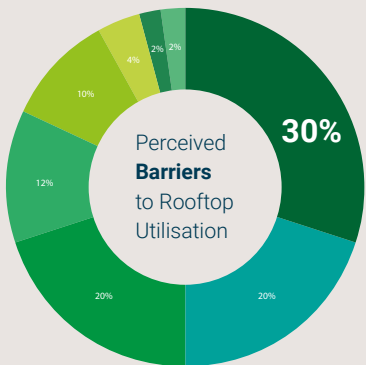
STATISTICS:



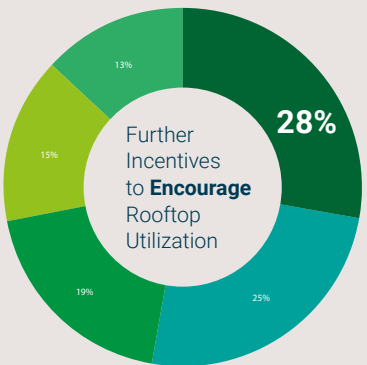
- Environmental and Climate
- Social and Recreational
- Urban Farming/ Food Production
- Functional and Practical
- Wellbeing
- Ecological and Biodiversity
- Aesthetic



Most Important **Challenges** to Rooftop Utilisation



- Maintenance and Upkeep
- Tenant Engagement/Cooperation
- Financial Constraints
- Safety Concerns
- Accessibility and Safety Concerns
- Child-Friendly Design
- Lack of Personal Space/ Privacy
- Design and Aesthetic Preferences



- Financial/ Cost-Related
- Community and Social Engagement
- Education and Awareness
- Safety and Protection
- Challenges and Feasibility



Stakeholder Engagement

Throughout the game, participants were invited through an anonymous vote, to choose which stakeholder in a green roof scenario they wanted to engage with first. The voting process highlighted distinct stakeholder priorities, illuminating the perceived importance of each group in the context of green roof initiatives.

In the first round, 64% of participants opted to speak with the “building manager,” reasoning that the manager, as the individual responsible for building operations, would play a key role in rooftop implementation. This choice underscores the building manager’s influence and the need for a strong management role in building operations. Urban planners in later interviews also noted that current building management in Cyprus is underdeveloped and awaits legislative support, which would facilitate such green initiatives.

In the second voting round, 69% of participants selected the “Top Floor Young Couple,” who had expressed a desire to own part of the roof. Participants reasoned that, given their proximity and vested interest, this couple would be among the most impacted by rooftop changes.

Finally, in the third round, 66% of participants chose to engage with “Parents with Children,” identifying them as another group with specific needs related to rooftop space use. Notably, “Senior Citizens” did not secure enough votes in any session, suggesting that their perspectives were perceived as less directly impacted or adequately understood by participants. However, feedback from focus groups suggested that participants already recognized the unique challenges faced by older residents in such settings.

This sequence of preferences highlights participants’ focus on stakeholders with active or vested interests in rooftop utilization, revealing the priority placed on those who would either manage or directly benefit from green roof initiatives.



Barriers to Rooftop Utilisation

After engaging with stakeholders, participants identified several pressing barriers to rooftop utilization, with safety, long-term sustainability, and maintenance being the top concerns. These issues reflect a strong focus on ensuring that rooftop spaces are both secure and durable over time. Financial constraints also emerged as a critical barrier, underscoring concerns about the economic feasibility of implementing such projects.

The barriers identified spanned several domains—financial, technical, social, and environmental. Economically, high initial costs, ongoing maintenance expenses, and limited financial support were seen as major challenges. These concerns highlight the need for effective funding mechanisms and incentives to make rooftop greening more accessible, especially for older buildings. In terms of technical and structural issues, participants emphasized the importance of proper planning, including the use of high-quality waterproofing materials and drainage systems to prevent water leakage and structural damage. Additionally, the perceived level of workmanship, particularly in Cyprus, was identified as a significant concern.

Climate considerations were also a key focus, particularly the harsh Cypriot sun. Participants recommended using drought-resistant plants and efficient irrigation systems to maintain green roofs

during the long, hot summer months. They also raised concerns about the environmental impact of water usage for rooftop gardens, although solutions like utilizing water lost from air conditioning units were suggested.

Socially, the creation of communal rooftop spaces was seen positively for fostering community interaction and providing recreational areas. However, concerns about privacy for top-floor residents and the need for child-friendly designs also emerged. Disagreements over rooftop management in multi-tenant buildings were identified as another potential obstacle.

The barriers to rooftop utilization identified during the game sessions were multifaceted, with significant challenges across financial, technical, social, and environmental domains.

On the environmental side, participants pointed to challenges related to climate suitability, water availability, pest control, and air quality. Additionally, concerns about “greenwashing” were raised, with some participants suggesting alternative green infrastructure solutions, such as planting more trees along streets and creating walkable green spaces, to achieve urban greening without the complexity of rooftop gardens.

The barriers to rooftop utilization identified during the game sessions were multifaceted, with significant challenges across financial, technical, social, and environmental domains. Addressing these issues requires a holistic approach that includes effective funding, technical expertise, careful climate considerations, and community-focused planning.

POLICY INSIGHTS:

Suggestions for Advancing Green Rooftop Utilization

The following insights have emerged as key considerations for successfully implementing a green rooftop policy. These suggestions are designed to inform and guide the development of policies and incentives that will foster the adoption of green rooftops. They emphasize the need for flexible, inclusive, and sustainable approaches to integrating green rooftops into urban environments.

Establish Clear Communication Frameworks

Policymakers should mandate the creation of structured communication channels between residents, building managers, and property owners. This will ensure collaborative planning and prevent cost increases linked to maintenance needs and operational challenges of green rooftops.

Ensure Equity and Transparency in Incentive Structures

Develop and enforce guidelines for incentives that ensure fairness in the distribution of benefits. Policies should prevent misuse by establishing clear and transparent criteria to guarantee that all stakeholders, including economically disadvantaged residents, have access to the benefits of rooftop greening.

Incentivize Long-Term Sustainability

Incentive programs should be structured to reward long-term commitment to sustainability. Policies should prioritize green roofs that offer lasting environmental and economic benefits, ensuring that such projects continue to support climate resilience and energy efficiency over time.

Provide Financial Support for Disadvantaged Residents

Implement financial mechanisms, such as subsidies, rent discounts, or reductions in common expenses, to make green rooftops more accessible to low-income residents. This will ensure that rooftop greening initiatives are inclusive and do not exacerbate existing social inequalities.

Support Market Differentiation

Through Green Certifications Encourage property owners to invest in green rooftop solutions by offering incentives for obtaining 'green building' certifications. These certifications should be linked to increased property value, making sustainable building practices more appealing to investors and developers.

Invest in Skill Development and Capacity Building

Policymakers should allocate resources for targeted training and skill development programs for building managers, architects, developers, and other relevant stakeholders. This will ensure that those responsible for green roof implementation have the necessary expertise to execute and maintain these systems effectively.

Adopt Flexible Policies for Varied Building Types

Recognize the diversity of building types and economic contexts by adopting flexible policies that accommodate the unique needs of older buildings and properties with different financial capabilities. This approach will allow green rooftop projects to be scaled and adapted to a variety of urban settings.

Provide Evidence and Data

Policymakers should ensure that architects, developers, and property owners have access to comprehensive data on the benefits and costs of green roofs. Providing quantitative evidence on energy savings, environmental benefits, and cost reductions will facilitate informed decision-making and encourage wider adoption.

Extended Warranty Periods for Green Roof Installations

Policies should incentivize green roof installations by offering extended warranty periods. This reduces the perceived risk for property owners and makes green roofs a more attractive investment by ensuring long-term durability and performance.

Implement Clear Resident Agreements

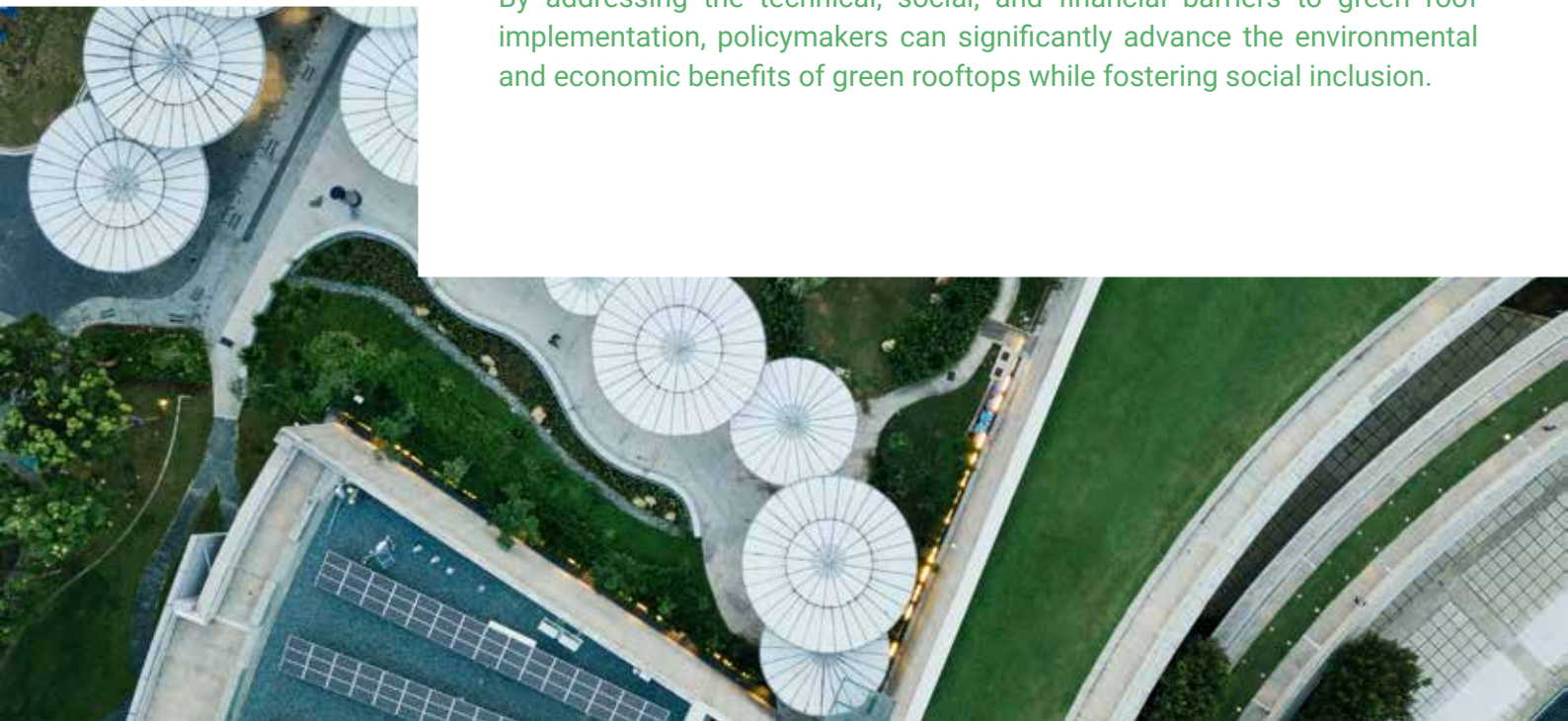
Establish policies that require residents to enter into formal agreements regarding the responsibilities and benefits of maintaining green roofs, similar to those for photovoltaic (PV) panel installations. This will clarify expectations and encourage greater resident participation in rooftop projects.

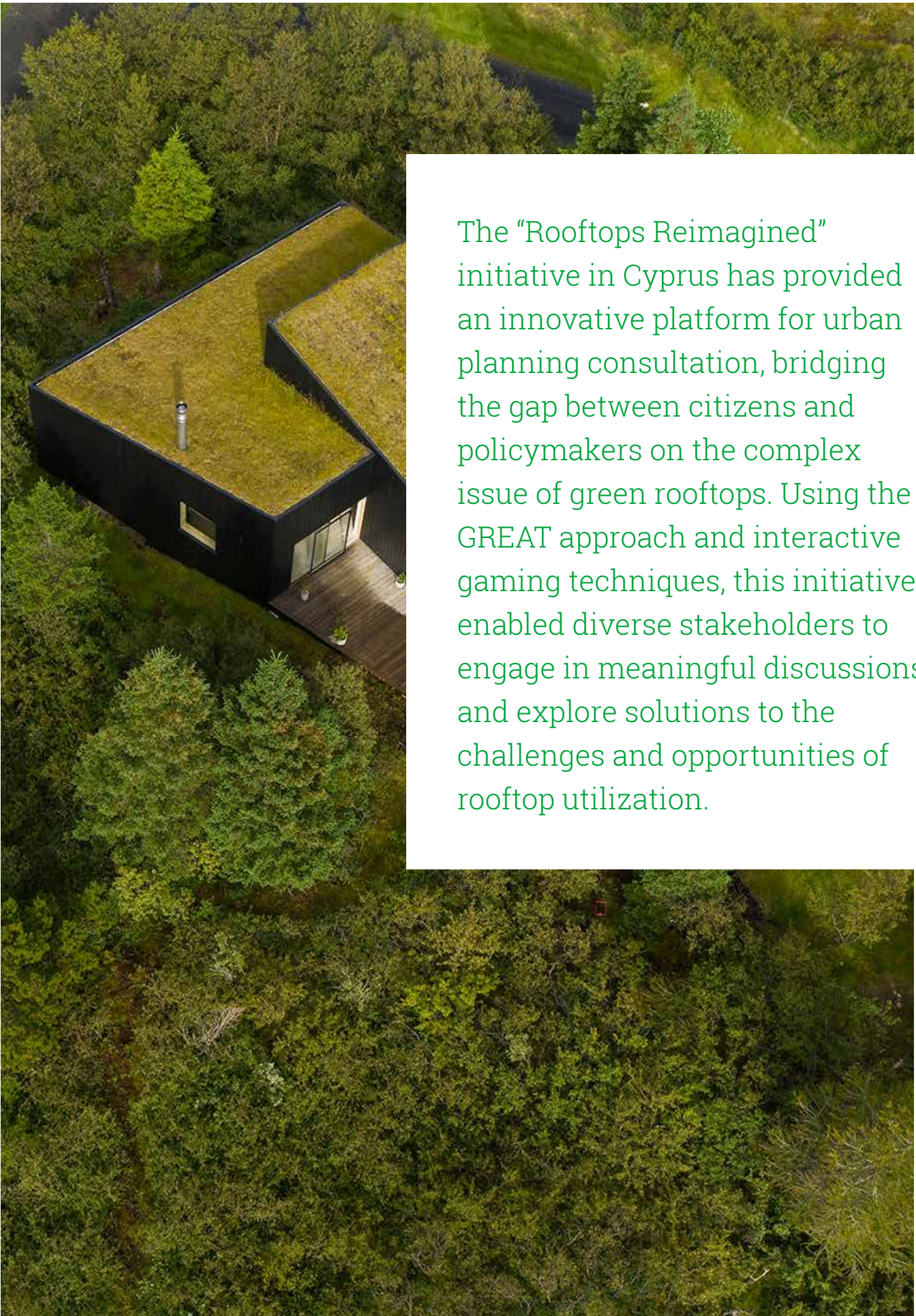
Anticipate Diverse Developer Responses

To foster collaboration and support, it is essential to emphasize the potential advantages of green roofs, including increased property value, enhanced corporate social responsibility (CSR) opportunities, and marketing benefits that developers can leverage to strengthen their portfolios and appeal to eco-conscious consumers.

These policy insights outline actionable steps for local and national governments to promote the widespread adoption of green rooftops.

The key focus areas include incentivizing sustainability, providing financial support for disadvantaged residents, ensuring fair and transparent policies, and supporting education and training for all involved stakeholders. By addressing the technical, social, and financial barriers to green roof implementation, policymakers can significantly advance the environmental and economic benefits of green rooftops while fostering social inclusion.





The “Rooftops Reimagined” initiative in Cyprus has provided an innovative platform for urban planning consultation, bridging the gap between citizens and policymakers on the complex issue of green rooftops. Using the GREAT approach and interactive gaming techniques, this initiative enabled diverse stakeholders to engage in meaningful discussions and explore solutions to the challenges and opportunities of rooftop utilization.

CONCLUSION:

Bridging the Gap for a Sustainable Future

The findings from the initiative reveal a set of pressing challenges and opportunities for green rooftop implementation, spanning financial, technical, social, and environmental domains. Financial constraints emerged as a key barrier, particularly the high initial costs, ongoing maintenance, and lack of financial support. Participants emphasized the need for targeted incentives, subsidies, and effective funding mechanisms to make rooftop greening projects accessible to a broader range of buildings and residents.

On the technical front, the importance of high-quality planning and materials was stressed, especially regarding waterproofing, drainage, and structural integrity. Given Cyprus' climate challenges, participants suggested solutions such as drought-resistant plants and efficient irrigation systems to ensure the long-term sustainability of green rooftops. Furthermore, climate suitability and the availability of water were identified as critical environmental concerns that must be addressed for green roofs to thrive.

Socially, the initiative highlighted the need for greater community engagement, particularly in multi-tenant buildings. While shared rooftop spaces were seen as valuable for fostering community interaction, participants noted privacy concerns and the importance of designing child-friendly spaces. Collaborative decision-making among

residents, building managers, and developers emerged as a necessary condition for successful rooftop projects, particularly in navigating shared-space etiquette and addressing accessibility concerns.

The environmental benefits of green rooftops, such as improved air quality, reduced heat island effects, and increased biodiversity, were widely recognized. However, participants stressed the importance of strategic implementation to maximize these benefits, particularly in areas with climate and water challenges. The project also revealed that green rooftops could enhance the value of properties, contribute to corporate social responsibility (CSR) goals, and offer significant community benefits, especially when applied to public buildings.

By integrating diverse perspectives and adopting an innovative, game-based consultation model, "Rooftops Reimagined" has demonstrated the power of inclusive planning processes to address complex urban issues. The insights gathered from this initiative serve as a roadmap for policymakers, developers, and urban planners to create more sustainable, community-driven solutions for green rooftops. Moving forward, these findings should inform the development of policies, incentives, and best practices that not only overcome the barriers to rooftop greening but also encourage its wider adoption in urban environments.



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