

Pilot Roadmap

Apiculture



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Introduction

Apiculture plays a critical role in sustaining biodiversity, food security, and resilient local economies, particularly in rapidly urbanizing territories such as the Aburrá Valley in the Medellín Province in Colombia. Pollinators are essential for the reproduction of a large proportion of flowering plants and agricultural crops, yet they are increasingly threatened by habitat loss, climate change, unsustainable agricultural practices, and limited public awareness. In this context, strengthening apiculture systems and pollinator conservation efforts is both an environmental priority and a strategic opportunity for sustainable territorial development.

Through a participatory process led by ICLEI Colombia, stakeholders from government, academia, civil society, the private sector, and beekeeping associations collaboratively developed the Aburrá Valley Pollinator Roadmap. The process included interviews, workshops, and multi-stakeholder dialogues to identify priorities and strengthen territorial governance for pollinator conservation. Its creation marks a significant step towards overcoming fragmented efforts, enabling collective impact, and fostering long-term governance for biodiversity stewardship. The Network is essential for articulating territorial efforts, scaling solutions, and ensuring that pollinator protection becomes a cross-cutting priority in development agendas.

This section presents the Apiculture Pilot as a comprehensive and forward-looking initiative designed to address these challenges through an integrated, multi-stakeholder approach. It outlines a shared long-term vision, a diagnosis of current conditions, and a set of strategic pathways to guide action.

The pilot emphasizes the importance of combining scientific knowledge, community engagement, policy alignment, and innovative practices to protect and enhance pollinator populations and their ecosystems.

By bringing together diverse actors—including communities, research institutions, public authorities, and the private sector—the Apiculture Pilot seeks to foster collaboration, strengthen capacities, and promote scalable solutions. Ultimately, it aims to position the Aburrá Valley as a leading example of how apiculture and pollinator conservation can contribute to biodiversity protection, climate resilience, and inclusive green development.



Vision

By 2050, the Aburrá Valley Pollinators Network will be a globally recognized model of biodiversity stewardship, innovation, and sustainable development. It will operate as a fully integrated, multi-stakeholder ecosystem connecting communities, research institutions, the private sector, policymakers, and civil society. Through advanced digital platforms, a comprehensive knowledge base, and adaptive governance structures, the Network will drive large-scale conservation of pollinators and their habitats, support resilient green economies, and promote food security and territorial autonomy.

The Network will empower citizen engagement, ensure the mainstreaming of pollinator-friendly practices across agriculture, urban areas, and industry, and facilitate international replication of its sustainable models. By 2050, pollinators and their ecosystems will be fully embedded into the social, economic, and political fabric of the Aburrá Valley, creating a thriving, biodiverse, and climate-resilient territory where human development and ecological health are mutually reinforcing.

Baseline

During the Baseline workshop, the stakeholders have identified different challenges.

The **baseline workshop** played a critical role in identifying key challenges across policy, technology, finance, and social dimensions. Four main challenges were prioritized:

- (1) knowledge gaps and fragmented data systems,
- (2) habitat fragmentation and limited restoration efforts,
- (3) low adoption of pollinator-friendly agricultural practices, and
- (4) limited structured capacity-building and awareness initiatives.

For each one, stakeholders provided details on the state-of-the-art of the challenge, giving an overview of the baseline (policy, technology, social adaptation, finance, etc.).

Here below each challenge is reported.

1. Knowledge gaps

- Knowledge gaps about pollinators and their ecosystems.
- Baseline information partially available; need for updated, systematised and locally focussed data.
- Fragmented research efforts.
- Isolated citizen science initiatives.
- No unified monitoring framework.

2. Habitat restoration and conservation

- Restore, connect, and protect pollinator habitats to increase biodiversity and ecosystem resilience.
- Fragmented ecosystems.
- Limited urban pollinator infrastructure.
- Isolated restoration efforts.
- Habitat fragmentation and urban expansion affecting connectivity.

3. Promotion of pollinator-friendly agricultural practices

- Limited adoption of pollinator-friendly practices.
- Emerging but unstructured green entrepreneurship.
- Weak market differentiation for pollinator-positive products.
- Conventional practices with pesticide dependence in some areas.

4. Capacity Building and Awareness Raising

- Growing interest but limited structured educational programming.

Pathways

During the workshops, the participants started from the challenges previously identified and focussed on solutions and initiative that could be implemented to reach the vision. Building on this baseline, stakeholders co-developed four strategic pathways (Annex 8¹), each with clear objectives, expected outcomes, and concrete action plans:

- Research and Knowledge Generation, aimed at consolidating scientific and applied knowledge to inform decision-making;
- Habitat Restoration and Conservation, focused on improving ecological connectivity and restoring pollinator habitats;
- Promotion of Pollinator-Friendly Agricultural Practices, supporting sustainable production systems and green market development;
- Capacity Building and Awareness Raising, strengthening public engagement and technical capacities.

These pathways reflect a balance between scientific evidence, territorial needs, and practical implementation, ensuring that the roadmap is both ambitious and grounded. Below, for each challenge area, details are provided in terms of objectives and outcomes of the initiative and actions to be implemented.



1. Annex 8 of Deliverable 2.2: Nature-Positive Economy (NPE) Pilot Roadmaps, published in July 2026, available at gonaturepositive.eu/resources

1. Research and Knowledge Generation

Objective

To generate scientific and applied knowledge on the identification, distribution, biology, ecosystem services, and extinction risk of native pollinator species in Valle de Aburrá.

Expected Outcome

Consolidated knowledge base to inform conservation planning and public policy decisions.

Plans

- By 2030: Conduct baseline assessment of pollinator species and habitats; Species mapping, biodiversity monitoring, risk assessments, ecosystem service valuation studies, citizen science data collection; Train stakeholders in data collection and use.
- By 2050: use advanced technologies and consolidate open-access knowledge systems; institutionalisation of education programs.

2. Habitat Restoration and Conservation

Objective

To restore and conserve pollinator habitats by reducing deforestation, creating ecological corridors, and protecting pollination zones across the Aburrá Valley.

Expected Outcome

- Improved habitat connectivity and increased availability of floral and nesting resources for pollinators.
- Connected ecological corridors.
- Increased pollinator populations.
- Enhanced ecosystem resilience and climate adaptation.

Plans

- By 2030: Native plant restoration, corridor design, reforestation campaigns, establishment of pollinator gardens and conservation agreements; Identify priority restoration areas; Plant native floral corridors; Install native beehive and solitary bee hotels.
- By 2050: Empower citizen participation and community leadership; Train communities in habitat creation.

3. Promotion of pollinator-friendly agricultural practices

Objective

To promote sustainable agricultural practices that protect and enhance pollinator populations.

Expected Outcome

- Increased adoption of pollinator-friendly practices.
- Certified pollinator-positive products.
- Strengthened green local economy.
- Reduced pesticide uses and increased adoption of biodiversity-friendly farming systems.

Plans

- By 2030: Training workshops and modules; Demonstration farms implemented with integrated pest management; Promotion of crop diversification and functional gardens.
- By 2050: Install native beehives in farms; Develop certification scheme; Provide seed funding and microloans.

4. Capacity Building and Awareness Raising

Objective

To strengthen public awareness and technical capacities regarding the importance of pollinators and the need for their protection.

Expected Outcome

Increased societal engagement and behavioural change supporting pollinator conservation.

Plans

- By 2030: Workshops, community events, media campaigns, educational materials, webinars, school programs developed and launched.
- By 2050: Position certified products in national and international markets; strengthen entrepreneurship ecosystem; Mainstream pollinator protection across all sectors (urban, agriculture, industry).

Summary

The roadmapping process for the Apiculture Pilot in the Aburrá Valley was built through a participatory, multi-stakeholder approach, with a strong emphasis on vision-building and priority-setting workshops. The workshops enabled the alignment of diverse actors and the co-creation of a long-term vision, positioning the Pollinators Network as a transformative platform for biodiversity conservation, sustainable development, and territorial resilience by 2050.

Through these sessions, stakeholders defined a shared vision of a fully integrated ecosystem connecting communities, research institutions, the private sector, policymakers, and civil society.

The vision highlights the role of digital tools, knowledge systems, and adaptive governance in scaling conservation efforts, strengthening green economies, and embedding pollinator protection into the social and economic fabric of the territory. A key outcome of the process was the definition of a governance structure and the organization of the network into seven core components: governance and coordination, knowledge generation, capacity building, communication, territorial articulation, sustainable production, and conservation.

This structure provides a clear and actionable framework to guide implementation and ensure coordination across sectors. Some challenges (criticalities) were encountered during the process, particularly related to data limitations, fragmented information, and coordination among diverse stakeholders. However, these were addressed through continuous dialogue, adaptive facilitation, and the integration of multiple engagement methods, including workshops, surveys, and field visits.

Overall, participant feedback was highly positive. The process was recognized for creating meaningful spaces for collaboration, strengthening inter-institutional relationships, promoting knowledge exchange, and increasing awareness of the ecological and economic importance of pollinators.

A key takeaway is the importance of combining technical discussions with experiential learning, which enriched stakeholder engagement and contributed to a more robust, inclusive, and actionable roadmap. The result is a comprehensive strategy that not only defines a long-term vision but also provides concrete steps to advance towards a biodiverse, climate-resilient, and Pollinator Network.



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