

# LESSONS FROM BIODIVERCITIES

**Matías Ramírez**

*University of Sussex, UK.*

BiodiverCities offers a truly *transformative* vision of the city in which human beings can live, work and evolve in harmony with their environment based on principles of biodiversity and sustainability.

Cities are centers of creativity and innovation, culture and learning, and can therefore be drivers of a new ecological infrastructure in which parks, gardens, open spaces, and water catchment areas thrive and support healthy ecosystems and biodiversity. Moreover, a common thread to the BiodiverCity narrative is its commitment to innovation for transformations and the *building of alternative pathways* of development based on new *system rules* that are tied to improving the health and well-being of human and non-human inhabitants. As Luis Inostroza explains in his article, the BiodiverCity challenges the narrow vision of the pragmatic and economic city. However, the merit of

this publication is that it also tackles “how” this transformation can take place and, through an in-depth analysis of case studies, the specific institutional changes required to make this happen. In this conclusion, we summarise some of the common themes emerging, the outstanding examples of contributions towards systemic change, and also perhaps those areas where more attention is required.

## VISIONS, IMAGINARIES, AND EXPERIMENTS

BiodiverCities represents a new imaginary around which new visions of cities can coalesce. Diana Ruiz and Andrés Ibáñez’s discussion of city metaphors –meta-human city, wild city, unfinished city, overlapping city, bio-performative city, biomimetic city– pick up some of the rich debates concerning different imaginaries cities can em-

brace to become **fairer, healthier and more resilient**. The concept of *policy experimentation* is critical here. Experimentation as a specific policy tool is built on the premise that there may be more than one correct answer for the same problem and we can learn from small-scale experiments to see how these vary in different context. This publication provides a rich tapestry of experiments combining *multi geographical scales* (national, regional, and local) and *multi-system-level changes* (large-scale, small-scale) in which BiodiverCity transformations are occurring. Indeed, the case studies highlight at least two types of experiments taking place. The first type, which could include the *Synecoculture* case authored by Masatoshi Funabashi, involves a control group where the investigations occur in controlled laboratory conditions where other variables are constant. The second type of

experiment, which the case of de Ceudel is an example, authored by Eline Van Remortel, takes place in real-life society through the interaction of many actors and often at multi-scales. As Menno Schilthuis underlines in his article, when this happens, urban environments can change very quickly, creating a space for questioning established rules (or what transformative innovation calls “second-order learning”). The task of academics and others is to learn from these experiments and draw conclusions about how to replicate and circulate the findings.

## SYSTEM GOVERNANCE AND SYSTEM CHANGE

Many of the case studies correctly identified that the problems that cities face today are *systemic* in nature. As Carlos Eduardo Correa explains, potential solutions need

integrative processes, for example, rivers with urban water systems. For Diana Ruiz and Andrés Ibáñez, the key where these can come together is ecosystem solutions (biological, social, technological-artificial elements).

However, as Inostroza points out, the typical process of urban expansion in Latin America still often takes place with no comprehensive planning that respects ecosystems and the informality of urban growth that constantly trashes highly biodiverse environments. Therefore, it is necessary to double down on why existing unsustainable systems continue to reproduce and are proving so difficult to change? This means addressing fundamental questions. How do we pass from small-scale experiments to large-scale changes? How do we break lock-ins to unsustainable systems, and what is necessary to achieve “tipping points” in which

new systems begin to consolidate? Part of the answer may lie in working with multi-scale cooperative international agreements referred to by Tadashi Matsumoto and others, such as the “New Urban Agenda,” adopted by the United Nations Conference on Housing and Sustainable Development in October 2016. However, Brigitte Baptiste’s eloquent contribution is perhaps more important. She argues that achieving systemic change in socially just and sustainable ways means looking at what makes cities unique –their histories, memories, authors, aesthetics, conflict, and scars– and in these special features lie the idiosyncratic solutions to apparently intractable problems. What is, therefore, necessary, as Germán Andrade argues, is that the concept of BiodiverCity is kept open, flexible, and regarded as an evolving category. What is required is that these small experiments articulate

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the challenge, the new rules required, and the potential these offer for new pathways of city development.

### TRANSFORMATIVE POLICY AND BUILDING A COMMONS

Perhaps the biggest challenge we face in transforming cities relates to the policy process to support transformations. Without public policy's legitimacy (and funding), urban transformations will remain a distant dream. The discussion in the publication emphasized three crucial aspects of policy change; the first concerns the need for new forms of *policy governance*, of which several excellent examples were discussed. Eline Van Remortel's discussion on how policy partners lead not through coercion or imposition but through connecting and providing vision is a perfect example of a practical "light-touch" policy approach. And the latter is more likely to effectively address complex problems such as that identified in Leon Kapetas and Piero Pelizzaro's piece on the greening housing program that led to gentrification and displacement of poor areas. A careful analysis of *policy mixes* is required. As Van Remortel puts it, "Project managers should not solidify the desired outcome but rather create a framework that ensures safety, legal, social and environmental measures while providing a space for creativity and innovation."

Three additional policy issues were touched upon that are crucially important in cities. Firstly, Felipe Suárez-Castro and colleagues' excellent article on monitoring and measuring progress on biodiversity through indicators. The BiodiverCity project must promote the use of broad indicators and metrics that allow it to identify its progress in terms of sustainability in all its dimensions and scales (e.g.,

local, regional, global). This includes sustainability indicators such as the "driver-pressure-state-impact-response" (DPSIR) model and others that consider natural capital stock and flow. These are important because they go beyond linear causality and instead look at different interaction levels and recognize the heterogeneity of urban spaces (biophysical and socioeconomic).

Secondly, Rigoberto Lugo and Pablo Lazo cover the vital issue of investments for the BiodiverCity project. The critical point here is that while a diverse portfolio is required from public and private sources, investment in BiodiverCities must undergo a fundamental change in *directionality*. And it must do so by guiding investment towards changing the underlying principles that drive these systems towards a circular, low carbon, more decentralized, local, and resource-efficient economy. The work of Penna et al. (2021) and others on coupling short-term and long-term finance with longer-term returns could help drive new infrastructure and ecosystem services.

Thirdly, Paola Morales and Claudia Álvarez address the need to transform the current mechanisms, tools, and instruments guiding urban planning. The authors call for the development of new planning forms that explicitly incorporate ecosystems and biodiversity, thus enabling a comprehensive view of the urban phenomenon at a landscape scale and the breaking of paradigms around managing cities exclusively based on the urban grey. This perspective highlights the importance of incorporating natural capital in urban planning to ensure human well-being and quality of life in cities.

Finally, a critical aspect emphasized by many of the case studies is that beyond democratic and participatory spaces, the establish-

ment of "commons" in urban areas is necessary. Commons can come in many forms. Belmonte's article on the Joys of Urban Farming showed that behavior change could emerge through re-designing farming narratives. Commons can also arise through the construction of urban ecosystem services. As Germán Andrade underlines, it is impossible to enjoy the benefits of the BiodiverCity where there are weak public services (for example, lack of urban sanitation, insecurity, and the lack of evidence for the natural benefits for the people's well-being). Strong commons can come in the form of collaborative networks that are as diverse as they are broad such as Jennifer Lenhart and Mateo Hernandez's discussion of citizen science. Likewise, these commons can emerge from the new capacities, values, and attitudes of citizenships that actively shape their territory by reconciling their relationship with nature, as Juliana Montoya points out. This new transformative citizenship ranges from learning about natural history to weaving new narratives through acts of contemplation and curiosity and, more so, awareness of the link between human well-being and biodiversity.

### WHAT DO WE STILL NEED TO TALK ABOUT?

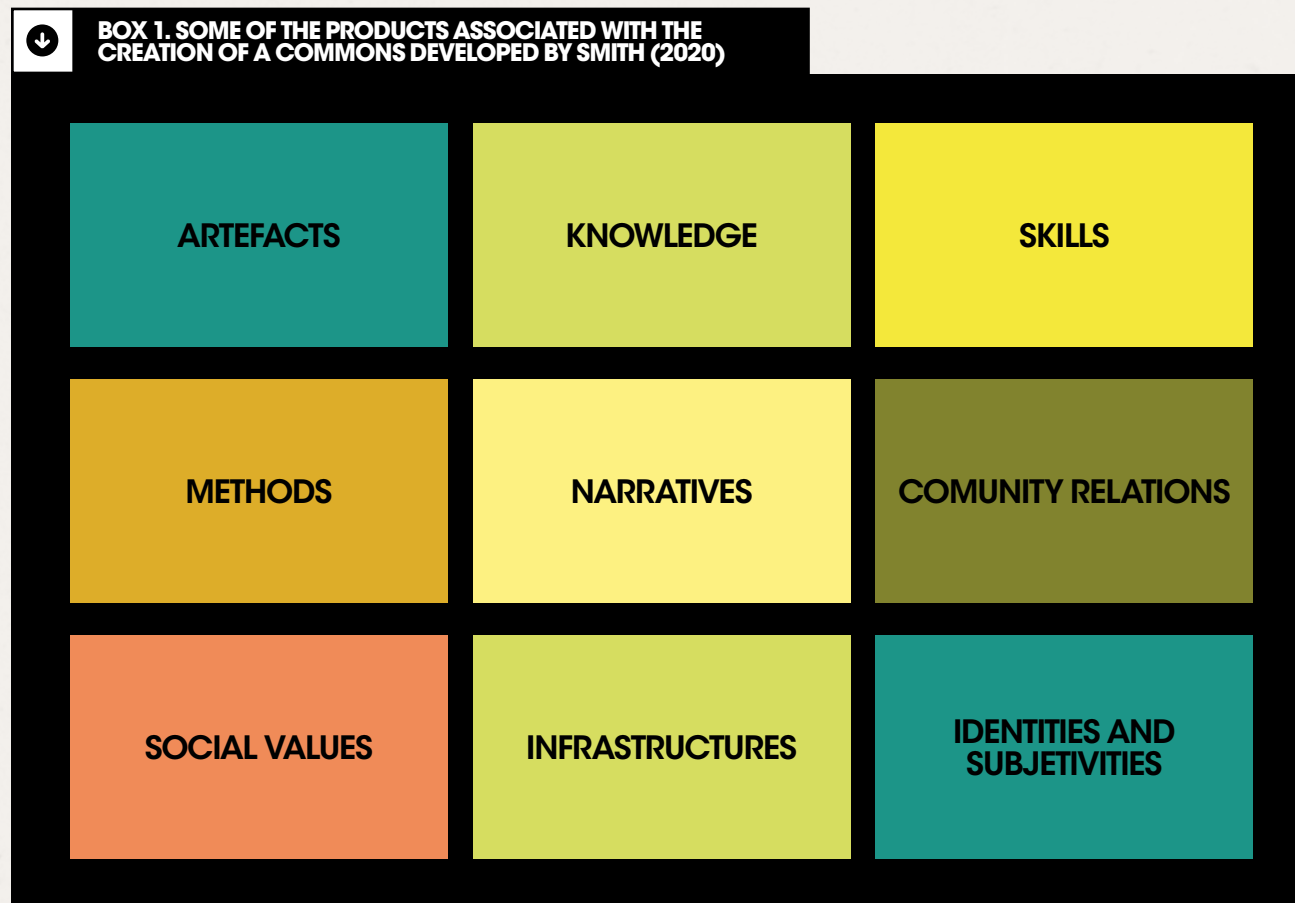
We are left with the thorny issue of how broader policy practice can support BiodiverCity experiments in Latin American cities? The discussion highlighted some key areas where positive policy change is required, including Nicolás Galarza and Edward Buitrago's discussion of regulated land use. However, broader issues are associated with the policy governance system in Colombia and Latin America. Conventional arrangements for funding and evaluating funding built around highly technocentric approaches and short-term achievement of

crude quantifiable indicators leave the margin for bottom-up transformative innovation initiatives minimal. Underlying this discussion is how evaluation techniques are used and above all avoidance of rudimentary indicators as proxies of performance. It is necessary to establish spaces in which more *formative forms of evaluation* can evolve that promote learning and progress towards sustainability.

### EXPERIMENTS AND CASE STUDIES

In table 1. we undertake a cursory grounded analysis of 11 case studies that show the most significant potential for systemic transformation. This indicates that all the projects involve the construction or production of a common non-excludable resource (in other words can be openly shared).

The box below identifies categories around which some of these shared resources can be understood. These can include tangible commons, such as infrastructures and artifacts. They can also include intangibles such as skills, methods, and values. These activities are essential, for constructing a commons is a necessary feature for transformations to BiodiverCities and need to be scaled up.



Secondly, most of these projects combine different specific features associated with transformative innovation methods. Some are experimental, some more policy-led, others more grass-roots-based. All have some potential for transformation, although system change is articulated

more clearly in some than others. Note should also be made of some projects, such as the Green Rooftops study in Rio de Janeiro, explicitly targeting vulnerable or economically poorer population sectors through BiodiverCity initiatives. These projects must be highlighted, for the merging of

improved nature with reduction of exclusion and poverty can occur here. These projects are liable to impact the population's well-being significantly and will also benefit from a broader network of actor participants. Therefore, they have greater potential for transformation and changing social rules.

Table 1. Transformative features of Case Studies



**RIVERS OF CHANGE (MONTERIA)**

**EXPERIMENTAL FEATURE**

Re-definition of spaces between city and river

**PRINCIPAL ACTOR(S)**

Engineers, city public officials

**POLICY SUPPORT**

Financing instruments, first refusal and priority development; and financing instruments such as valuation and capital gains

**CHALLENGE DRIVEN**

River degradation, urban anti-social areas

**BUILDING OF COMMONS**

Bank alongside river (as a public place)



**PLANNING FROM GROUND UP (GEF)**

**POLICY SUPPORT**

Identifying networks of interconnected territories of relevance to maintain critical ecosystem processes, manual of good practices

**PRINCIPAL ACTOR(S)**

City officials, academics, engineers

**BUILDING OF COMMONS**

Biodiversity protection

**CHALLENGE DRIVEN**

Extreme drought, urban expansion, overexploitation of natural resources; destruction and contamination of urban wetlands



**WIN-WIN SCENARIOS (VILLAVICENCIO)**

**PRINCIPAL ACTOR(S)**

City officials

**BUILDING OF COMMONS**

Buildability rights for construction and regulation of ownership of environmental areas

**POLICY SUPPORT**

Land Management plan to recover six of the more than 270 wetlands and their associated biodiversity. Regulatory framework allows landowners to see protected land as a benefit.

**CHALLENGE DRIVEN**

Loss of ecosystem services due to urbanization and noncompliance. Land movements, deforestation, landfilling, draining of swamps, hunting of animals, and pesticides



**VALUE OF URBAN FOREST (MEDELLIN)**

**PRINCIPAL ACTOR(S)**

Focus group in the pilot area with various stakeholders (public, institutional, community)

**EXPERIMENTAL FEATURE**

Monitoring methodologies, experimental plots

**CHALLENGE DRIVEN**

Contribution of streams bio-diversity to human well-being.

**BUILDING OF COMMONS**

Benefits of green areas to inform urban planning processes, a baseline for ecosystem supply



**GREEN ROOFTOPS (RIO DE JANEIRO)**

**PRINCIPAL ACTOR(S)**

Researchers

**BUILDING OF COMMONS**

Most populated zones have the highest potential (favelas).

**EXPERIMENTAL FEATURE**

Potential for Rooftop agriculture to address food insecurity. Test model in different ecosystems and types of inhabitants.

**CHALLENGE DRIVEN**

Methodology to determine areas socially vulnerable and potential for rooftop agriculture.



**THE SWEET CITY (COSTA RICA)**

**PRINCIPAL ACTOR(S)**

Naturalists, city officials

**POLICY SUPPORT**

Back casting as a planning strategy

**BUILDING OF COMMONS**

Planning and management of public spaces, roads, and buildings. Call to live in a forest within the city.

**CHALLENGE DRIVEN**

Unplanned diversification



**NEIGHBOURHOOD SCALED BIODIVERCITIES (BOGOTA)**

**EXPERIMENTAL FEATURE**

Floristic inventories

**PRINCIPAL ACTOR(S)**

Community science, observation to fill information gaps

**POLICY SUPPORT**

NGO Grupo "Ecomunitario" to foster better management practices for urban green spaces, coordination of common objectives with policy actors

**CHALLENGE DRIVEN**

High biodiversity area degradation

**BUILDING OF COMMONS**

Multi-functional vision of Chapinero district and ecological corridor



**URBAN BIOTOPES (SHENZHEN)**

**PRINCIPAL ACTOR(S)**

Architecture firms

**CHALLENGE DRIVEN**

Public space to replicate ecological complexity

**BUILDING OF COMMONS**

Public space intervention in Qianhai, Shenzhen's financial center, vision of landscaping, architecture beyond an aesthetic and towards ecosystems



**A RIVER RUNS THROUGHOUT (MOMPOSINO)**

**PRINCIPAL ACTOR(S)**

Inhabitants contributed to adjustments, rethinking, and improving project components through participatory work.

**EXPERIMENTAL FEATURE**

Participatory design

**BUILDING OF COMMONS**

Mitigate flooding through water cycles

**CHALLENGE DRIVEN**

Urban and architecture co-exist with water as a consequence of common flooding



**INDUSTRIAL ENVIRONMENTAL FABRIC (YUMBO)**

**PRINCIPAL ACTOR(S)**

Local officials

**POLICY SUPPORT**

Industry cedes areas of ecosystemic importance to the municipality for buildability rights.

**CHALLENGE DRIVEN**

Create industrial environmental fabric on principles of circular economy and mitigate flooding and air pollution

**BUILDING OF COMMONS**

Recovery of El Higuiron wetland by re-establishing connection with the river.



**MORAVIA (MEDELLIN)**

**PRINCIPAL ACTOR(S)**

Community initiatives and informal settings empower inhabitants with new opportunities

**POLICY SUPPORT**

Close links and synergies with the mayor's office

**EXPERIMENTAL FEATURE**

Architecture designed to strengthen neighborhood (reduce segregation)

**CHALLENGE DRIVEN**

Transformation of territory from a rubbish dump to a neighborhood park

**BUILDING OF COMMONS**

Social urbanism promotes environmental culture through pedagogy and exchange of experiences, the creation and weaving of community and inter-institutional alliances