

1. Title/Heading

Ecology Positive Cities Framework

2. Context and rationale

Plants are the solution to the greatest urban challenges of this generation. They mitigate climate change, air pollution, stormwater, heat islands, erosion, and flooding while improving air, water, biodiversity, and soil quality through normal function. They are the bedrock of the economy, health and identity of cities. Given the global scale of urbanization, climate change, and biodiversity loss, infusing plants into cities is the most urgent of causes.

My natural based solution contribution will create an innovative framework that can be practically incorporated into any green building certification program. The objective is to leverage development by incentivizing plants on and within buildings to generate a positive gain of leaf surface area in relation to ecosystems that existed pre-urbanization. My will natural based solution contribution brings us closer to the 17 sustainable development goals. The prosperity of 7.6 billion people and 1.7 million species of animals, plants, insects and algae are at stake.

3. An overview of the contribution

My natural based solution contribution goes to the heart of sustainability and human well-being. It balances practicality with vivid consequences. It turns the problem of rampant population growth and urbanization into an opportunity. It touches each of the 17 sustainable development goals.

Specifically, I am seeking to address the impacts of urbanization on human health and the environment. Urbanization is a pathway to opportunity for millions, including myself. I was raised rurally but followed the promise of opportunity within the entrepreneurial haven of cities. Urbanization allows us to organize ourselves efficiently by pooling resources. This exodus from our historically rural existence into the built environment is uncharted territory.

With a sense of irony, industrialization and urbanization has pulled millions out of poverty, extended our life span, and taken us to new technological heights, but also introduced us to climate change, biodiversity loss, and population growth. These pressures are growing at unprecedented speed and scale and so is the demand for solutions.

Over the past 50 years, research has built a clear narrative on how plants provide the relief our cities desperately need. The list of their benefits is overwhelming. Most importantly, they sequester carbon, create the foundation of biodiversity, enable livability and resilience in areas of urban density, and provide the bedrock of a healthy environment that ensures undisrupted economies.

My framework scales the quantity of plants and their crucial benefits, in dramatic fashion.

The framework objectives are:

- Identify the ecosystem type that existed on a given development site pre-urbanization using eco-archaeology
- Quantify the leaf surface area of the identified ecosystem as a baseline
- Create a positive leaf surface area gain while promoting native biodiversity
- Infuse plants on and within buildings
- Easily integrate into existing green building programs
- Develop unique partnerships between key industries
- Increase developer profit while maintaining purchaser affordability

Although my intent is targeted, the benefits are radiant. From improved social implications to infrastructure functions to economic opportunity to benefits yet to be discovered, plants are the solution to our most colossal problems.

The idea is that achieving a positive leaf surface area gain would provide an alternative pathway or subsidized pathway to becoming a certified green building.

We know the benefits of plants, we know about the imminent global population boom and urbanization, and we know plants help with these challenges. We have the architectural creativity, technologies and skills to build them into our cities.

A comprehensive, action-oriented framework for mobilising plants into our cities is needed. Timing is everything. Now is the time for Ecology Positive Cities.

4. How the contribution leverages living natural systems as a solution to avert climate change?

My contribution creates an economic incentive for property developments across the world to use the surface area of their ever-taller buildings to sequester carbon by incorporating living plants on top, on the side of and within them.

5. How might the contribution support both climate, mitigation and adaptation as well as other important co-benefits and social, economic and environmental outcomes in coming years.

Plants incorporated into buildings at a meaningful scale with an emphasis on native species and economic incentivization have a huge array of benefits:

- a. Milan's Bosco Verticale alone has demonstrated to sequester 44,000 pounds of carbon dioxide each year by incorporating 20,000 plants
- b. Plants on and within buildings strengthen resiliency against climate change by protecting the overall environmental conditions from the extremities of climate change impacts

- c. The entire environmental consulting, development, real estate, landscaping, urban agriculture and gardening industries would be lifted. Research indicates that improved environmental quality reduces crime, violence and poverty in urban centres.
 - d. Through scaling the overall quantity of plants in urban centres, Billions of dollars could be saved by avoiding the economic impacts of poor environmental conditions like smog, erosion, stormwater, biodiversity dead zones, drought, tainted water quality, urban heat islands, etc.
 - e. The framework would significantly impact the realization of the 2030 Agenda for Sustainable Development (in particular SDGs 1,2,6,12,13,14,15,16) by improving the lives of urbanites around the globe and the natural environment that they depend on for survival
 - f. Urban agriculture would play a major role in many developments that were seeking achieve the positive leaf surface area required to achieve the green building certification
 - g. Scaling the quantity of native urban plants would increase the overall carrying capacity of ecosystems. Every leaf counts.
- 6.** Every country in the world, through their own green building programs, could adopt the Ecology Positive Cities Framework
 - 7.** More consulting is required with green building administrators, ecologists, and the development community to realize the framework
 - 8.** The contribution could be delivered in an urban area of the world, regardless of climate or culture
 - 9.** The contribution could be delivered by organizing a series of workshops to ensure its ultimate global adoption. The potential impacts would be the quick emergence of highly visible greenery on and within buildings around the globe that make cities healthier and richer
 - 10.** This initiative would contribute to all Climate Action Summit workstreams because its impact is all encompassing

11. The contribution builds on the current infrastructure of the successful implementation of various green building programs around the world. The contribution links with the overall effort to make city life healthier, richer and more environmentally sustainable in the face of global urbanization and rise of megacities.

12. Relatively little funding is required. The appointment of a project manager and supporting staff, resources for workshops, and infrastructure for ongoing support and improvement of the initiatives. Source to be determined.

13. The framework would need to be tailored to each green building program. The organizing administrators could provide stewardship and success metrics as part of their overall green building monitoring.

14. The communication strategy would be based around healthier cities for people, planet and profit.

15. The framework would need to be tailored and refined to suit the needs of green building administrators to ensure their commitment is strong.

John Lieber, ISA Certified Arborist, LEED AP (BD + C)