

# INDUSTRIAL ENVIRONMENTAL FABRIC

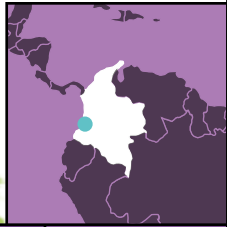
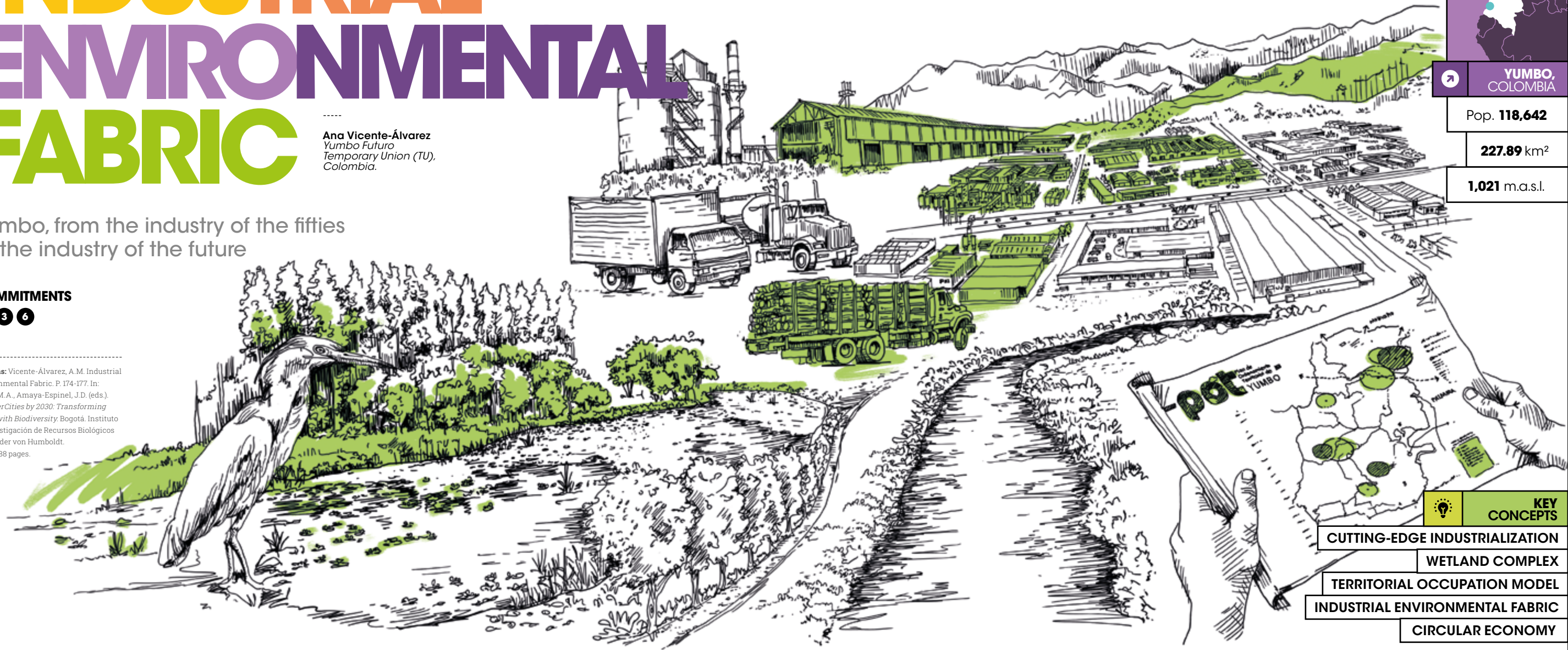
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**Ana Vicente-Álvarez**  
*Yumbo Futuro*  
 Temporary Union (TU),  
 Colombia.

Yumbo, from the industry of the fifties to the industry of the future

**COMMITMENTS**

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Quote as: Vicente-Álvarez, A.M. Industrial Environmental Fabric. P.174-177. In: Mejía, M.A., Amaya-Espinel, J.D. (eds). *BiodiverCities by 2030: Transforming Cities with Biodiversity*. Bogotá. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt. 2022. 288 pages.



**YUMBO, COLOMBIA**

Pop. **118,642**

**227.89** km<sup>2</sup>

**1,021** m.a.s.l.

**KEY CONCEPTS**

- CUTTING-EDGE INDUSTRIALIZATION
- WETLAND COMPLEX
- TERRITORIAL OCCUPATION MODEL
- INDUSTRIAL ENVIRONMENTAL FABRIC
- CIRCULAR ECONOMY

**Faced with the industry vs. environment dichotomy, the municipality of Yumbo is proposing an occupation model that seeks to establish the conditions to build a fabric that modernizes the industrial vision and, at the same time, mitigates environmental risks.**

The country's industrial areas are incompletely developed and grew with a productive vision without considering other aspects such as urban planning or community. For this reason, industrialists can now manage essential areas for risk mitigation and move from yes-

teryear to **cutting-edge industrialization** that is beneficial for companies. Such is the case of the Yumbo industrial zone, the third-largest in Colombia. Consolidated more than forty years ago, high, medium, and low impact industries coexist with an intricate **wetland complex** associated with the Cauca and Arroyohondo rivers and premontane, and tropical dry forests.

In order to update the **territorial occupation model** of the last twenty years, Yumbo has proposed an **industrial environmental fabric** for the POT 2022-2035. Its purpose is to mitigate flooding and air pollution while al-

lowing industries to maintain their location and advance their technologies and vision. This model, which has already been socialized to the industrialists, will be presented to the environmental authority Regional Autonomous Corporation of Valle del Cauca (CVC), adjust accordingly, and then seek subsequent endorsement by the municipal council in 2022.

The territorial occupation model that was proposed seeks to manage an environmental structure through public-private financial instruments. Industries would cede areas of ecosystemic importance to the mu-

nicipality in exchange for buildability rights. It is expected to restore the area and integrate innovations into the industrial plants, understanding the entire Cauca River area as a single impact mitigation strip.

Yumbo's effort involves reconciliation between competitiveness and industrial production and the improvement and protection of local biodiversity. Once the industrial environmental fabric is built, the next bet will be the **circular economy** within the industrial complex. Industries would estimate their carbon footprint, diversify their services and, if possible, complement each other.

**RECOVERY OF THE WATER NETWORK AND PUBLIC USE**

Part of the water demand of the industries is met with groundwater. By unifying and recovering the strip encompassing the industrial environmental fabric, the Arroyohondo riverbank would be freed up to serve as a recharge area and thus make the water supply sustainable, both in quality and quantity. In addition, this same area would mitigate the risk of flooding and alleviate pollution from particulate matter (PM<sub>10</sub>).

One of the targets this model seeks is the recovery of the *El Higuero*n wetland, which would strengthen the water network through its restoration with biodiversity criteria. The latter includes the recovery of the water footprint, reestablishment of the connection with the river system, carbon sink, and public use of the space for recreational activities.

**A BRIDGE BETWEEN INDUSTRY AND THE ENVIRONMENT**

For this project's construction, the multitemporal changes in ecosystems and the actions that have most affected them were diagnosed to include missing areas in the traditional models in terms of biodiversity, connectivity, and water management. On the other hand, references –such as Brownsville, Bridgeport Eco-Industrial Parks, and Em-scher Park– aimed to empower industrialists by teaching them that change within industrialization is possible.

Meanwhile, during the formulation stage of the POT, the possibility of integrating new environmental financing instruments, such as carbon bonds, payment for ecological services, and forestry incentive certificates, into the land-use management instruments will be evaluated. Finally, new indicators will be integrated into the industrial area to monitor the plan's implementation, including the main industrial-ecological managed structure and the reforested areas in the Cauca River complex.

Also worth mentioning is the mediating role of the municipality between the environmental authorities and the industries so that both parties recognize each other as cooperators and know their value, changing the logic of punishing industries to one of ecological impact. This process has taken into account that the conflict over water has set the tone. So it is necessary to recover its supply and moderate its demand; it can't continue growing exponentially.

**KEY LESSONS**

➔ Coexistence between impact industries and critical ecosystems of national importance, such as the Cauca River, is possible.

➔ There is a need to reintroduce biodiversity as a strategy for risk management, for example, through nature-based solutions.

➔ Conventionally, industrialists have been approached as the object of a command-and-control policy. In contrast, this occupation model postulates industries as allies of biodiversity management and reveals the economic benefits of such an environmental fabric.

➔ The institutional vision now understands that the environmental and biodiverse matrix does not exclude the urban or the productive networks since a path has been opened to biodiversity management in the urban and industrial environment.

➔ The conflict over water is central and permanent. So apart from recovering the recharge areas and flood mitigation, the municipality has approached more hermetic industries (such as mining) to build a bridge between them, the inhabitants, and the benefits of this fabric.

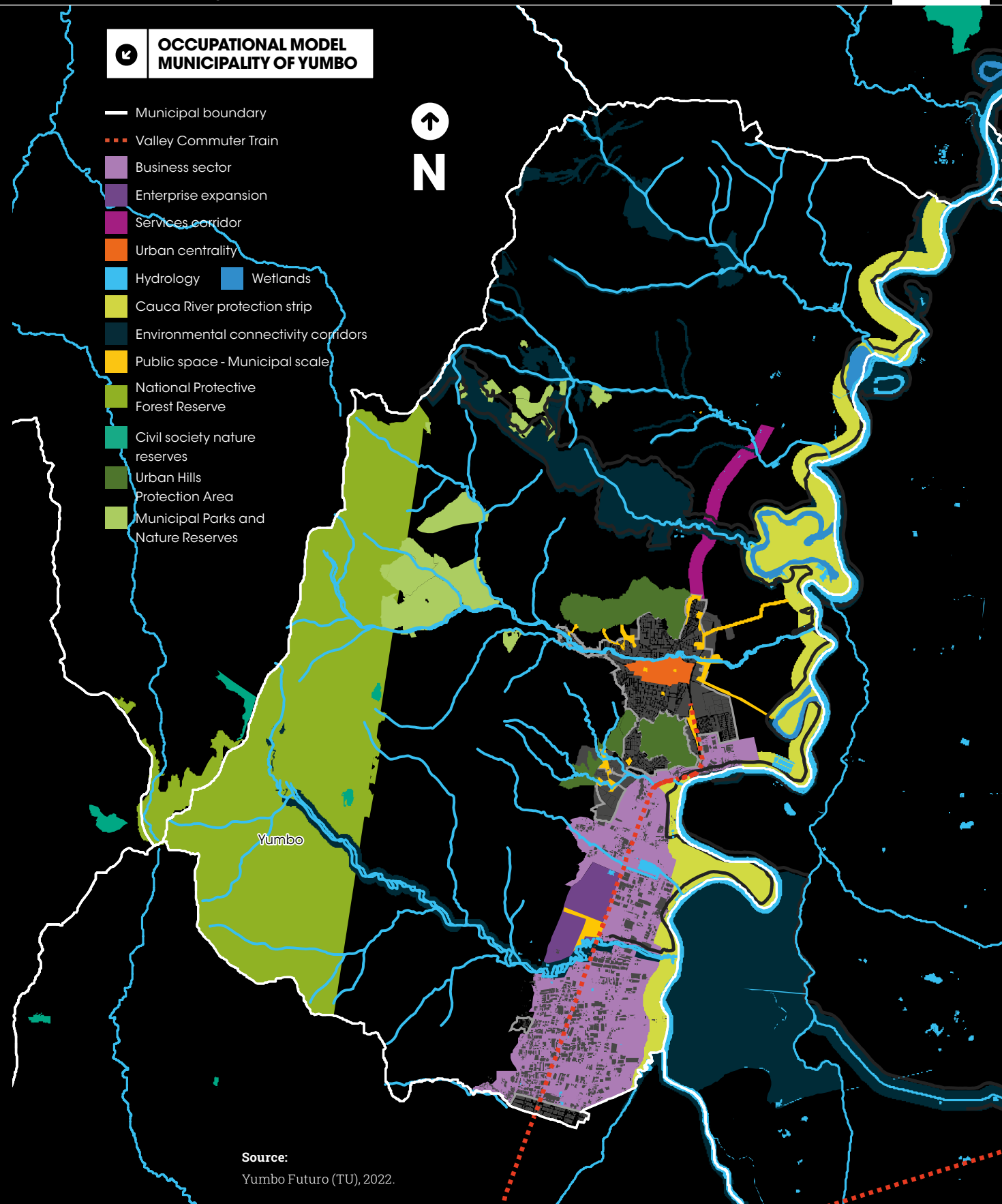
➔ This model proposes that any economic sector can interweave an industry-environment fabric to compensate and balance productivity and environmental protection.



➔ The Cauca River, the main water artery in southwestern Colombia, marks the limit of the industrial zone. This river hosts a strategic wetland complex for this region: the Platanares, Pelongo, and Higueron wetlands.



➔ Yumbo's Industrial Zone hosts approximately 300 industries in five essential chains in export products such as chemicals and pharmaceuticals, food, paper pulp, clothing and footwear, and mining



Source: Yumbo Futuro (TU), 2022.