

Country /City Peru, Lima
University / School Pontificia Universidad Católica del Perú / Faculty of Architecture and Urbanism
Academic year 2020-1 - 2021-1
Title of the project HARVESTING -in the- FOG. Socio-ecological system of Loma regeneration as a climate change response, from Valle Alto to Metropolitan Lima
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TECHNICAL DOSSIER

Title of the project	HARVESTING -in the- FOG. Socio-ecological system of Loma regeneration as a climate change response, from Valle Alto to Metropolitan Lima
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Title of the course	PFC1
Academic year	2020-1 - 2021-1
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University / School	Pontificia Universidad Católica del Peru



Written statement, short description of the project in English, no more than 250 words

Despite being part of the ecological structure of Lima city, the fragile and seasonal ecosystem of the Lomas Costeras faces the progressive reduction of its extension, biodiversity and eco-systemic services due to anthropic logics of informal urban growth, reducing its presence to fragmented islands of vegetation along the Metropolitan Lima's periphery, being the south in the district of Villa María del Triunfo, where the problem is more latent. Given this quality of metropolitan presence, a territorial and systemic approach, and diverse quantitative and qualitative information, the loma community of Valle Alto is identified as a relict of awareness and protection of the ecosystem, so as to propose a research and intervention model that can be extrapolated to the rest of the city's lomas belt. Based on 3 communal and territorial scale fog-harvesting devices, and the appointment of Valle Alto's micro-basin as a unit for land management; various processes of capture, retention, distribution and infiltration of the harvested fog water are proposed so as to be distributed on the arid and loma hillsides, throughout interscalar and interrelated systems. Collective fog-harvesting is the means to face informal occupations, loma depredation, improve the precarious conditions of Lima's peripheral communities, and more importantly, to address the actual climate change crisis.

For further information

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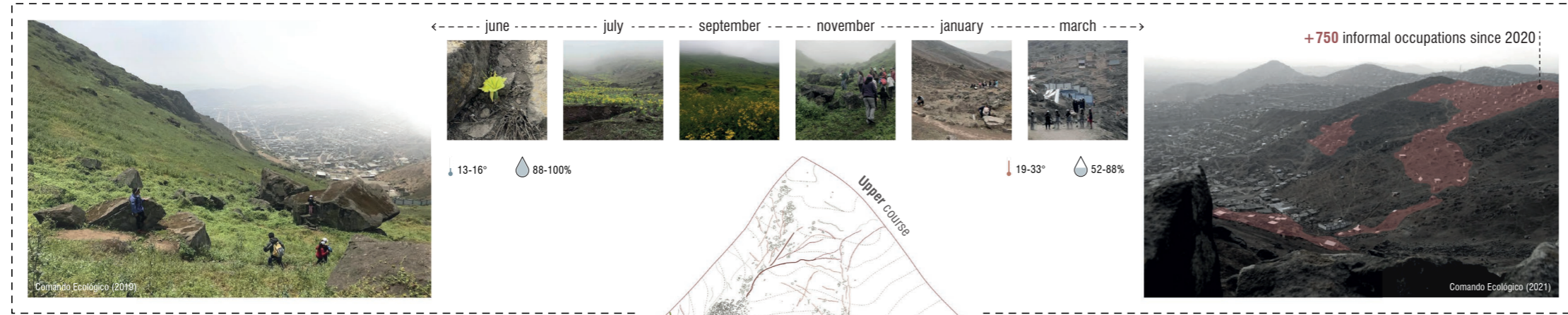
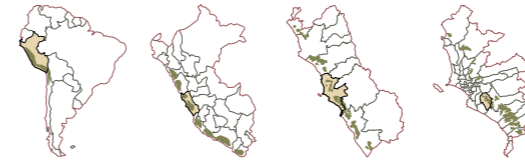
Barcelona November 2023

SCHOOL PRIZE

HARVESTING -in the- FOG

Socio-ecological system of Loma regeneration as a climate change response, from Valle Alto to Metropolitan Lima

In Metropolitan Lima appears the Lomas Costeras, a fragile and cyclical ecosystem of 70 ha. of biodiversity, generated by the winter trade winds that intersect with Lima's hillsides. Despite its territorial and ecological importance, it faces a progressive reduction of its extension due to anthropic logics that fragments it into green islands throughout the territory, with the most affected area in the south, the district of Villa María del Triunfo.



How to achieve the **maximum socio-ecological impact**, for the community, the territory and the collective urban imaginary, following a systemic, interscalar and multifunctional approach, and taking the **fog as an identity water resource**?

Loma's biodiversity space

receding due to anthropogenic predation.

Water reservoirs

only source of water, unsteady flow.

Communal facilities monofunctional and precarious

(a) comunal facility, (b) preschool, (c) popular dinning room, (d) sport fields.

Rocky headlands
natural moisture and vegetation collectors.

Scree at the basin's bottom
increased surface runoff flow and natural habitat of trees

Degraded Loma areas
mostly on the southern slope, due to its lower presence of rocky soil and fog intensity

Constant road extensions
generated by land traffickers for illegal sale of land properties

+112 species of flora, 10 birds, 1 mammal, invertebrates, reptiles and insects.



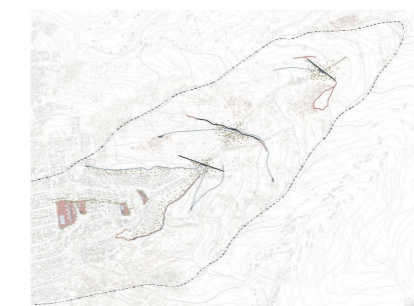
Paths system
Structure the micro-basin through a longitudinal and transversal axis, and secondary, tourists, maintenance, and productive paths.



Water system
Fog as a water resource, to promote greater diversity and with it, the recovery of the ecosystem.



Plant system
Strategic plantations, in location, quantity and species, to magnify the Loma's ecosystem services.



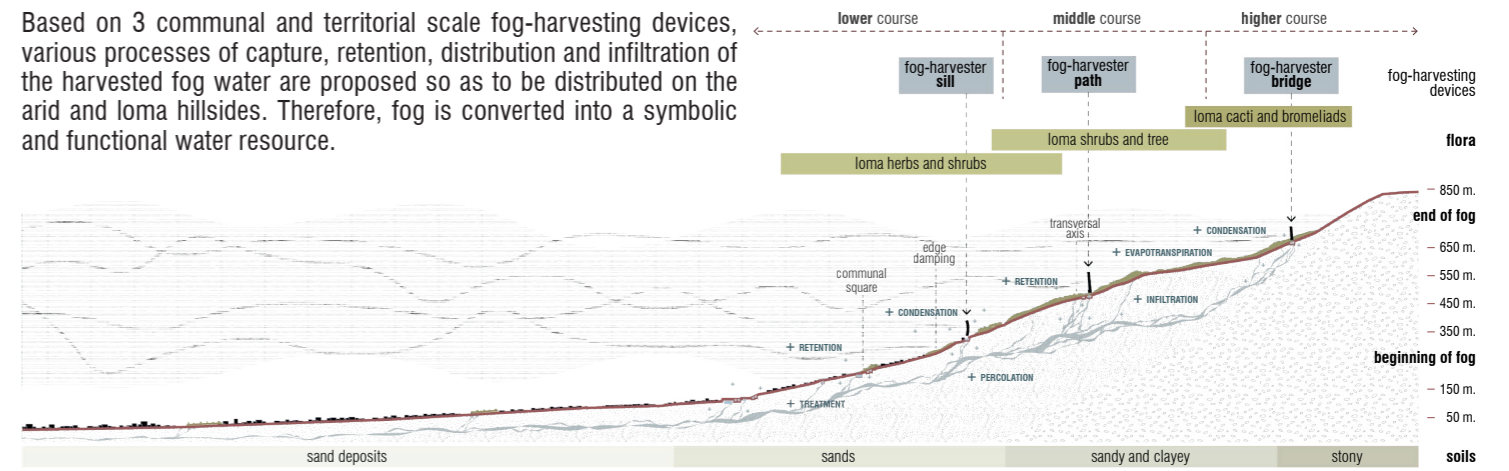
Plant system
Multifunctional interventions in the public spaces and loma hillsides, based on the new water availability.



Fog-harvester Path
in the middle course of the microbasin

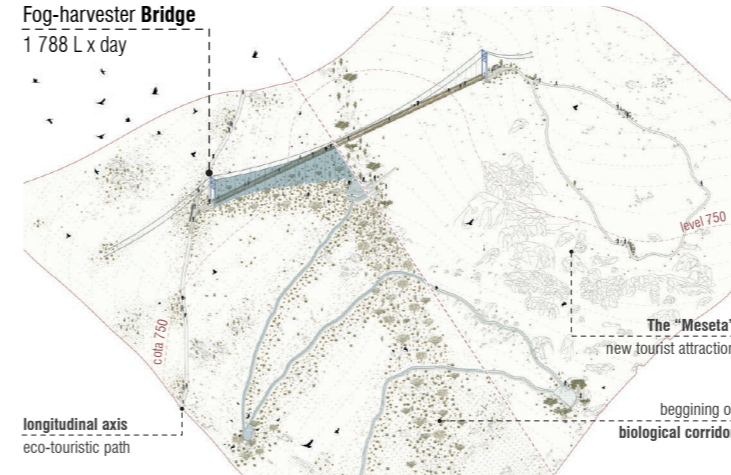
New collective urban imageries for Valle Alto, the Loma ecosystem and Lima

Based on 3 communal and territorial scale fog-harvesting devices, various processes of capture, retention, distribution and infiltration of the harvested fog water are proposed so as to be distributed on the arid and loma hillsides. Therefore, fog is converted into a symbolic and functional water resource.



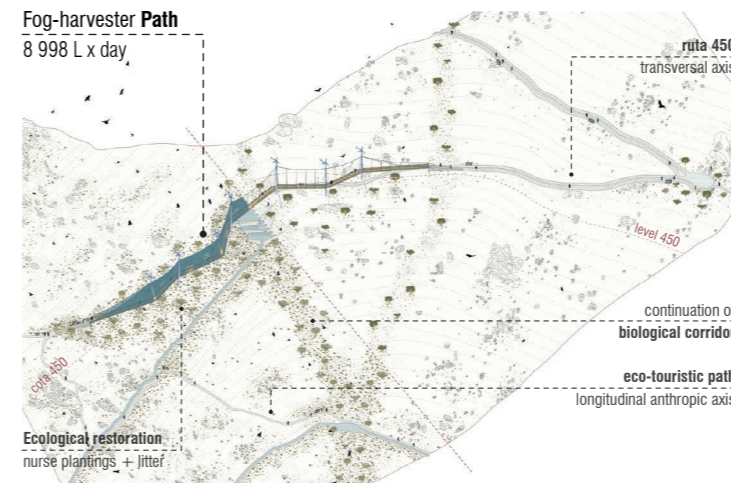
Fog-harvester Bridge

1 788 L x day



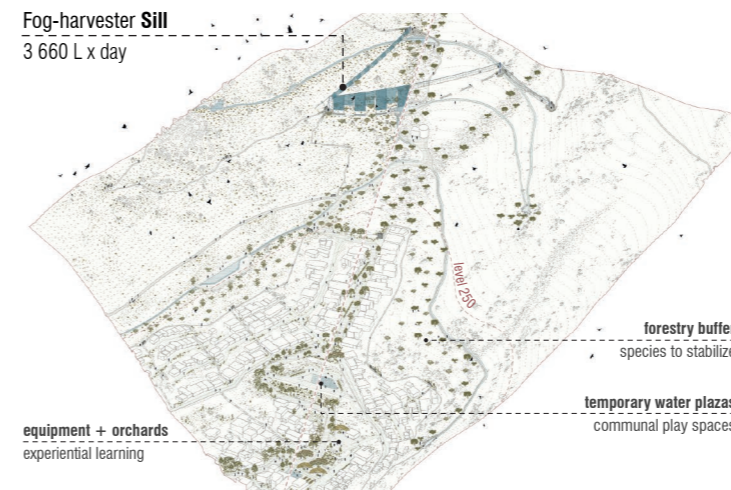
Fog-harvester Path

8 998 L x day



Fog-harvester Sill

3 660 L x day



Fog-harvester Bridge
in the upper course of the microbasin

Water and Transformative Potential

The search for reciprocity and mutual benefits between the anthropic and natural system lay the foundations of the project, and allow us to rethink the territorial, urban and architectural approach to the Lomas Costeras socio-ecosystem. Thus, a new socio-ecosystemic climax is reached, where the self-sustaining and ecological development of a communal and hillside territory allows the reconversion of the collective and identity imaginary, and thus, once again, become part of the territorial management of the city.

Puente atrapanieblas

surface: 596 m²
 efficiency: 3 L x m² x day
 quantity: 1 788 L x day

Camino atrapanieblas

superficie: 2 232 m²
 efficiency: 4 L x m² x day
 quantity: 8 998 L x day

Umbral atrapanieblas

superficie: 915 m²
 efficiency: 4 L x m² x day
 quantity: 3 660 L x day

Aguas grises tratadas

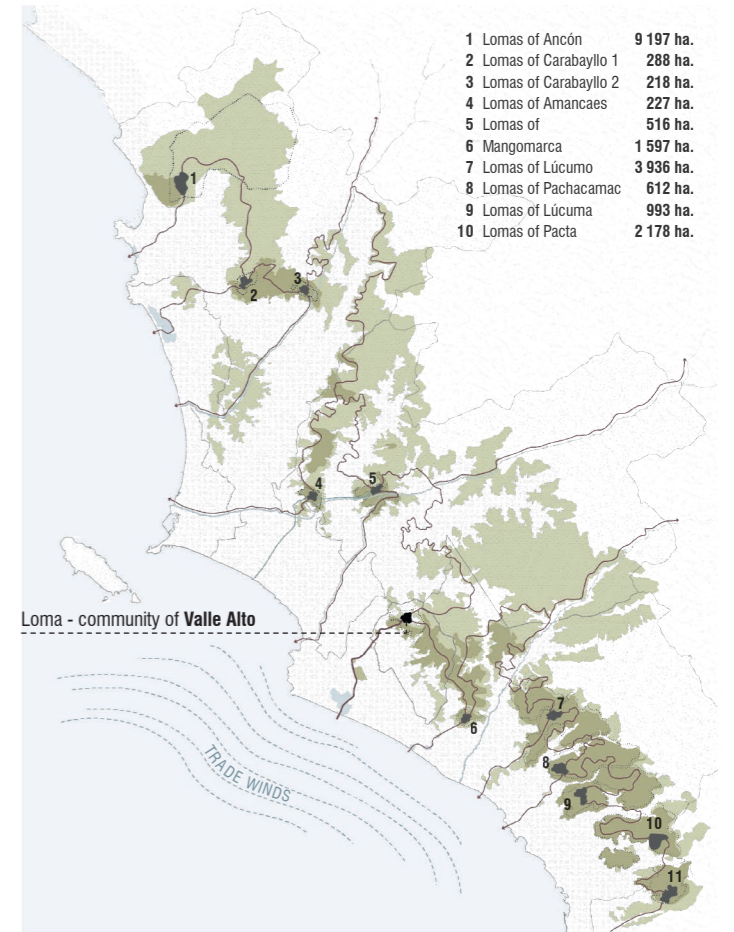
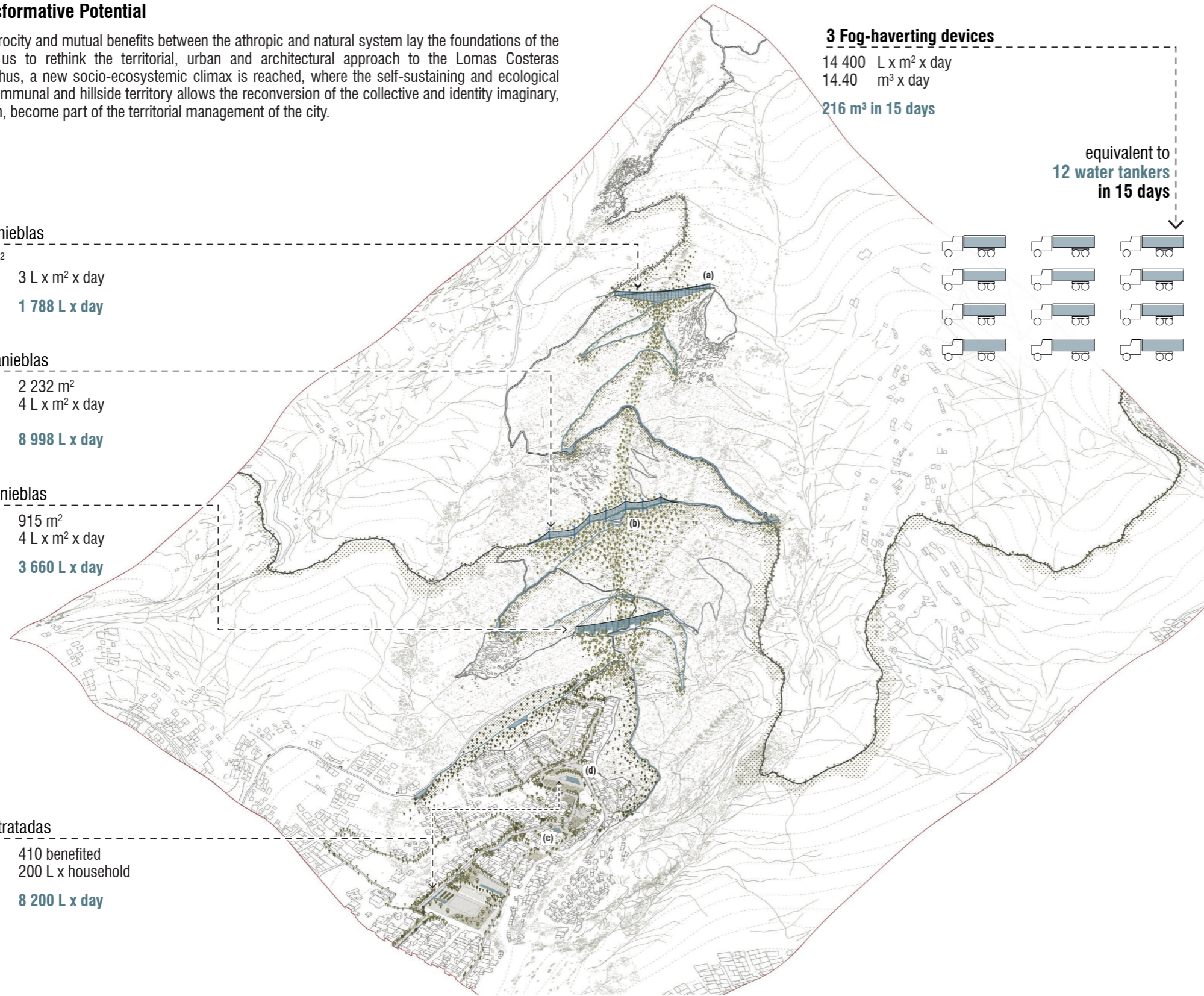
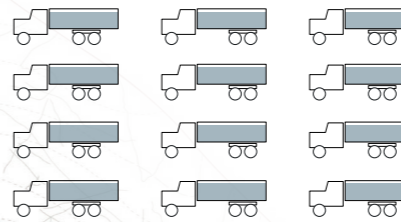
households: 410 benefited
 efficiency: 200 L x household
 quantity: 8 200 L x day

3 Fog-harvesting devices

14 400 L x m² x day
 14.40 m³ x day

216 m³ in 15 days

equivalent to
 12 water tankers
 in 15 days



More than 21 730 ha. of loma-communities to intervene.

