



Nuevas Tecnologías de Jardín y su
Impacto en la Salud Humana,
Ecológica y Ambiental

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CENTRO DE INVESTIGACIONES
TECNOLÓGICAS, BIOMÉDICAS
MEDIOAMBIENTALES



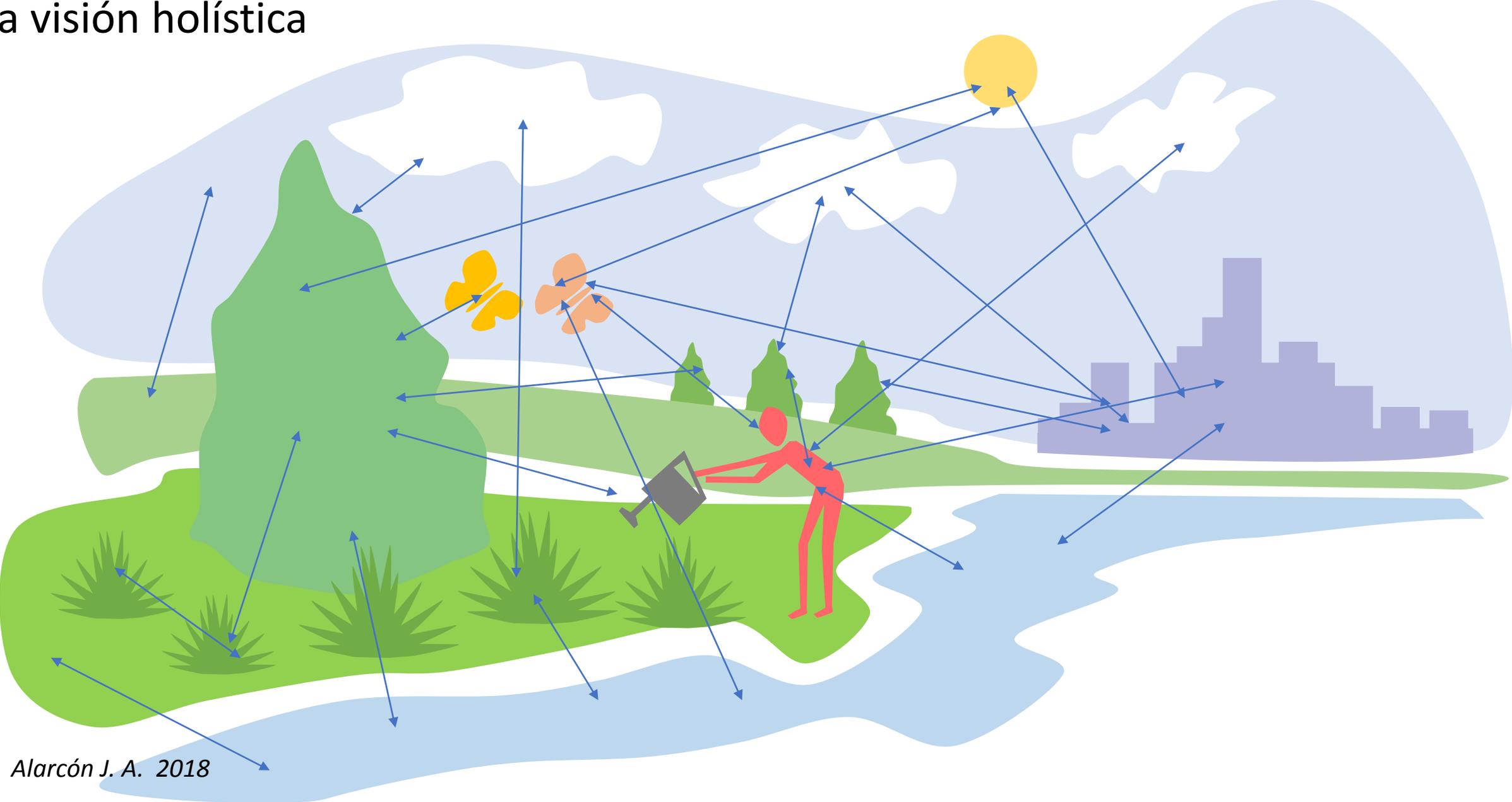
La visión holística

del griego [hólos] = "todo"

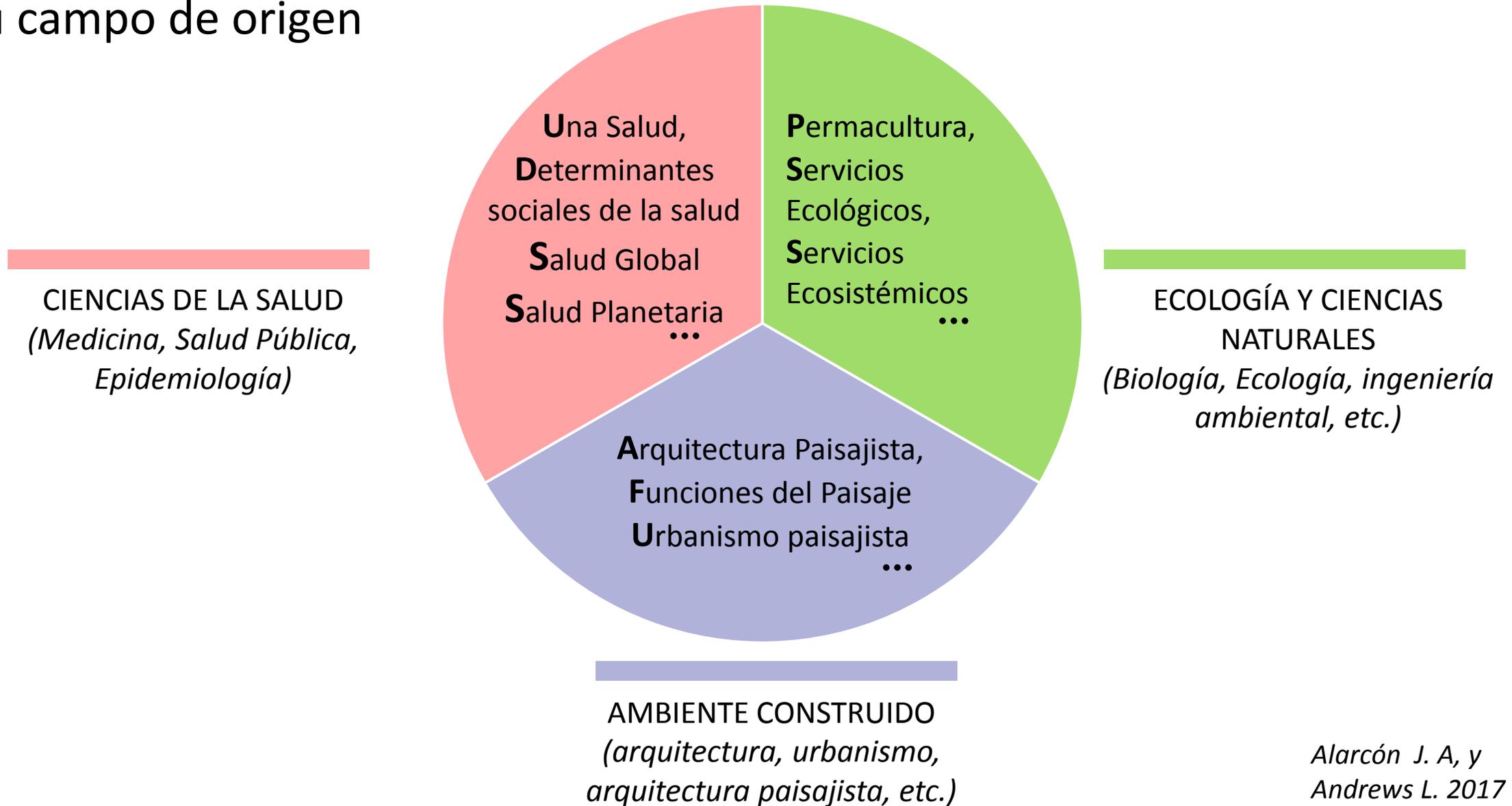


Instrucciones: En el siguiente gráfico, identifica elementos y sus relaciones entre ellos.

La visión holística



Teorías y enfoques integrales y su campo de origen



LOS DETERMINANTES SOCIALES DE LA SALUD Y BIENESTAR HUMANOS



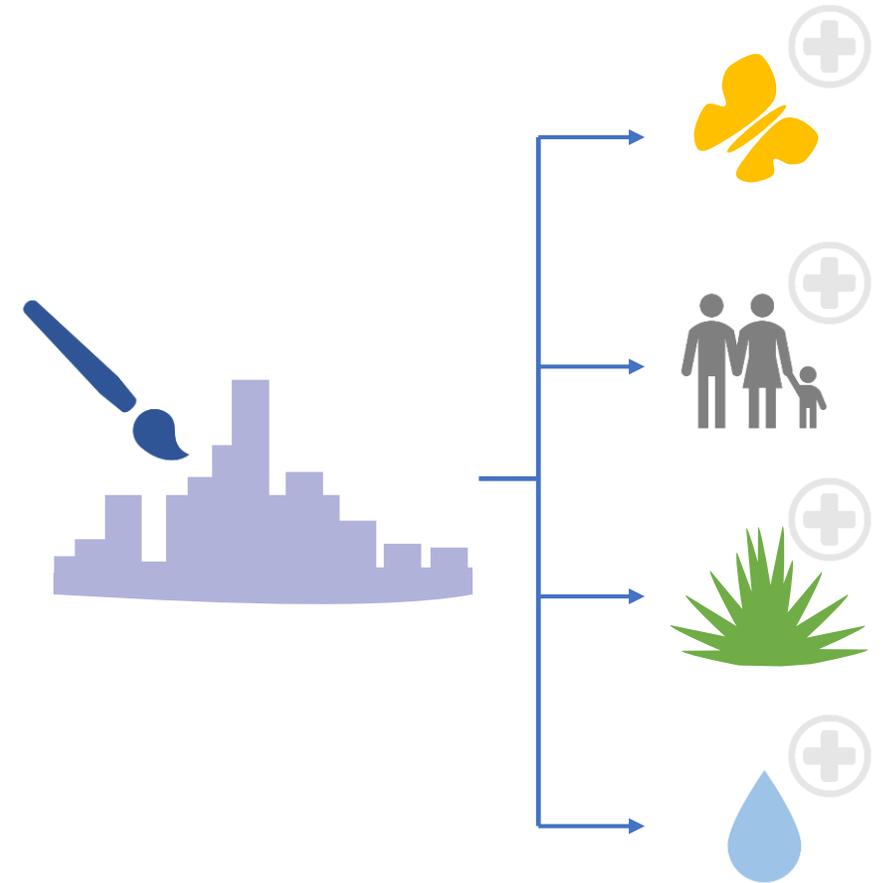
Los Objetivos de Desarrollo Sostenible de la ONU

17 objetivos, 169 metas – cada una con 1-3 indicadores



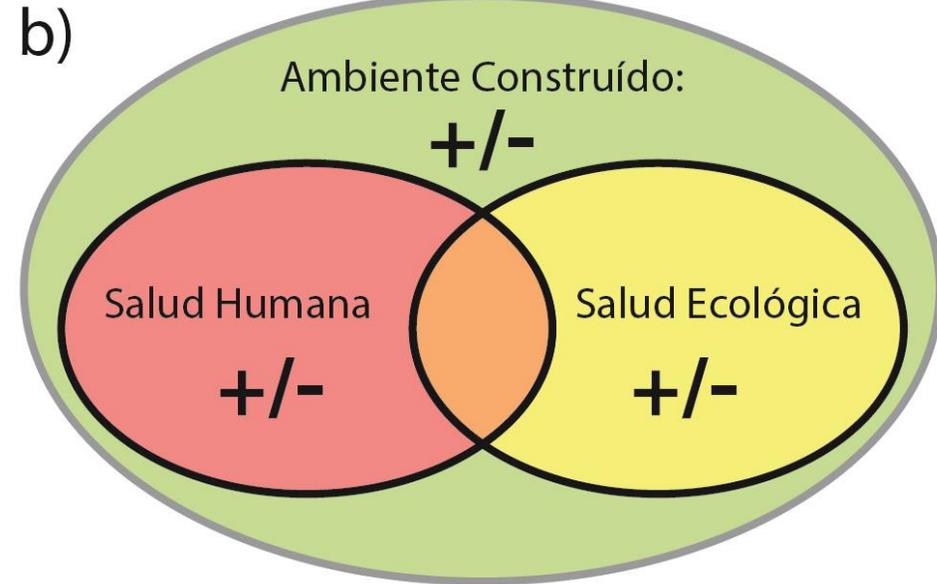
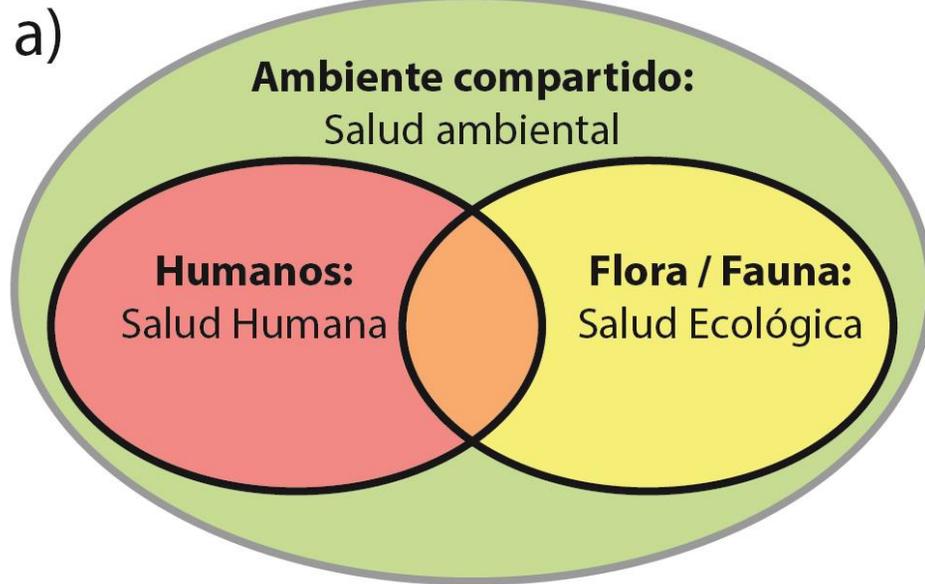
Arquitectura Paisajista

- I. **Es la fabricación de ambientes y sistemas que satisface las aspiraciones y necesidades de los humanos, la vida silvestre, y otros procesos de la tierra. (incluyendo salud)**
- II. Abarca un amplio espectro de prácticas, desde el diseño de paisajes urbanos a la restauración de hábitats y ecosistemas, que opera en múltiples escalas que van desde los sitios individuales a los barrios, distritos, ciudades y regiones.
- III. Se trabaja con el espacio y el tiempo para garantizar el bienestar de los hábitats humanos y no humanos.



Los determinantes sociales de la salud

El enfoque arquitectónico paisajista



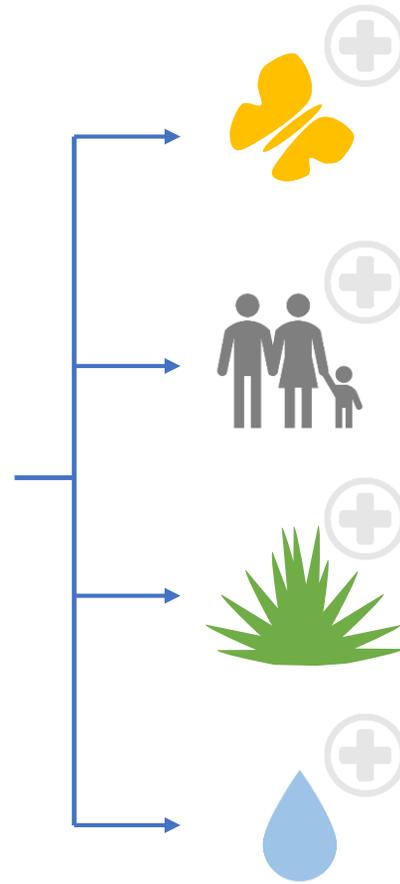
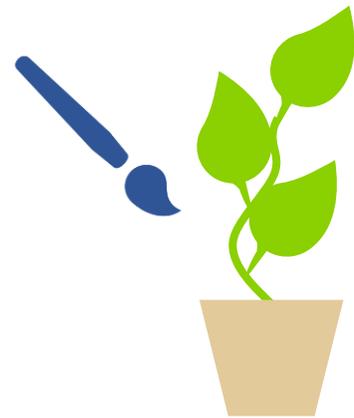


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Nuevas Tecnologías de Jardín y
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y Ecológica y Ambiental

a. ¿Cómo diseñar intervenciones paisajistas?



b. ¿Cuál es el impacto de estas intervenciones en la salud humana, ecológica y ambiental?



Iquitos

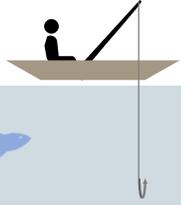
★ Claverito

Amazon River

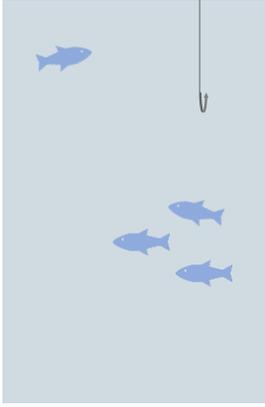




4 m

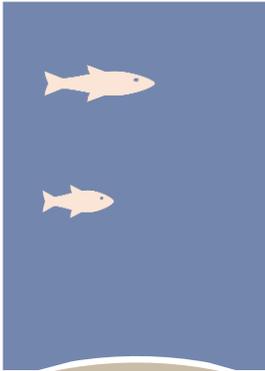


Enero a Mayo



2 m

Junio y Diciembre



0 m

Julio a Noviembre



RIO ALTO



RIO BAJO





42% reportó accidentes

82% tiene parásitos

42% diarrea crónica

89% inseguridad alimentaria media a severa

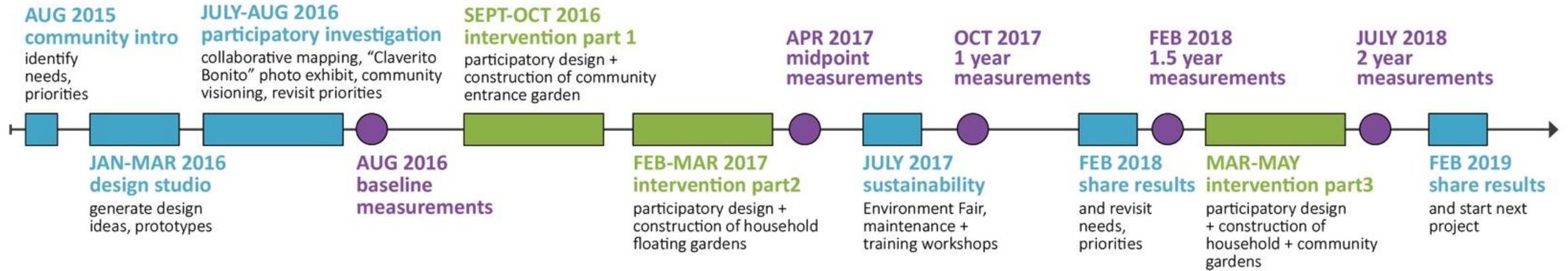
70% depresión media a severa



Nuevas Tecnologías de Jardín y su Impacto en la Salud Humana y Ecológica y Ambiental



Esquema del Proyecto



 Intervención paisajista

 Investigación y/o evaluación

 Educacion y actividades participativas

Equipo del Proyecto

Coco Alarcón + Leann Andrews

Alexandra Jhonston

Alvaro Olarte

Ana Lucia Seminario

Anika Larson

Ashley Powell

Austin Bidman

Belle Chen

Ben Spencer

Carlo Tapia del Aguila

Carolina Reategui Reategui

Chih-Ping Chen

Christian Ampudia Gatty

Cristian Flores Satalaya

Crystyan Syles

Dan Dicker

Dario Davila Paredes

David Witte

Diego Macedo Ramirez

Diego Amphibio

Edinson Sanchez Linare

Eli Ruiz Lopez

Evan Patrick Lester

Gabriela Ganoza

Georgios Kotsakis

Helvio Astete

Ingrid Santander Ramirez

James Wohlers

Jeffrey McLean

Jennifer Ricaldi

Joe Zunt

Johny Ahuite del Aguila

Jorge Villacrés Vallego

Jorge Liao Guevara

Juan Ruiz Maceda

Julia Piscoya

Karol Ramirez Marayahua

Klinger Ushinahua Lopez

Lauren Frisbie

Laura Jara Vidalon Orrillo

Leah Isquith-Dicker

Lourdes Bocanegra Torres

Lourdes Rios Tanchiva

Lucia Quinto Hinojos

Lynsey Tafreshi

Marc Horton

Marina Martinez

Marissa Masihdas

Marco Alarcon Palacios

Milagros Zavaleta

Milko Echevariia Wong

Mojde Eftekhar

Morgan Busse

Nancy Rottle

Peter Rabinowitz

Pierina Vargas

Pooja Rajanbabu

Priscila Koo Pinedo

Rachel Booher

Raul Chuquiayaur

Rebecca Neumann

Reiser Pinedo Shupingahua

Rommell Mosquo

Roopa Sriram

Samantha Solis Ruiz

Samantha Zwicker

Sarah Gimbel

Silvia Marin

Stefanos Tyrovolas

Sunmy Rosa Inuma Lao

Susan Bolton

Susan Paredes Fernandez

Susana Cubas Poclan

Tania Ariza Fritas

Teresa Mori

Todd Benkart

Tracey Chaplin

Vanessa Barnett Pinedo

Vickie Ramirez

Victoria Arévalo Nogueira

Viviana Rios Saavedra

Yeiko Rojas Campos

Yessenia Pinedo Mecicomes

Yvette Rodriguez

Zenaida Caycho Herbo

And the LARC 502 Design
Activism Studio students,
and Architects Without
Borders...

Disciplinarietà del Progetto

ARQUITECTURA
INGENIERIA CIVIL
HORTICULTURA
ESTUDIOS
INTERNACIONALES
ARQUITECTURA
PAISAJISTA

BOTÁNICA
HERPETOLOGÍA
ENTOMOLOGÍA
ORNITOLOGÍA
CIENCIAS AMBIENTALES
INGENIERIA FORESTAL
INGENIERÍA AMBIENTAL

MEDICINA
ENFERMERÍA
SALUD PÚBLICA
NUTRICIÓN
ODONTOLOGÍA
EPIDEMIOLOGÍA
UNA SALUD

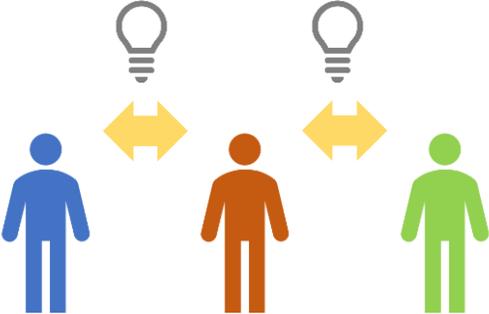
CIENCIAS POLÍTICAS
ANTROPOLOGÍA
EDUCACIÓN
AMBIENTAL
BIOESTADÍSTICA
MÉTRICAS DE SALUD
NEUROLOGÍA

Disciplinarietà del Progetto

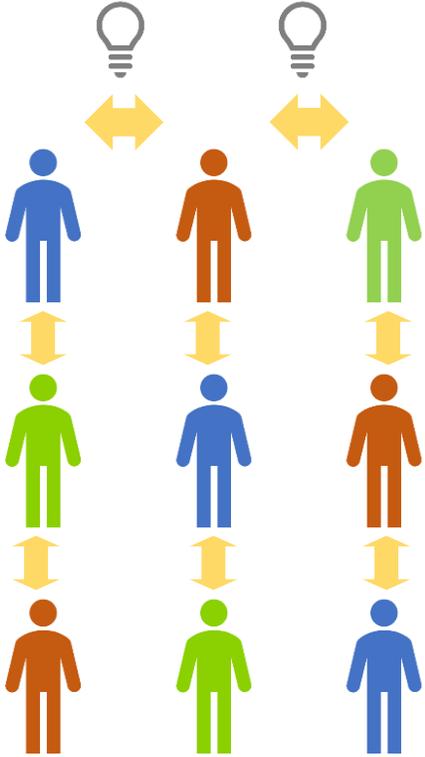
Prática Multidisciplinaria



Prática Interdisciplinaria



Prática Transdisciplinaria











Salud Ambiental



Salud Humana



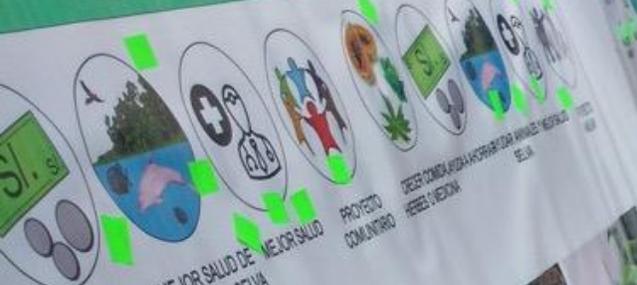
Salud Ecológica



Prioridades identificadas:

- Mejorar el acceso a espacios verdes
- Incrementar biodiversidad local
- Reducir la basura
- Mejora la seguridad alimentaria
- Proveer acceso a medicina
- Tratar los problemas de parásitos y gastrointestinales
- Reducir el estrés en la comunidad

Jardines en casa

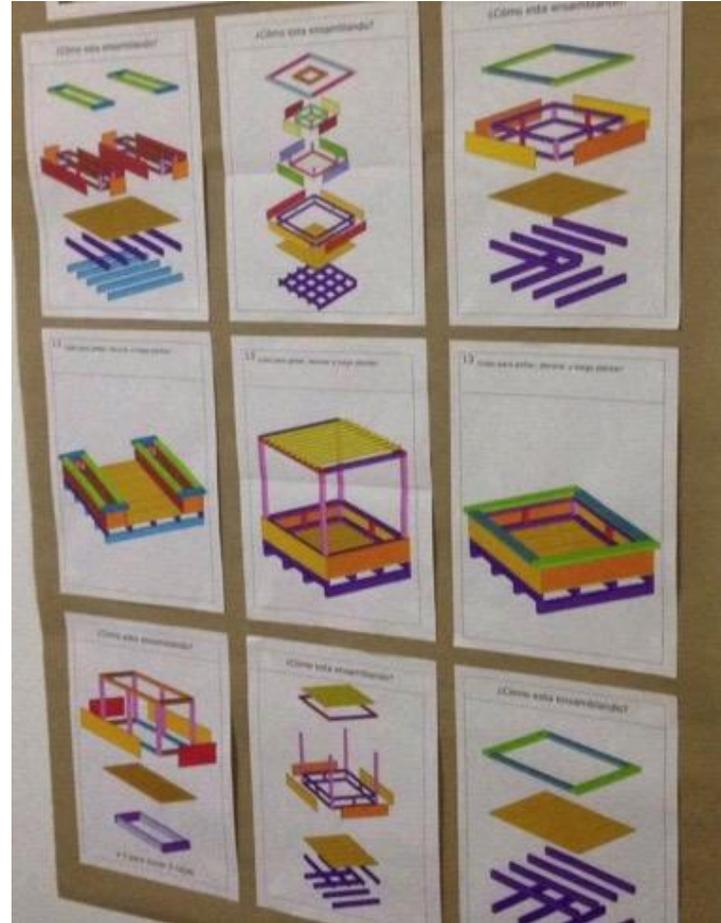


MEJORA LA ALIMENTACION, ECONOMICA
MEDICINA OPORTUNIDAD O ANIMALES Y SELVA
TRABAJAR

MEJOR SALUD DE
PROYECTO
COMUNITARIO

DEER COMIDA PARA LOS ANIMALES Y SELVA
REDES VEDON





- Part 1: Community Entrance Garden
- Part 2: Household Floating Gardens (28)
- Part 3: Community Entrance Garden
- Part 4: Home Gardens (31)



public plaza

public boardwalk

public plaza





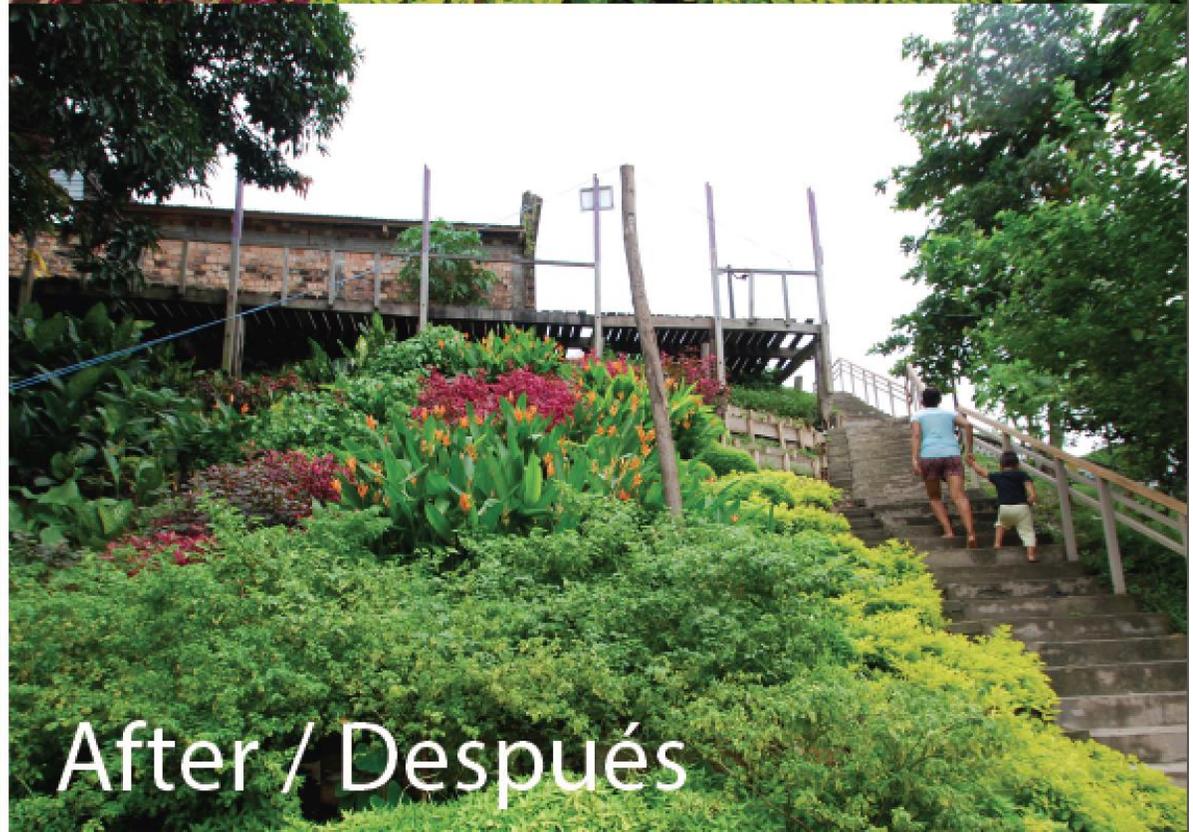












Before / Antes

After / Después

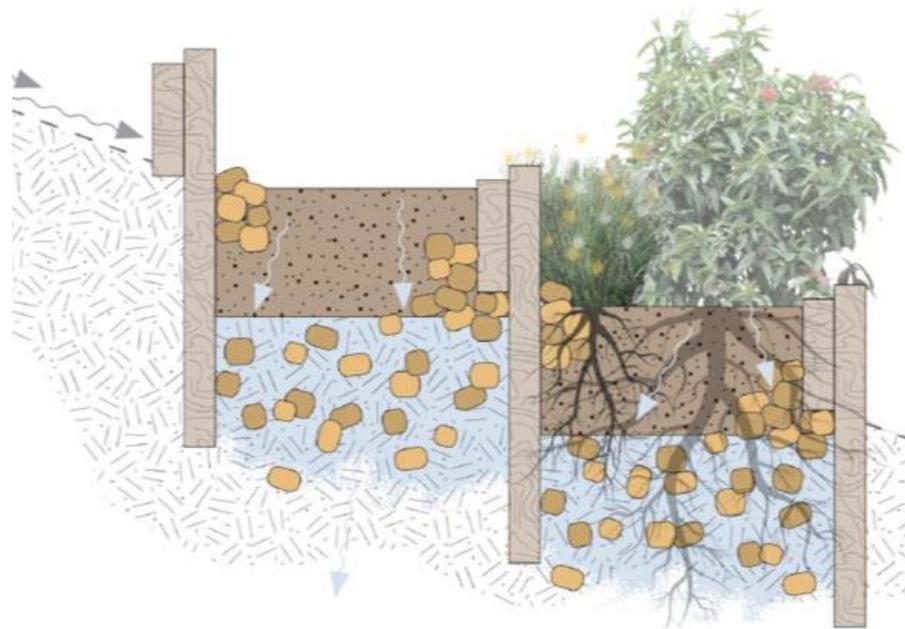


Beauty, community pride, mental wellbeing, empowerment

Productive (food, medicine, spiritual)

Reduced vector habitat (trash)

Habitat for birds, amphibians, reptiles, butterflies, insects etc.



Improved water + soil quality, slope stabilization

















Bienvenido al Jardín
LAS AMAZONAS









Reducción de basura / reservorios de mosquitos



KG recogidos in situ

ANTES
5,443 kg

DESPUES
0 kg

2 MESES
5.5 kg

4 MESES
4.7 kg

6 MESES
2.2 kg

Incremento de la biodiversidad



Especies de Aves

Especies de Mariposas

Especies de Reptiles y Anfibios

ANTES

77

11

11



DESPUES

90

22

10

Incremento de belleza y orgullo



Residentes que piensan que Claverito es bonito:

ANTES
27%



DESPUES
68%

$p < .001$

Seguridad alimentaria y acceso a medicina tradicional



familias con seguridad alimentaria severa
Familias sin acceso a medicina tradicional

ANTES

57%



DESPUES

27%

$p < .001$

68%

24%

$p < .001$

HFIAS- household food insecurity access scale

Salud Mental y Bienestar



Depresión moderada a severa

ANTES
70%



DESPUES
44%

$p = .02$

PHQ-9 : depression scale
GAD-7 anxiety scale

Bienestar Social



Pobre relación con vecino y amigos
como causa de estrés

ANTES
76%



DESPUES
28%

$p < .001$

Reducción de accidentes



Reporte caídas y heridas en los últimos 6 meses

ANTES
42%



DESPUES
1%

$p < .001$



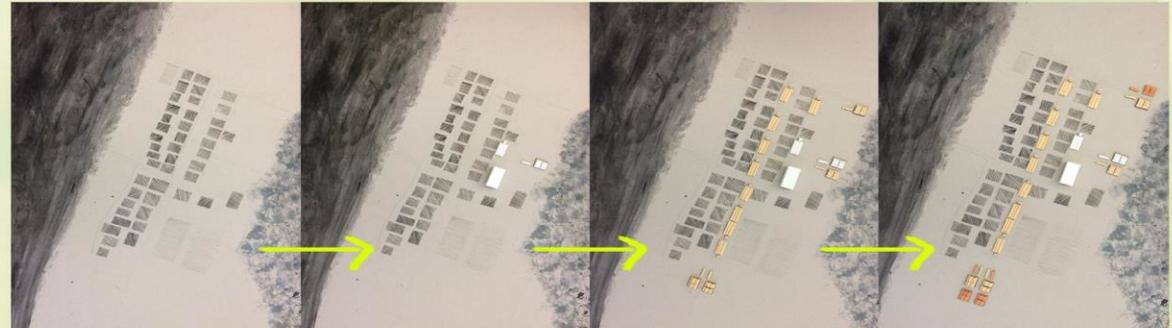
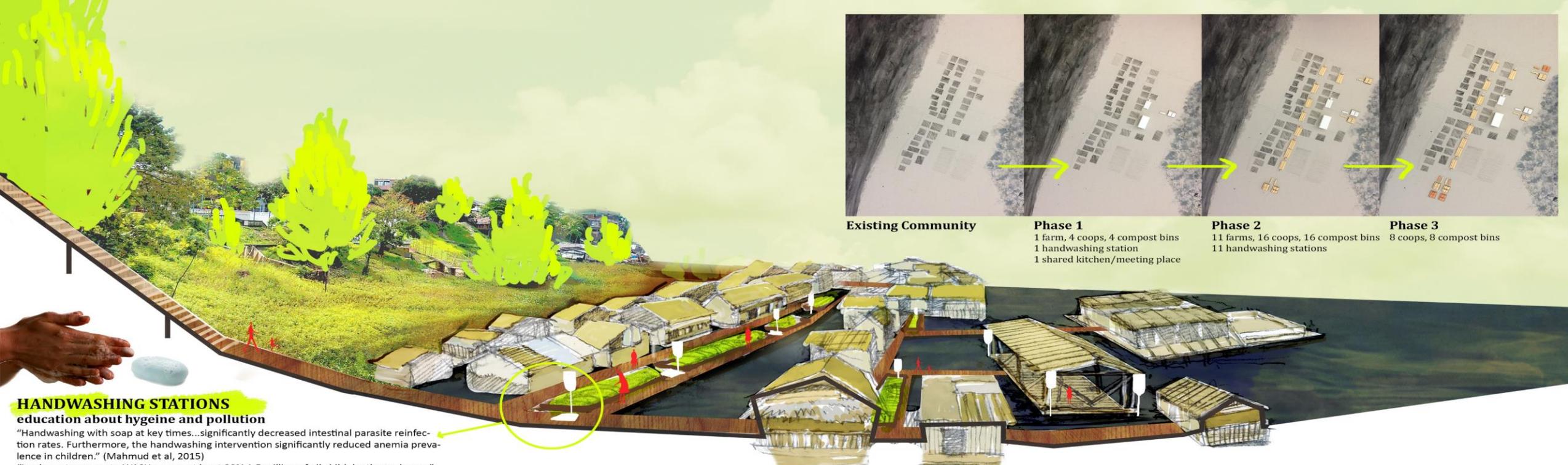
Con plantas



Sin plantas

LECCIONES Y DESAFIOS

- Ha producido un gran volumen de evidencias científicas para muchas disciplinas simultáneamente y en un plazo relativamente corto.
 - Ha creado oportunidades para la interacción de disciplinas que usualmente no están relacionadas. En este proceso se ha logrado un intercambio de métodos de investigación y análisis, así como oportunidades de aprendizaje entre disciplinas.
 - Ofrece la oportunidad de documentar hechos relativos a personas, ecología y ambientes de poblaciones marginales que usualmente no se registran.
-
- La necesidad de un léxico que se adapte a las necesidades de cada campo y permita la comunicación interdisciplinaria.
 - La necesidad de impulsar la innovación en diferentes campos como en los diseños, los métodos y las técnicas.
 - Lograr el financiamiento suficiente para todos los componentes de la práctica interdisciplinaria en «Una Salud».
 - Idear nuevas estrategias para la disseminación del gran volumen de información que involucra muchas disciplinas y profesiones.



Existing Community **Phase 1**
 1 farm, 4 coops, 4 compost bins
 1 handwashing station
 1 shared kitchen/meeting place

Phase 2
 11 farms, 16 coops, 16 compost bins
 11 handwashing stations

Phase 3
 8 coops, 8 compost bins

HANDWASHING STATIONS
 education about hygiene and pollution

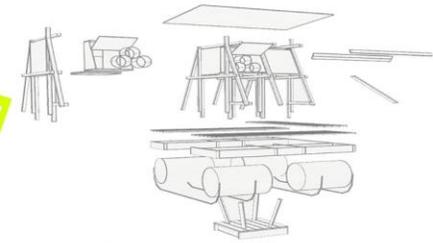
"Handwashing with soap at key times...significantly decreased intestinal parasite reinfection rates. Furthermore, the handwashing intervention significantly reduced anemia prevalence in children." (Mahmud et al, 2015)
 "Inadequate access to WASH causes at least 20% 1.5 million of all child deaths each year." (Prüss-Üstün et al, 2008) [WASH = safe drinking Water, Adequate Sanitation, and Hygiene promotion]

FARMS
 add beauty to the waterscape, give people the chance to grow healthy food and enhance the value of the community to Iquitos.

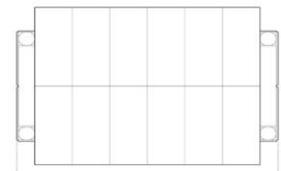


CHICKEN COOPS / COMPOST

recycled materials, clean, easy maintenance, improved quality
 "Subsistence/smallholder agriculture can play an important role in reducing the vulnerability of rural and urban food-insecure households, improving livelihoods, and helping to mitigate high food price inflation." (Baiphethi et al, 2009) "Feces from chickens poses public health sanitation issues, and chickens can transfer the bacteria Campylobacter and Salmonella to humans. Corraling and enclosing chickens can help reduce the disease transmission risks." (Martinez, 2013)
 "By 2012, 32.9% of the Peruvian children under five had anemia and 18.0% had chronic malnutrition." (Anticona, 2014)
 "Results of both animal and human studies have confirmed that [iron-deficiency anemia] increases intestinal lead absorption" (Baker et al, 2010)
 Iron per 100g: Tomato: 0.3mg; Watermelon: 0.2mg; Yuca: 0.27mg (USDA, 2015) Camu camu: 0.53mg (Justi, Visentainer, Evelázio de Souza, & Matsushita, 2000)



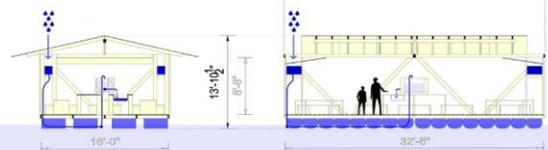
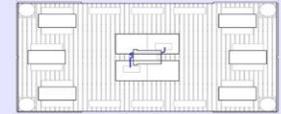
ROOF PLAN
 roof drains into filtered rainwater capture barrels



COMMUNITY KITCHEN
 unites community around a new center



PLAN
 meetings up to 60 people
 communal cooking/eating



SECTIONS
 rainwater collection, human scale

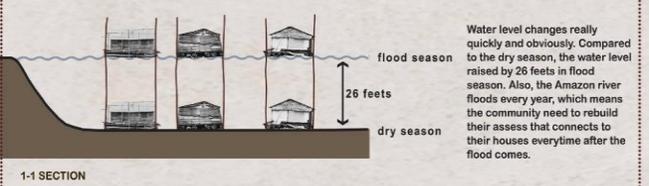
AQUA • INFRASTRUCTURE

Our site, community of Claverito, located in the largest metropolis in the Peruvian Amazon—Iquitos, it is the fifth most populous city of Peru with over 0.5 million inhabitants. The goal of this project is to improve the living environment for the community by proposing different type of infrastructure units in a modular and easy way.



SITE CONTEXT

Community of Claverito is such an indigenous community. It is settled on waterfront at the west of Iquitos, and has last for over 35 years. While until now, the community has not been accredited by the government, and having no access to any kinds of support and utilities from the city.

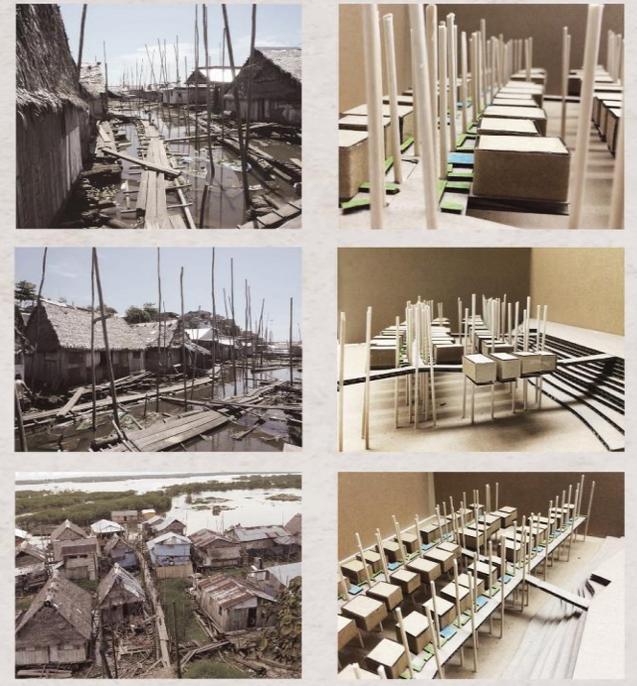
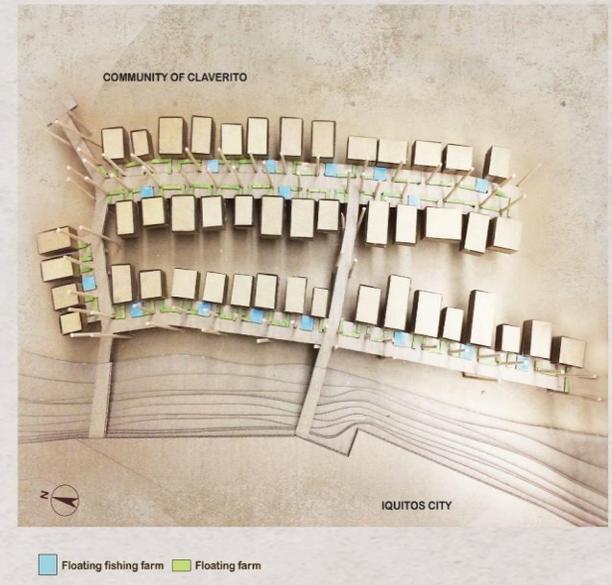


VOICE FROM COMMUNITY

The workshop with Claverito on August 11, 2015 provides an efficient way to help designers to learn community members' ideas. In this community meeting, everyone gathered close in one big group so could hear other's answers.

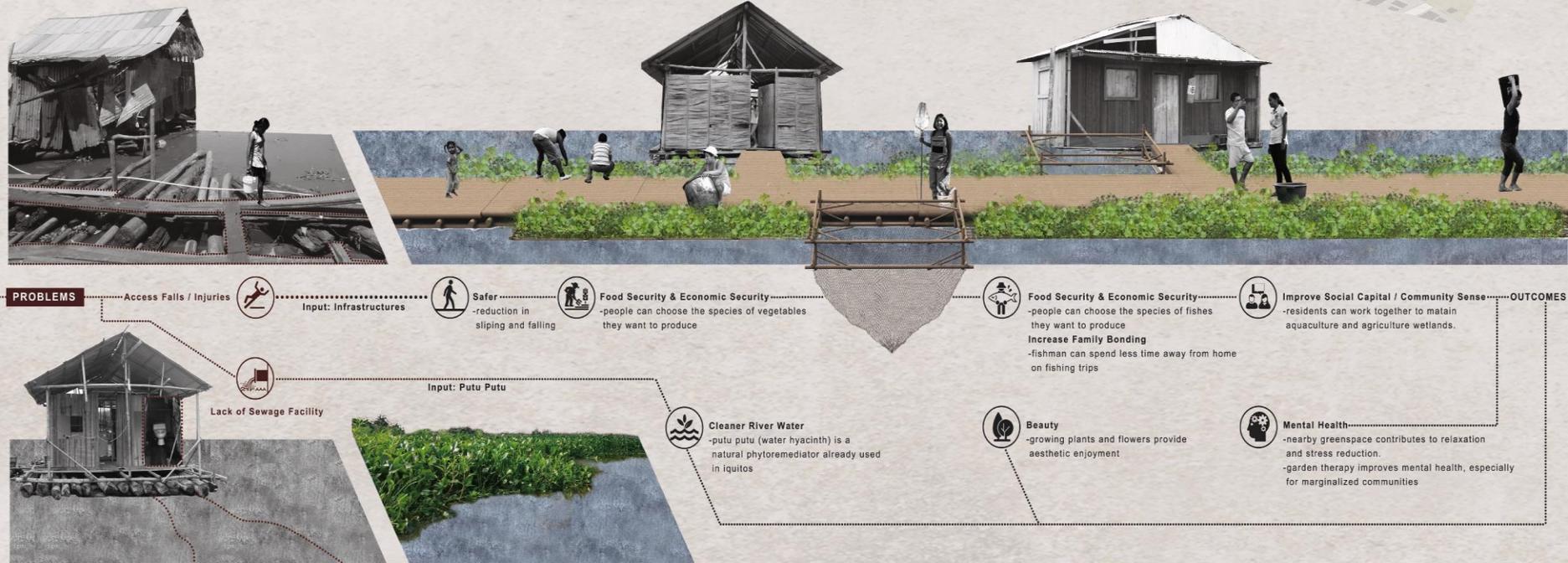


MASTERPLAN

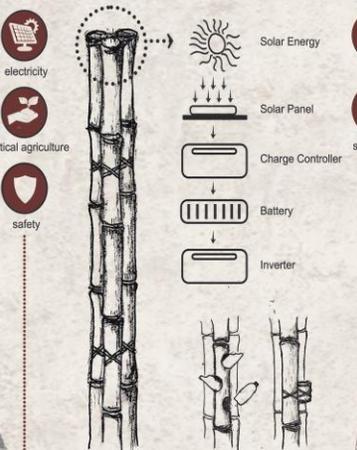
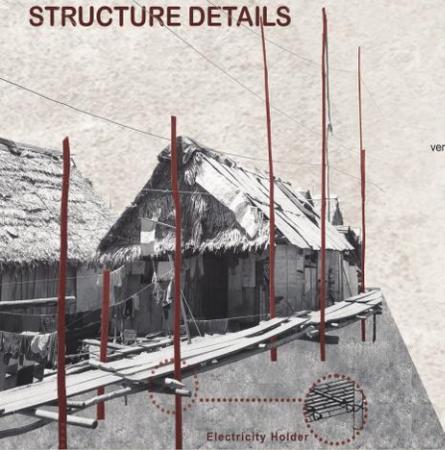


INFRASTRUCTURE SYSTEM

- Food**
Growing crops on verticle holders, medicinal plants and other edible plants on the floating farms, also raising fish in the fish pools will be a crucial activities of the community. After growing the food well, markets could be set up, which could also open to the up-level city.
- Permanent Road System**
We created modular structure for the pathway of the community, which could be easily built and move. The way how different module is attaching to each other, also how road system is related to other infrastructure system will create a new healthy and efficient lifestyle for the community.
- Green Bathrooms**
Unhealthy bathroom is a big issue in the floating community, which not only harm to human health but also to the eco-system. We took the precedents and Cambodia bathrooms, relocate the bathrooms in back of people's house and create a green belt in between, growing Putu Putu as water treatment.
- The Anchor**
We improve the quality and stability of the existing electricity holder, which is vital element of the floating community—to keep them stay in the same location and keep them from floating away. The newly designed holder will be stronger, and productive, better serve the community as "the essential anchor".
- Electricity Power**
We are proposing the quality and sustainable use of solar panels on top of the holder we create. This will be part of the electricity plan. The other part is to propose safe and easy layout of electricity network for the government to provide electricity.



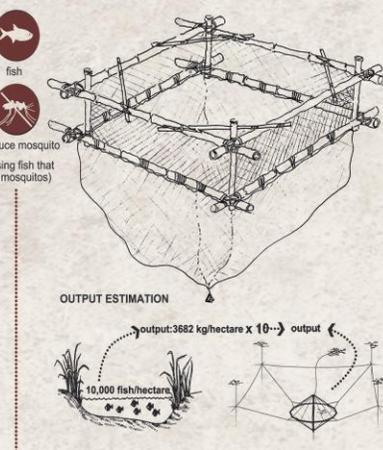
STRUCTURE DETAILS



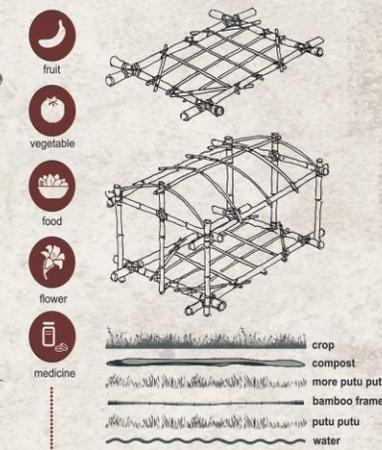
MULTIFUNCTIONAL HOLDER



MODULAR FLOATING PATH



FISHING FARM



FLOATING FARM

PERSPECTIVE



DESIGN VISION



QUITOS CITY

HOW DO WE BUILD OUR COMMUNITY?

The infrastructure system we propose is modular, units could be connected with each other easily by rope. The holders and floating pathway units are basic structure which should be built first. Fishing farm and floating farm are optional depend on people's will and interest, and those structures could be easily attached to the floating pathway.



FLOATING BATHROOMS

Using Putu Putu, a local plant, as efficient water purification element. The green belt in between the back side of each row of housing, serving as a purification buffer, cleaning the polluted water comes from the bathroom and other human activities.



ECO-SYSTEM HEALTH

Because of the special location of the community—the gate to the Amazon and right near the rain forest, the "Green Belt" can be considered as an essential node along the river, and benefits larger eco-system as well.





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