



One Health in urban areas: Co-benefits and costs of non-action

Fabrice Vavre
CNRS/University Lyon 1



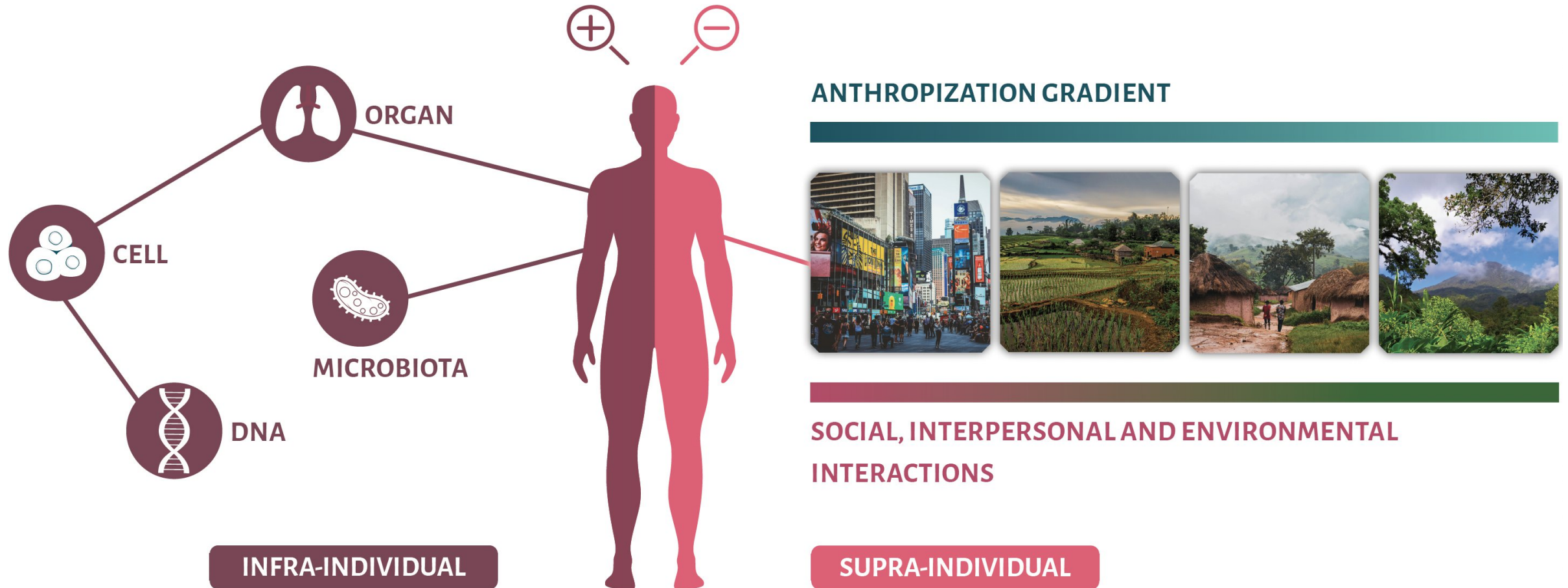
VetAgro Sup



anr[®]

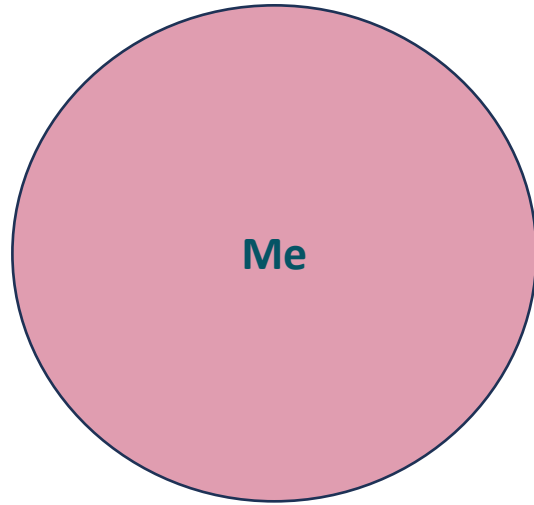
Individuals at the heart of the One Health approach

« Putting the individual back at the center — both as a target and an actor within their environment »

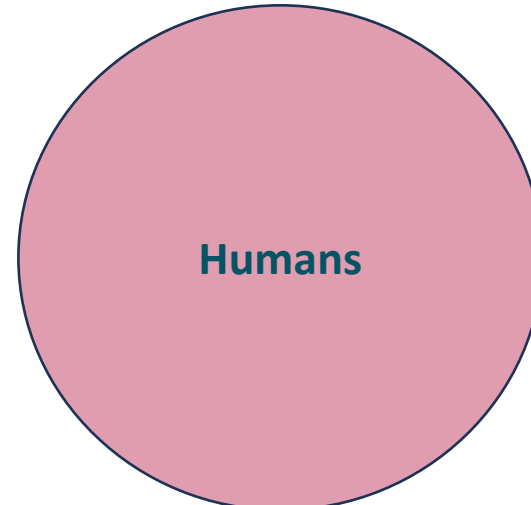


One Health at all scales

Who am I?

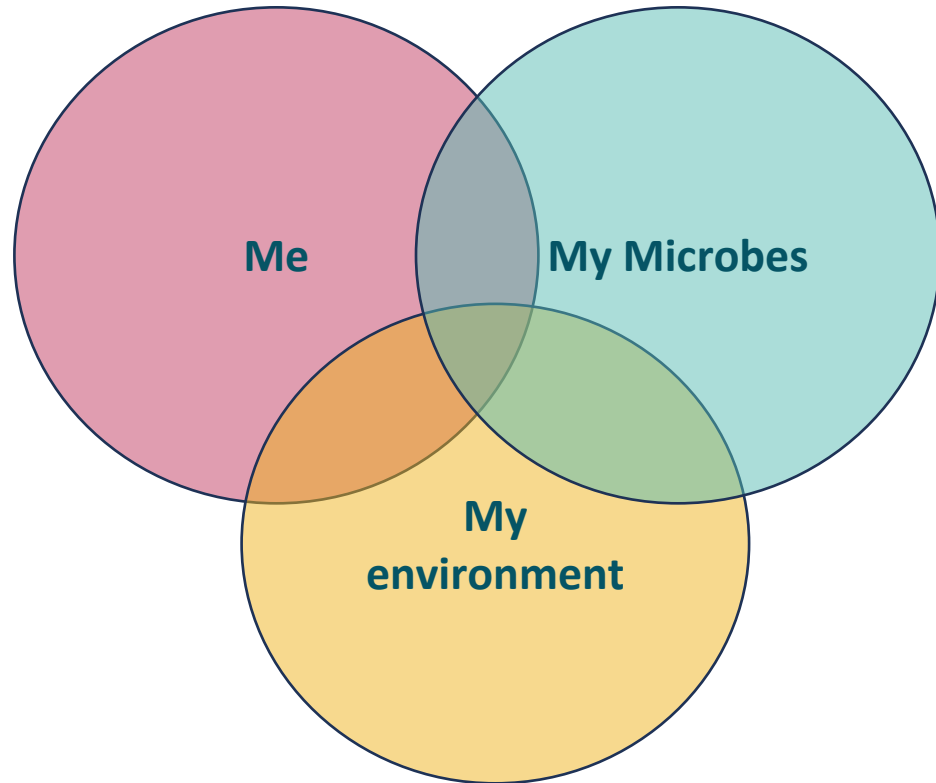


Who are we?

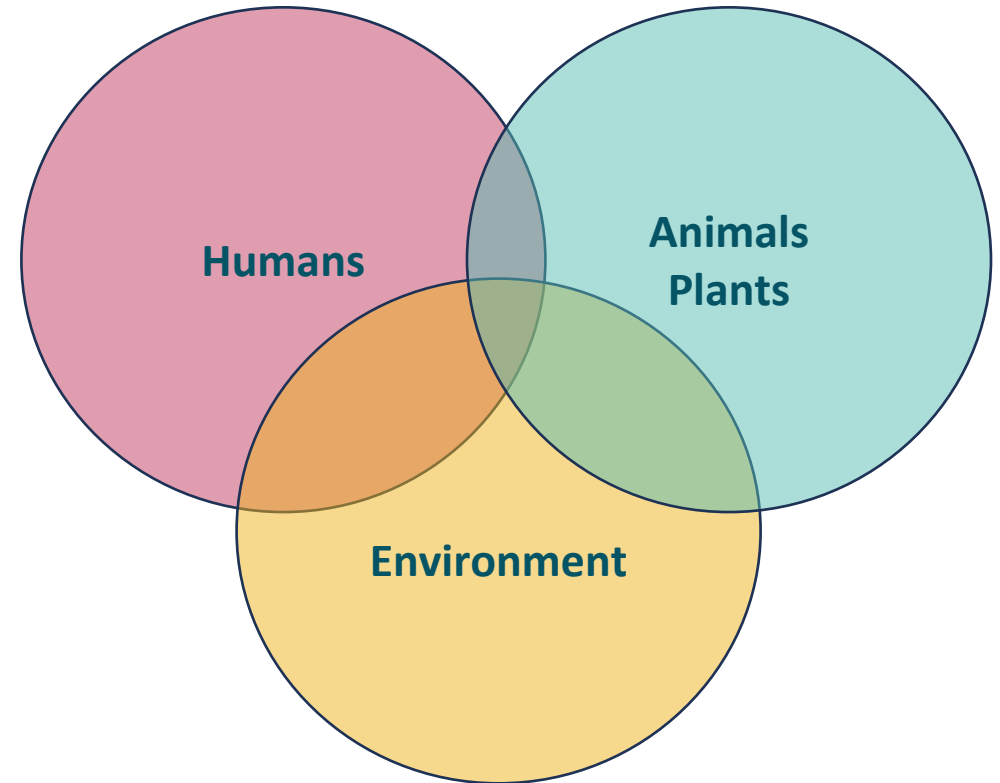


One Health at all scales

Who am I?

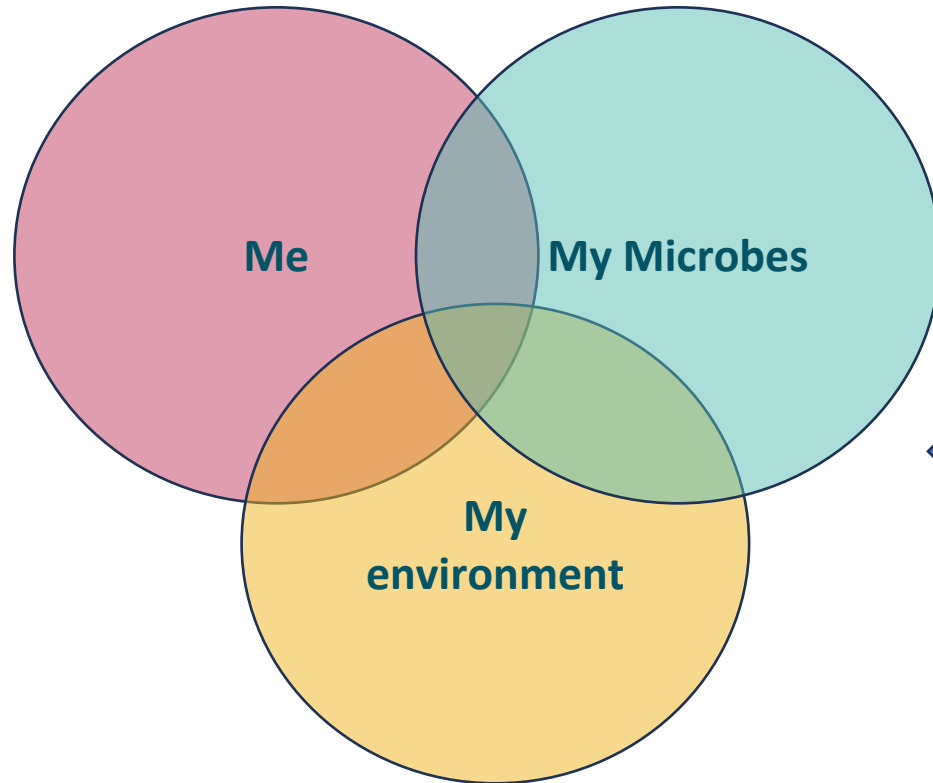


Who are we?

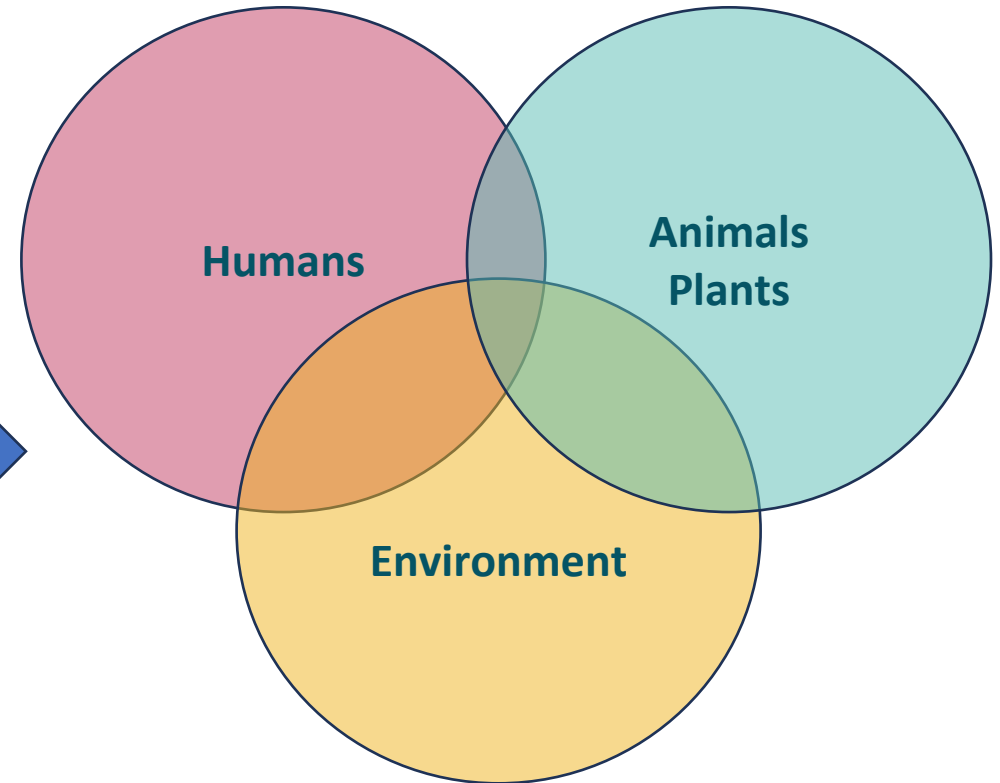


One Health at all scales

Who am I?

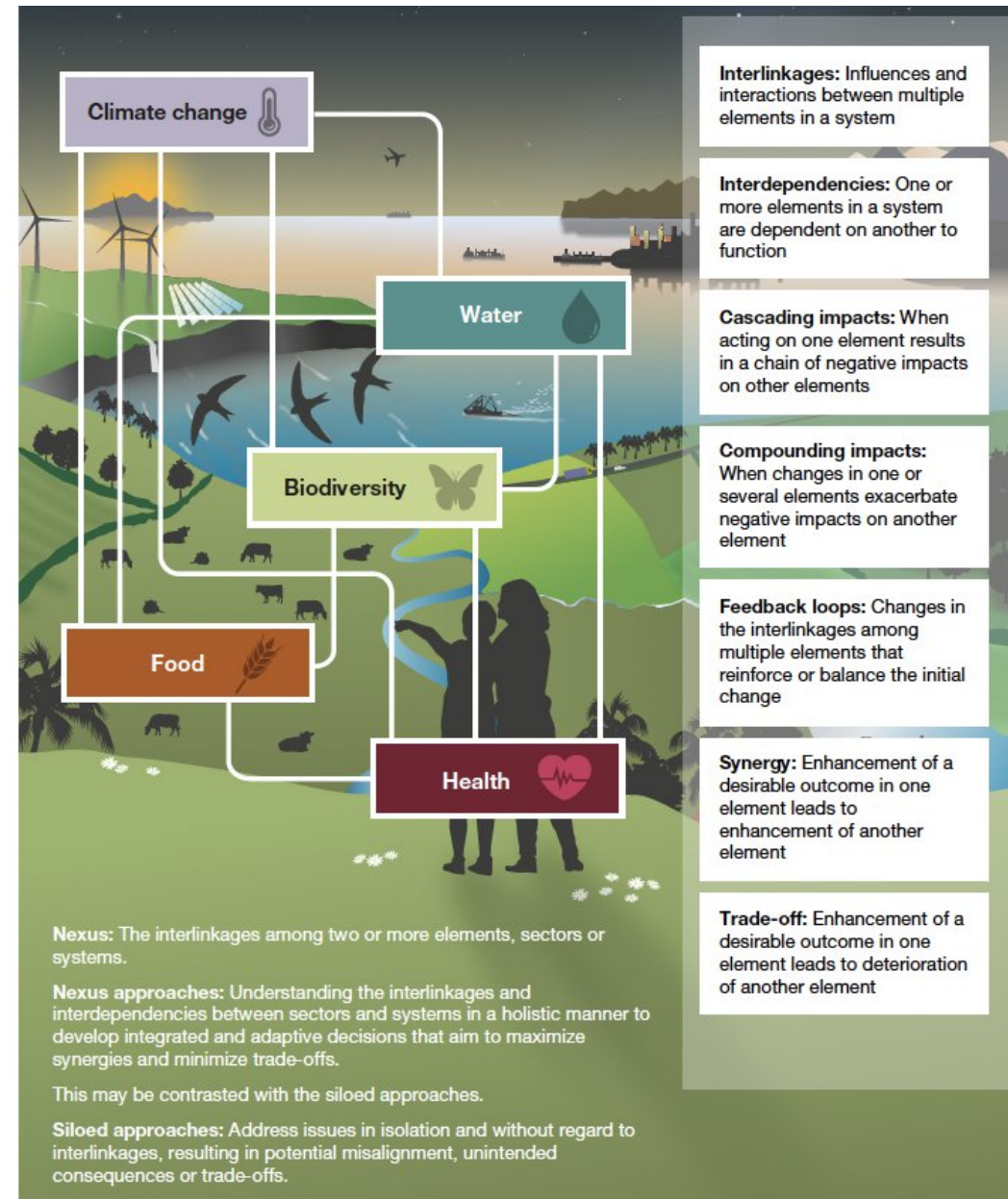
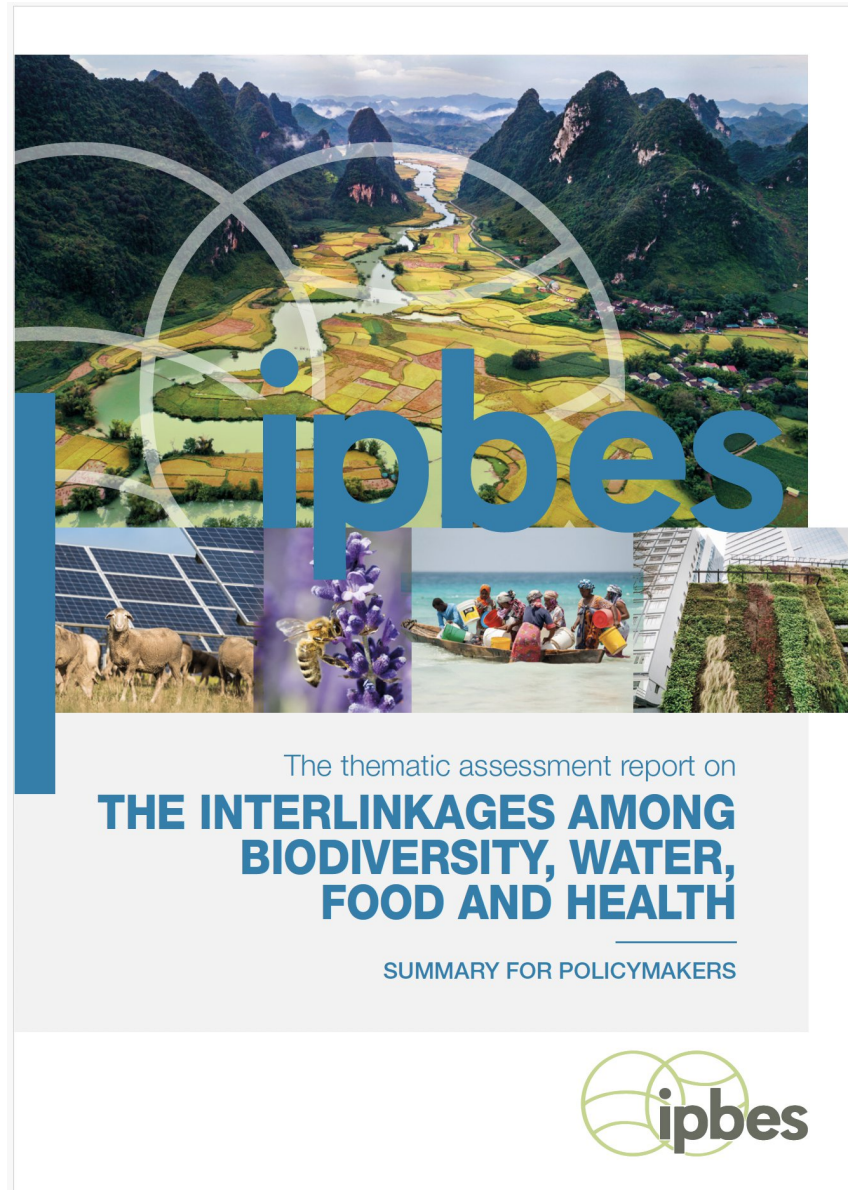


Who are we?



We are ecosystems part of ecosystems!

The IPBES Nexus report, working on intelinkages



Negative trends and interdependencies...

B TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON NEXUS ELEMENTS										Direct driver
Indicators of indirect driver		Trend in indirect driver	Biodiversity	Water		Food		Health		Climate change
				Availability	Quality	Quantity	Quality	Physical	Mental	
Economic	GDP	↑	↘	↘	↘	↑	↘	↘	↘	↑↑
	Material intensity	↘	—	—	—	↑	—	—	—	↓
	Trade	↑	↘	↘	↘	↑	↘	↘	↘	↑
	Poverty	↓	—	~	—	~	~	~	~	—
Demographic	Population	↗	↘	↘	↘	↑	↘	↘	↘	↑↑
	Urbanization	↗	↘	↘	↘	↑	~	↘	↘	↑
Institutional	Regulations (environmental)	↑	↑	↑	—	—	—	—	—	—
	Armed conflicts	↑	~	—	—	—	↘	↘	↘	↑
Cultural	Knowledge/literacy	↗	—	—	—	—	—	—	—	—
	Per capita consumption	↗	↘	↘	↘	↑	↘	↘	—	↑↑
Technology	Renewable energy (solar and wind)	↑	↘	—	—	~	—	~	—	↓
	Use of ICT	↑	↘	—	—	—	—	↘	—	~

Trend characterization, annual growth rate since 2001

↑

> +3%

↗

0.3 to 3%

→

-0.3 to 0.3%

↘

-0.3 to -3%

↓

< -3%

How trend in indirect driver impacted trend in direct driver

↑↑

Intensification

↑

Modest intensification

—

Stable/little impact

↓

Small reduction

↓↓

Large reduction

~

Variable

How trend in indirect driver impacted trend in nexus element

▲▲

High positive impact

▲

Moderate positive impact

—

Stable/little impact

▼

Moderate negative impact

↘

High negative impact

~

Variable

Level of evidence of impact

Well established

Established but incomplete

Unresolved






Inconclusive

Staying on these trends and the cost of inaction...

- Negative externalities on biodiversity, water, health, food, and climate change are at least USD 10-25 trillion per year
- Delayed action on climate change adds at least USD 500 billion per year in additional costs for meeting policy targets

Interdependencies and the power of co-benefits






186 individuals scenarios evaluated
6 nexus archetypes

A PROJECTED FUTURE IMPACTS ON THE NEXUS ELEMENTS					
Nexus archetype	Nexus element				
	Biodiversity 	Water 	Food 	Health 	Climate 
1. Nature-oriented nexus	▲▲▲	▲▲	▲	▲	▲▲
2. Balanced nexus	▲	▲	▲▲	▲▲	▲
3. Conservation first	▲▲	~	▼▼	~	▲
4. Climate first	▼	~	▼▼	▲	▲▲
5. Food first	▼▼	▼	▲▲	▲	▼▼
6. Nature overexploitation	▼▼	~	▼▼	▼	▼▼

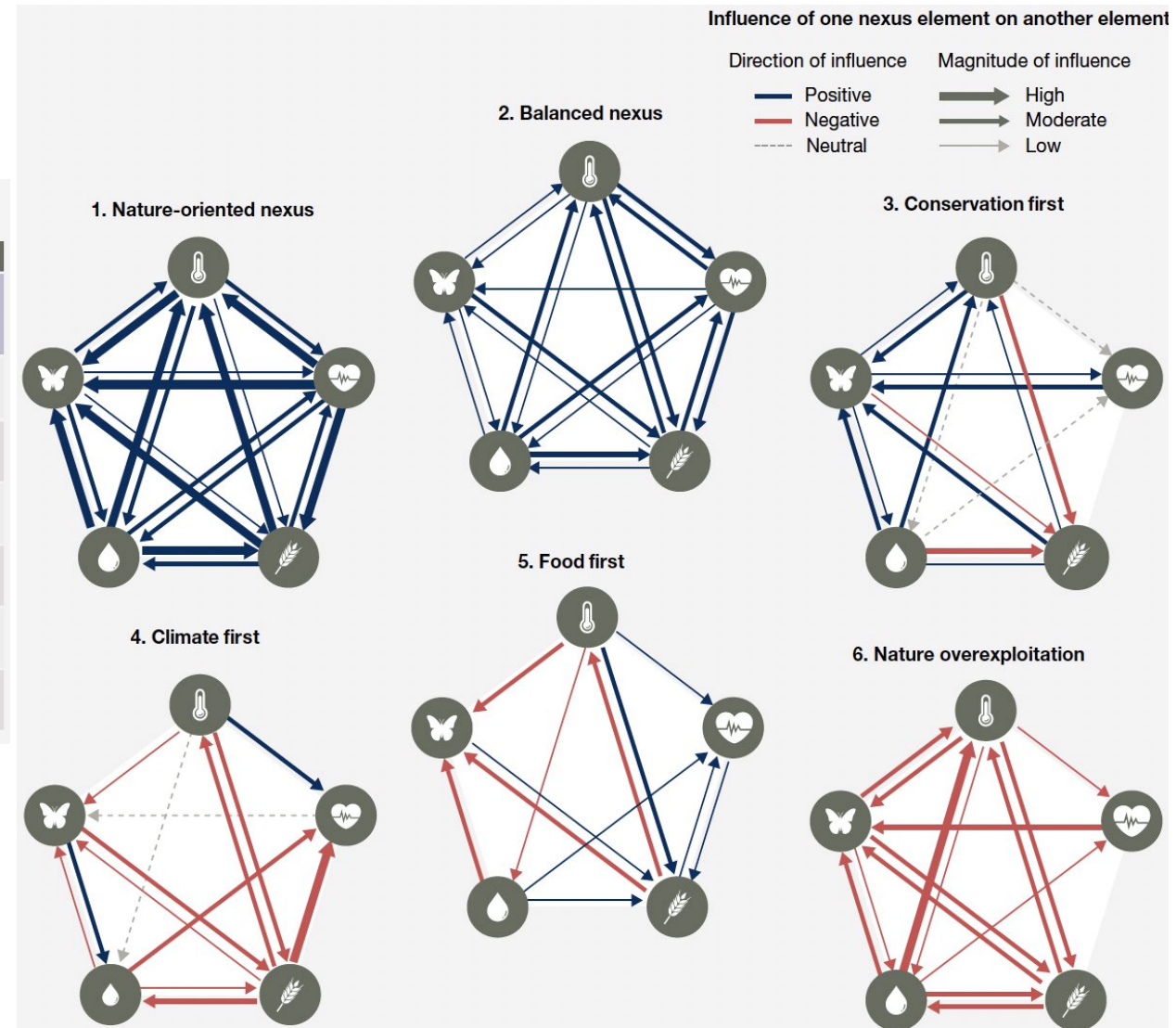
Interdependencies and the power of co-benefits

186 individuals scenarios evaluated
6 nexus archetypes

A PROJECTED FUTURE IMPACTS ON THE NEXUS ELEMENTS

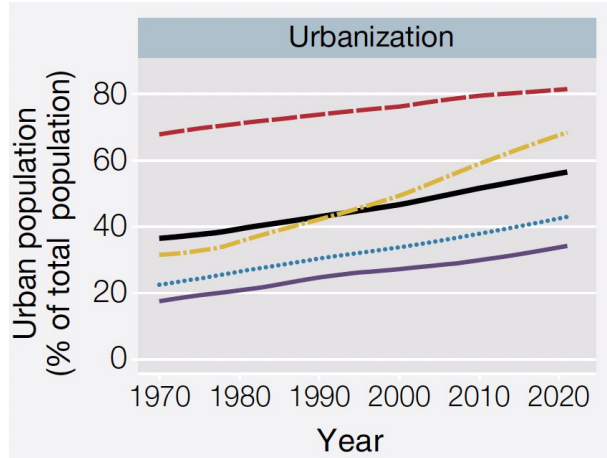
Nexus archetype	Nexus element				
	Biodiversity 	Water 	Food 	Health 	Climate 
1. Nature-oriented nexus	▲▲▲	▲▲	▲	▲	▲▲
2. Balanced nexus	▲	▲	▲▲	▲▲	▲
3. Conservation first	▲▲	~	▼▼	~	▲
4. Climate first	▼	~	▼▼	▲	▲▲
5. Food first	▼▼	▼	▲	▲	▼▼
6. Nature overexploitation	▼▼	~	▼▼	▼	▼▼

Best archetypes rely on co-benefits among the nexus elements

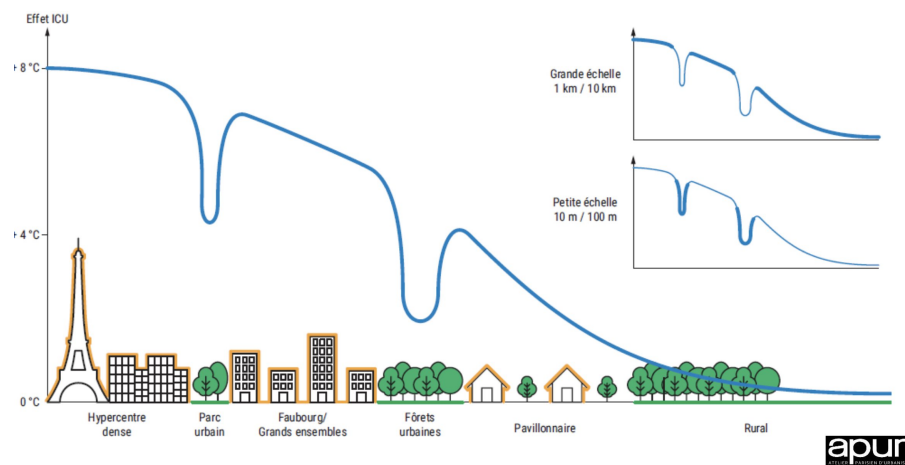


Why do cities matter?

A large fraction of the population



A higher susceptibility to climate change

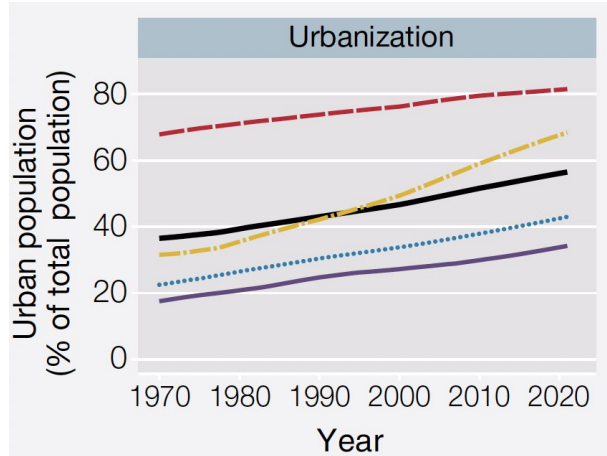


Many worsened effects in cities

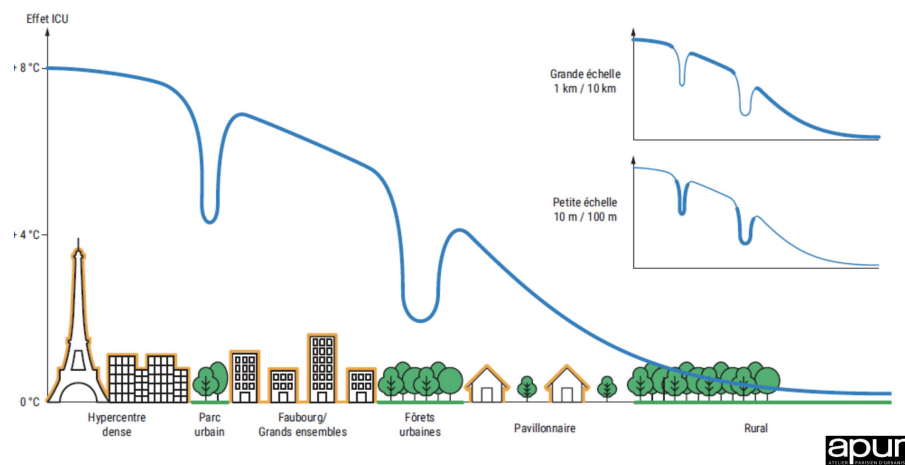
- Environmental health (pollution)
- Infectious diseases (density)
- Chronic diseases (diet, sedentary way of life)
- Mental health (stress, isolation)
- Poverty and inequalities
- Water quantity and quality
- Imbalanced biodiversity (too much, or too few)

Why do cities matter?

A large fraction of the population



A higher susceptibility to climate change



Many worsened effects in cities

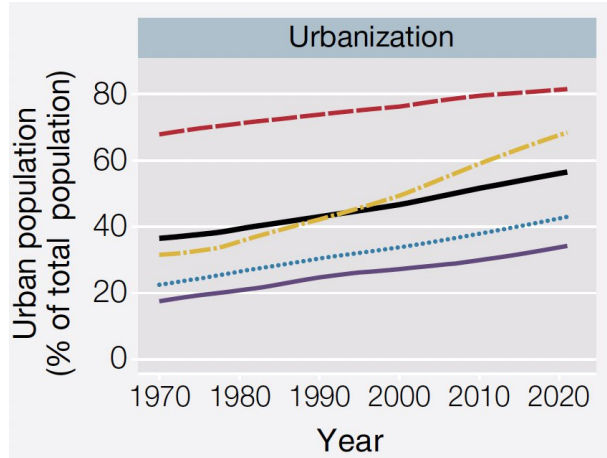
- Environmental health (pollution)
- Infectious diseases (density)
- Chronic diseases (diet, sedentary way of life)
- Mental health (stress, isolation)
- Poverty and inequalities
- Water quantity and quality
- Imbalanced biodiversity (too much, or too few)

B TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON NEXUS ELEMENTS

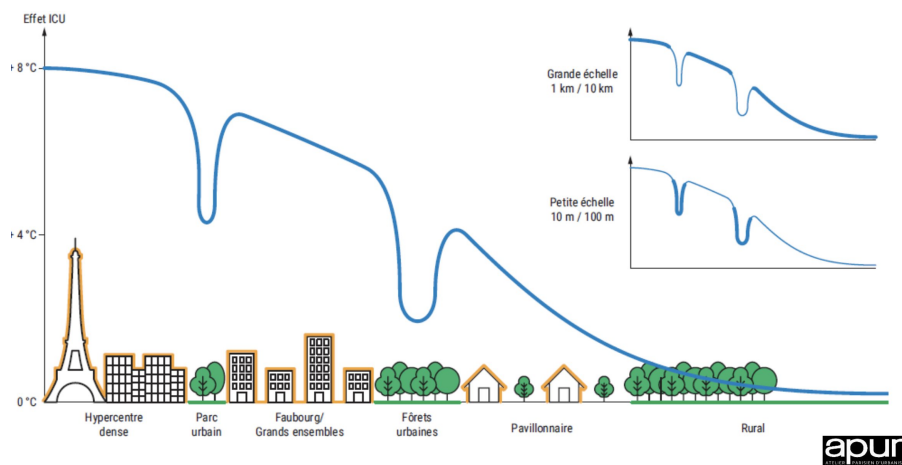
Indicators of indirect driver		Trend in indirect driver	Biodiversity		Water		Food		Health		Climate change
					Availability	Quality	Quantity	Quality	Physical	Mental	
Economic	GDP	↑	↓	↓	↓	↓	↑	↓	↓	↓	↑↑
	Material intensity	↓	—	—	—	—	↑	—	—	—	↓
	Trade	↑	↓	↓	↓	↓	↑	↓	↓	↓	↑
	Poverty	↓	—	~	—	—	~	~	~	~	—
Demographic	Population	↑	↓	↓	↓	↓	↑	↓	↓	↓	↑↑
	Urbanization	↑	↓	↓	↓	↓	↑	~	↓	↓	↑
Institutional	Regulations (environmental)	↑	↑	↑	—	—	—	—	—	—	—
	Armed conflicts	↑	~	—	—	—	—	↓	↓	↓	↑
Cultural	Knowledge/literacy	↑	—	—	—	—	—	—	—	—	—
	Per capita consumption	↑	↓	↓	↓	↓	↑	↓	↓	—	↑↑
Technology	Renewable energy (solar and wind)	↑	↓	—	—	—	~	—	~	—	↓
	Use of ICT	↑	↓	—	—	—	—	—	↓	—	~

Why do cities matter?

A large fraction of the population



A higher susceptibility to climate change




Many worsened effects in cities

- Environmental health (pollution)
- Infectious diseases (density)
- Chronic diseases (diet, sedentary way of life)
- Mental health (stress, isolation)
- Poverty and inequalities
- Water quantity and quality
- Imbalanced biodiversity (too much, or too few)

B TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON NEXUS ELEMENTS

B

TRENDS IN INDIRECT DRIVERS AND THEIR IMPACTS ON NEXUS ELEMENTS

Indicators of indirect driver		Trend in indirect driver	Biodiversity	Water		Food		Health		Direct driver
				Availability	Quality	Quantity	Quality	Physical	Mental	Climate change
Demographic	Population	↗	↓	↓	↓	▲	▼	▼	▼	↑↑
	Urbanization	↗	▼	▼	▼	▲	~	▼	▼	↑

Practical actions with co-benefits: from immediate benefits to the reconfiguration of city perception

The Project Rue des Enfants :
Reconfiguration of school surroundings



Outdoor kindergartens



Immediate co-benefits :

- Health: physical and mental
- Bioversity
- Environment: pollution (air, noise)
- Water: permeabilization
- Food

Practical actions with co-benefits. from immediate benefits to the reconfiguration of city perception and conception

The Project Rue des Enfants :
Reconfiguration of school surroundings



Outdoor kinder gardens



**Reconfiguration of city perception for the youngest,
Cities are:**

- Quiet
- Active
- Green
- shared with other species

What's next? Tomorrow is unknown...

- It will not be like today
- It will be a new reality
- Let's be creative!



A vibrant, hand-drawn illustration by Guillaume Padilla. In the center, a stylized human figure in a white circle is connected by blue lines to four circular icons: a pair of lungs (top-left), a DNA helix (bottom-left), a cell (top-right), and a flower (bottom-right). The background is divided into four quadrants by white diagonal lines. The top-left quadrant shows a lush green forest with a large toucan perched on a tree and two parrots flying. The top-right quadrant depicts an urban scene with a traffic light, a red stop sign with a green cross, and a building labeled 'HOSPITAL MATERNA'. The bottom-left quadrant shows a deforested area with a person running, a mosquito, and a small hut. The bottom-right quadrant features a rural landscape with a cow, a chicken, and a church. The artist's signature '© Guillaume Padilla' is in the bottom right corner.

