UNLOCKING INNOVATION AND BIOPHILIC DEVELOPMENT FOR SUSTAINABLE TROPICAL CITIES

Chula Next Energy : Stakeholders Seminar

Gap in Thailand's Energy Structure
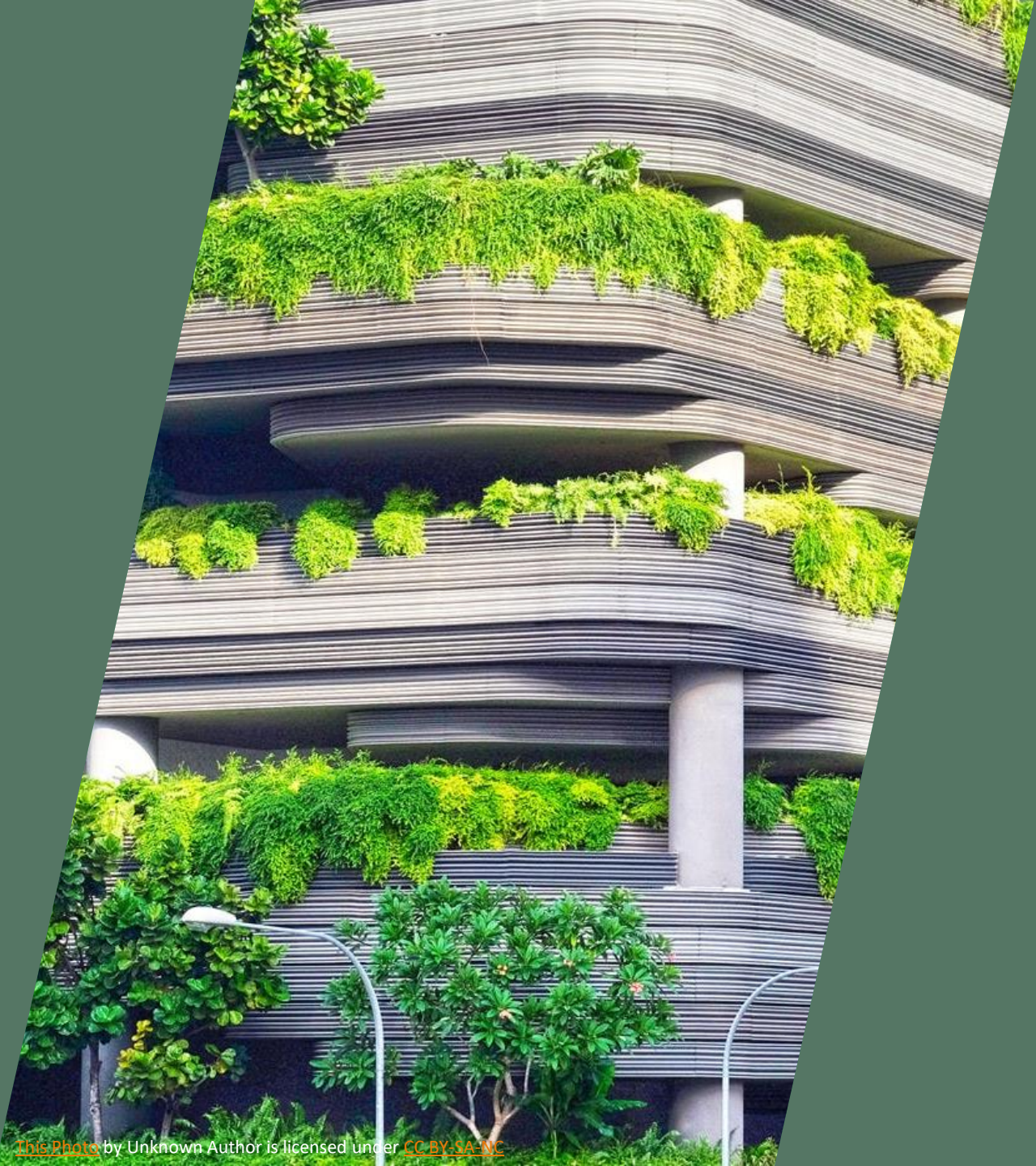
Ariya 'Narm Aruninta

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Biophilic Development
for
Sustainable Tropical Cities

Contents

- Introduction : What to be unlocked !!!

  - Biophilia | Ontological Landscape |Sustainable Development Goals

- Interlinkage of SDGs - Sustainable Development Goals

- The Anthropocene Economic vs Ecology

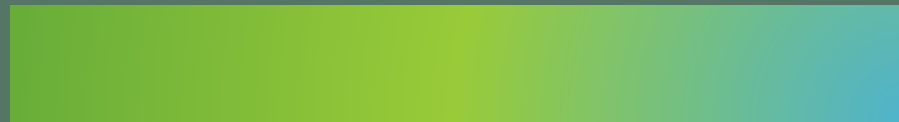- Ontological Landscape

- Conclusion - Biophilic Development

Introduction

Unlocking Innovation and Biophilic Development for Sustainable Tropical Cities

WHAT TO BE UNLOCKED

- Future actions for **SDGs**

- Understanding the **Ontological Landscape** of our cities

- Paradigm shift from **Anthropogenic → Biophilic** Development

Sustainable Development Goals
|Ontological Landscape| Biophilia

- **17 Sustainable Development Goals**

- **Ontological Landscape**
  → **existential, phenomenological Landscape**

- **Biophilia**
  Bio **+** Philia = 💚 Living things

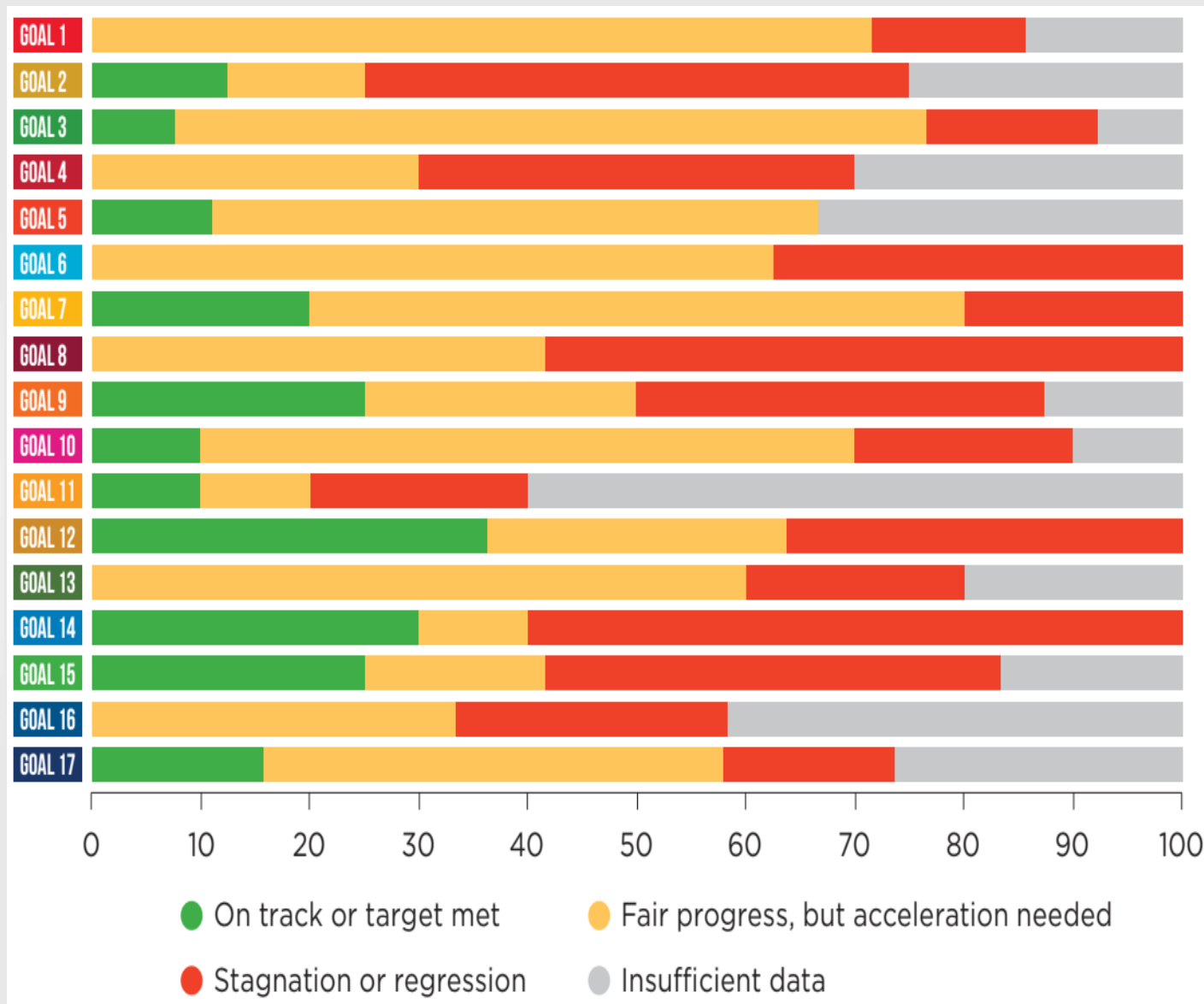# Interlinkage of SDGs - Sustainable Development Goals

INTERLINKAGES : POSITIVE & NEGATIVE

ec.europa.eu

2023 (AUGUST) PROGRESS BY GOALS

Sustainable Development Goals Infographic

unstats.un.org

Progress by Goals chart:
- GOAL 1 through GOAL 17 progress bars (scale 0–100)
- Legend:
  - On track or target met (green)
  - Fair progress, but acceleration needed (yellow)
  - Stagnation or regression (red)
 - Insufficient data (grey)

FUTURE ACTIONS FOR SDGS

1. Save energy at home
2. Change your home's source of energy
3. Walk, bike or take public transport
4. Switch to an electric vehicle
5. Consider your travel
6. Reduce, reuse, repair and recycle
7. Eat more vegetables
8. Throw away less food
9. Plant native species
10. Clean up your environment
11. Make your money count
12. Speak up

https://www.un.org/en/actnow/ten-actions

The Anthropocene
Economic vs Ecology
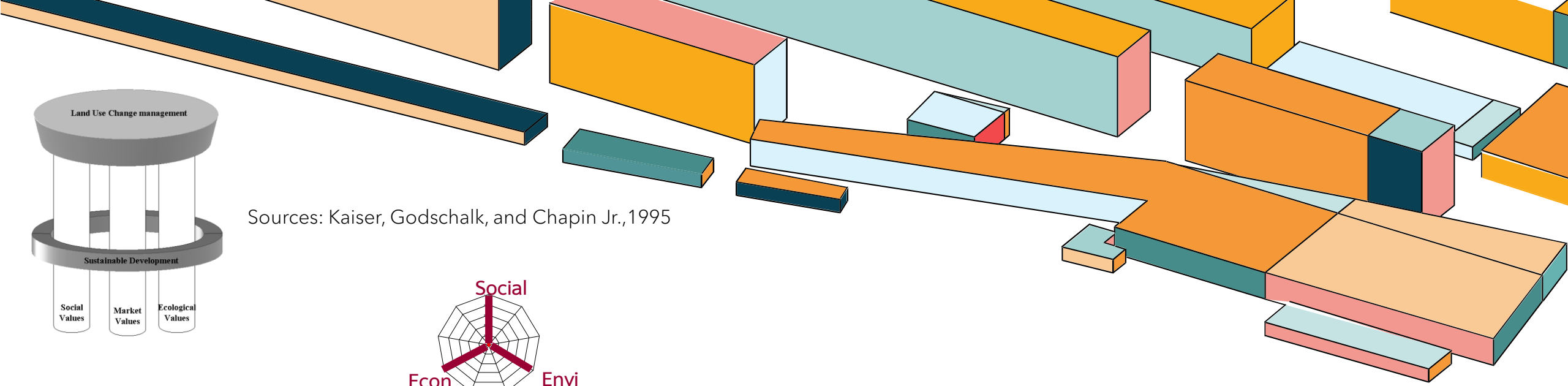
Sources: Kaiser, Godschalk, and Chapin Jr.,1995

Social

Econ   Envi
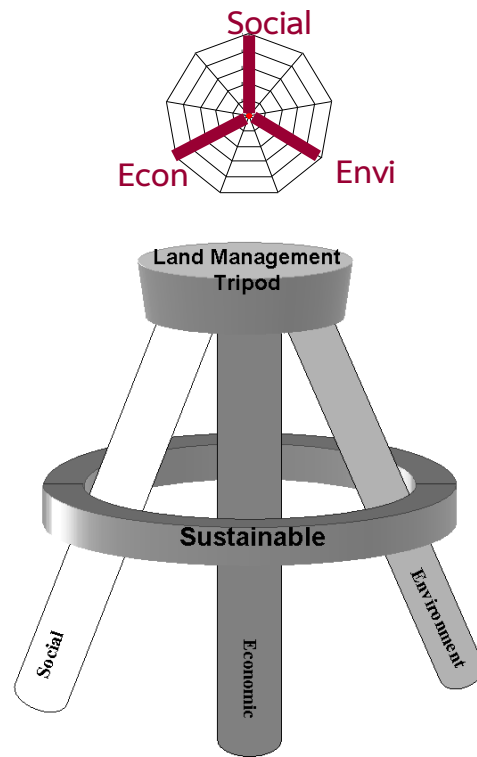
Aruninta (2005) developed the model of land use change management, as
'a three-legged stool' to
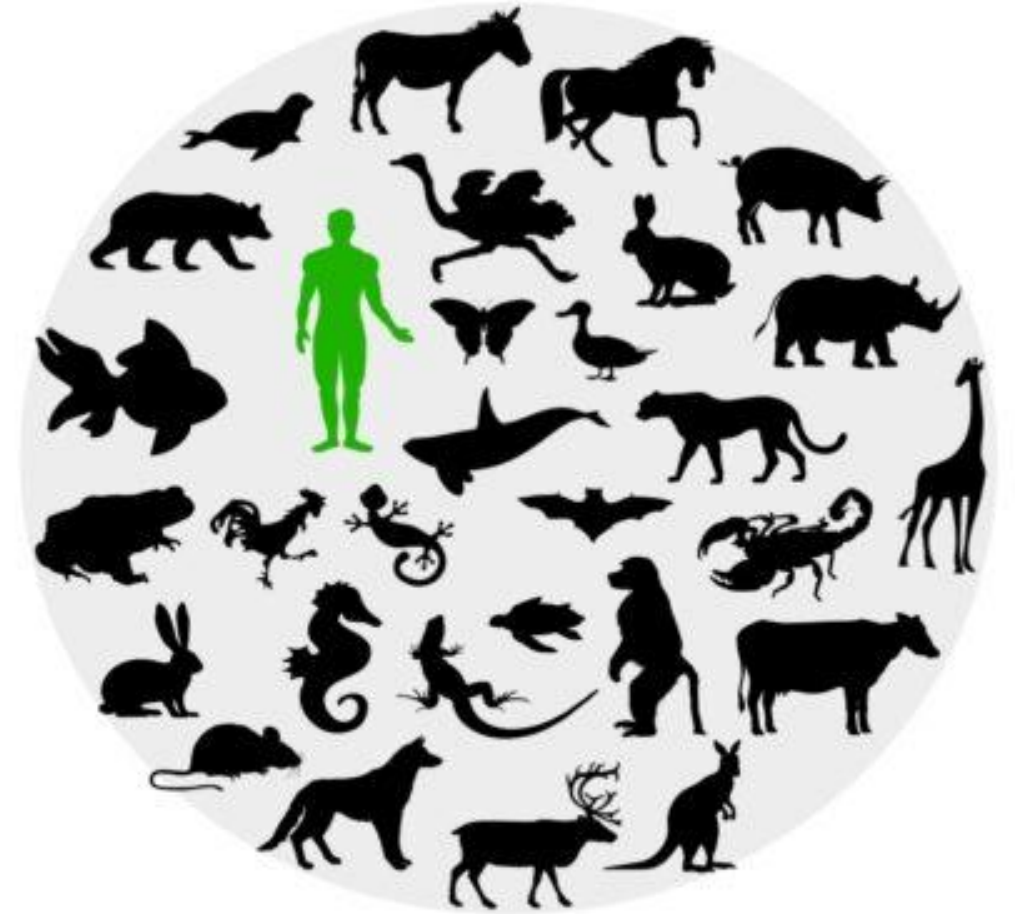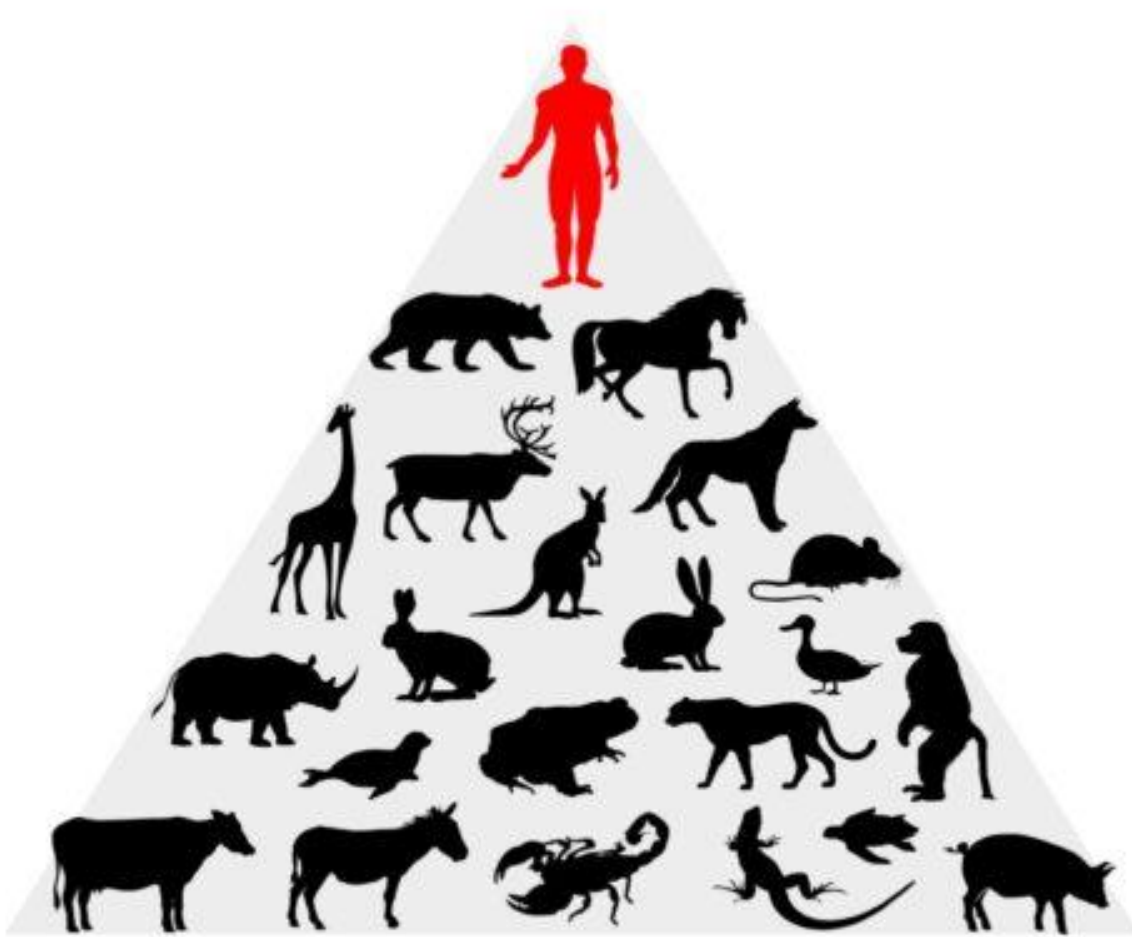'The land management tripod.'
that allows for inclusion of the political dimension and in the more flexible nature than the three legged stool.

Sources: Aruninta, 2005. Managing publicly owned urban vacant land redevelopment projects in Bangkok, Thailand., 42nd FLA World Congress theme: Urban Growth and Decline

BALANCING / INTEGRATION / HARMONIZING
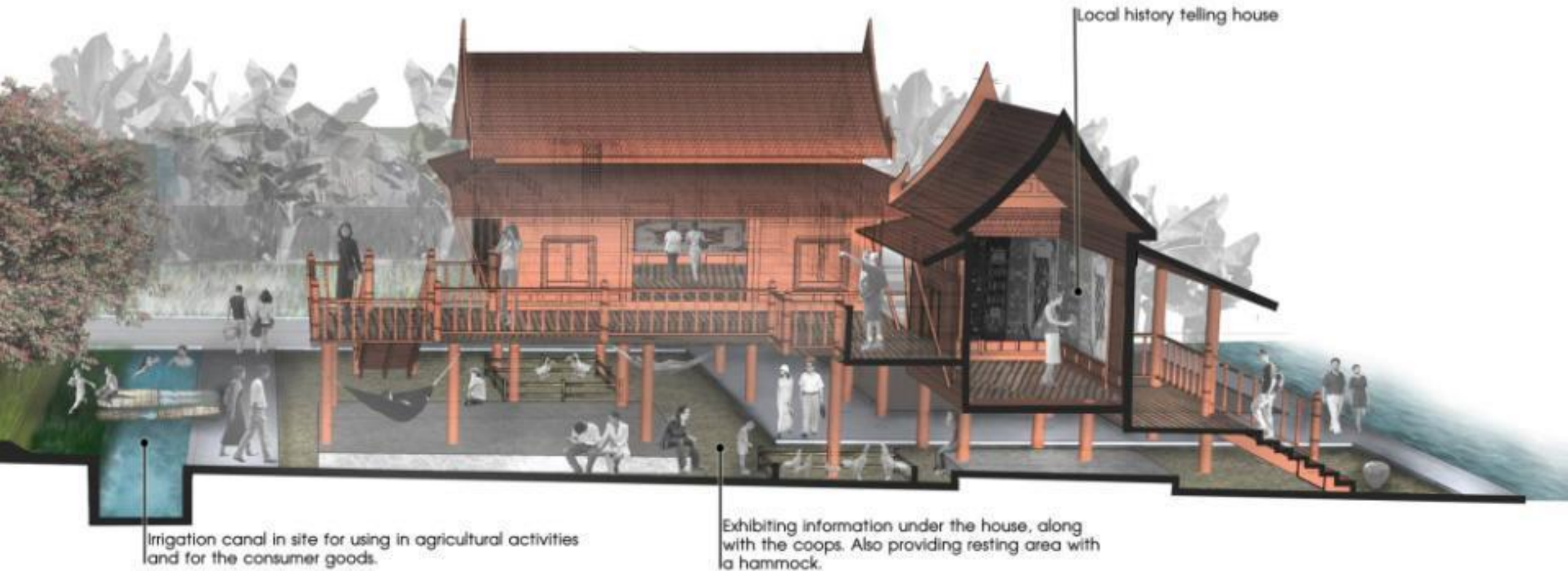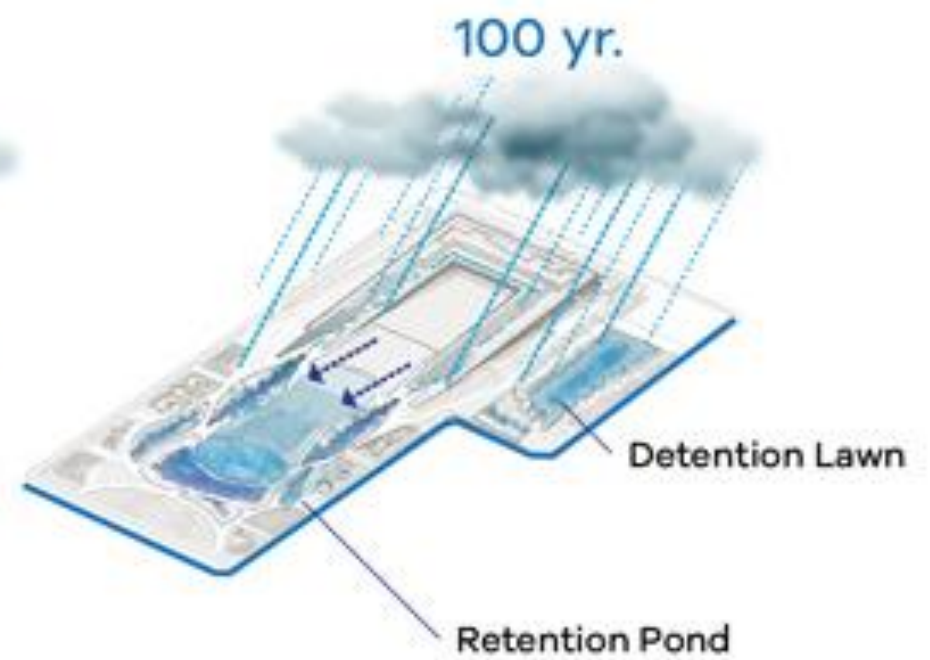
Ego Only me **Eco** For us

Image : Alain Lacroix, Leadchangegroup.com

Image: Planta & Canta, plantaycanta.com.ar

Ontological Landscape

Local history telling house

Irrigation canal in site for using in agricultural activities and for the consumer goods.

Exhibiting information under the house, along with the coops. Also providing resting area with a hammock.

THAI WISDOMS : Passive but Adaptive

LA Design Studio

Ms. Sarocha Manaanantakul

Down
Up

5 yr.

50 yr.

100 yr.

Retention Pond

Retention Pond

Detention Lawn

Retention Pond

Rain and Storm Water management
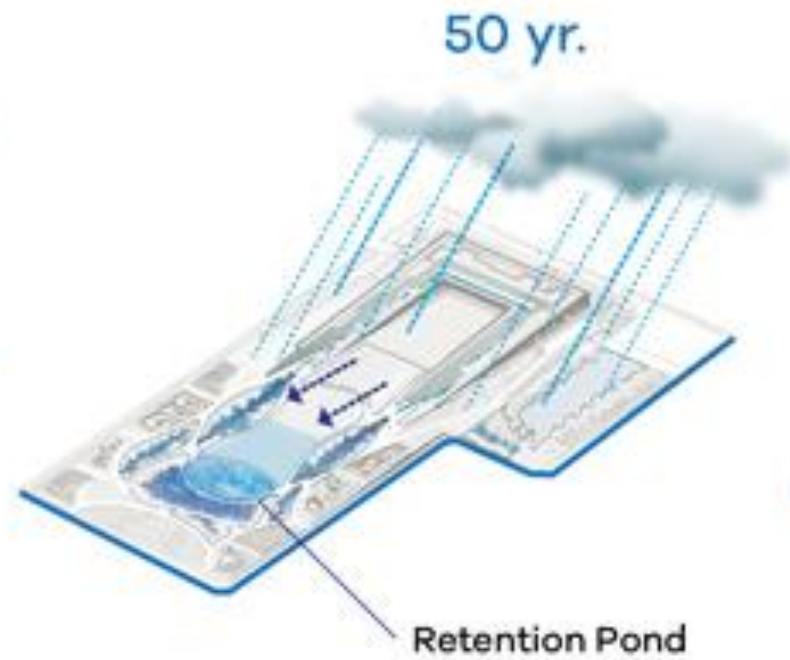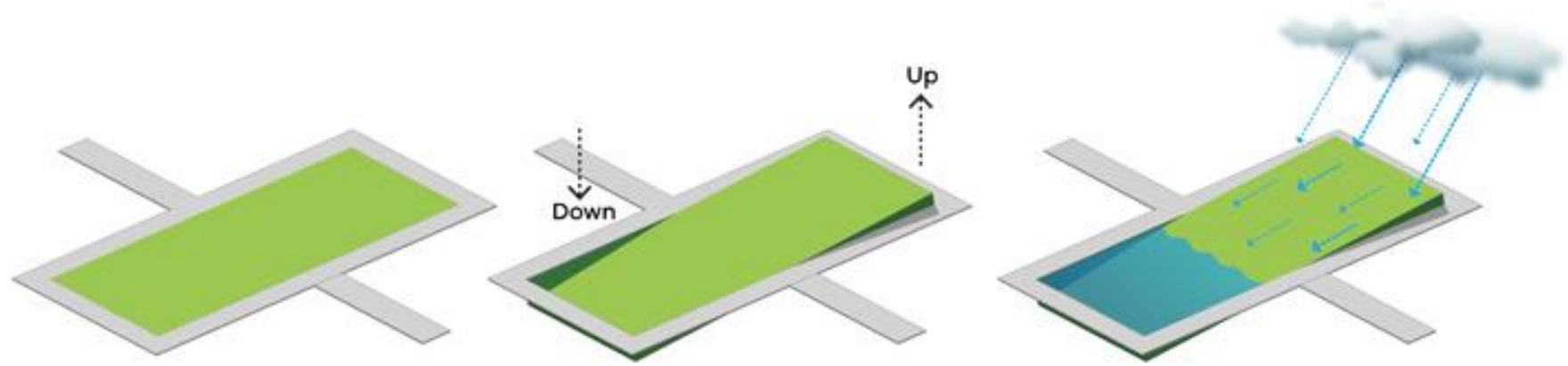
UHI – Urban Heat Island

Sky factor | Green factor | Albedo

Incoming Solar Radiation

Outgoing Radiation

Reflected by Clouds

Reflected by Surface

Net Emission from Surface

Emission by Clouds

Emission by Water Vapor, CO_2

Absorbed by Clouds

Absorbed by Water Vapor, Dust, O_3

Absorbed by Surface

Absorption and Emission by Atmospheric Gases, Water Vapor and Dust

Infrared Radiation Emitted by Surface
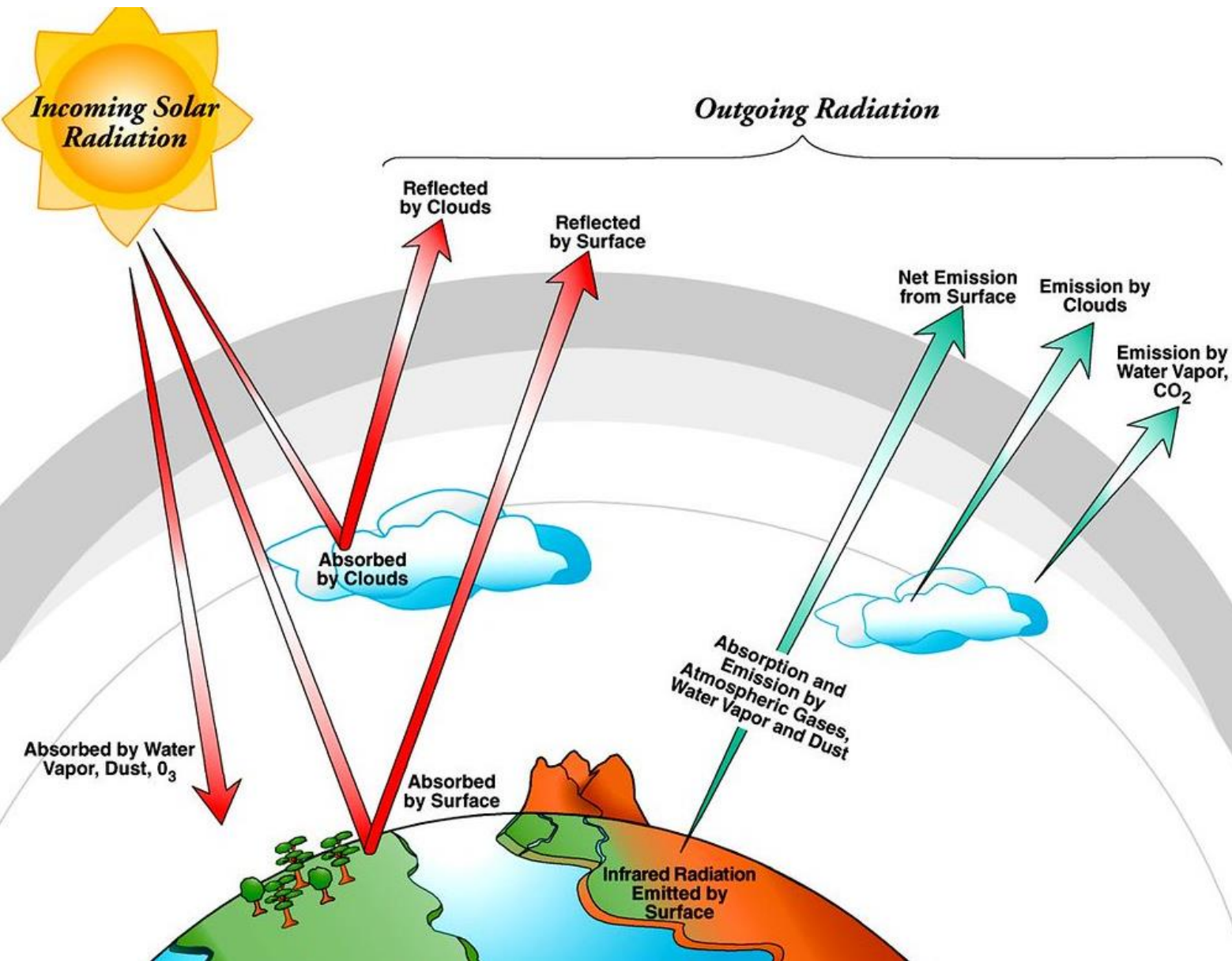
RADIATIONS

- Short wave
- Long wave
- Absorption vs Reflection
- Albedo

ALBEDO EFFX

➔ The amount of energy reflected by a surface to space

- High Albedo: A Double-Edged Sword.
- Albedo effx is a multifaceted phenomenon.
- Understanding its intricacies enables us to make informed decisions about mitigation strategies and to work towards a more sustainable future.
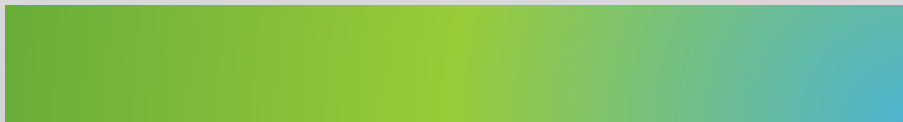
kloopify.com
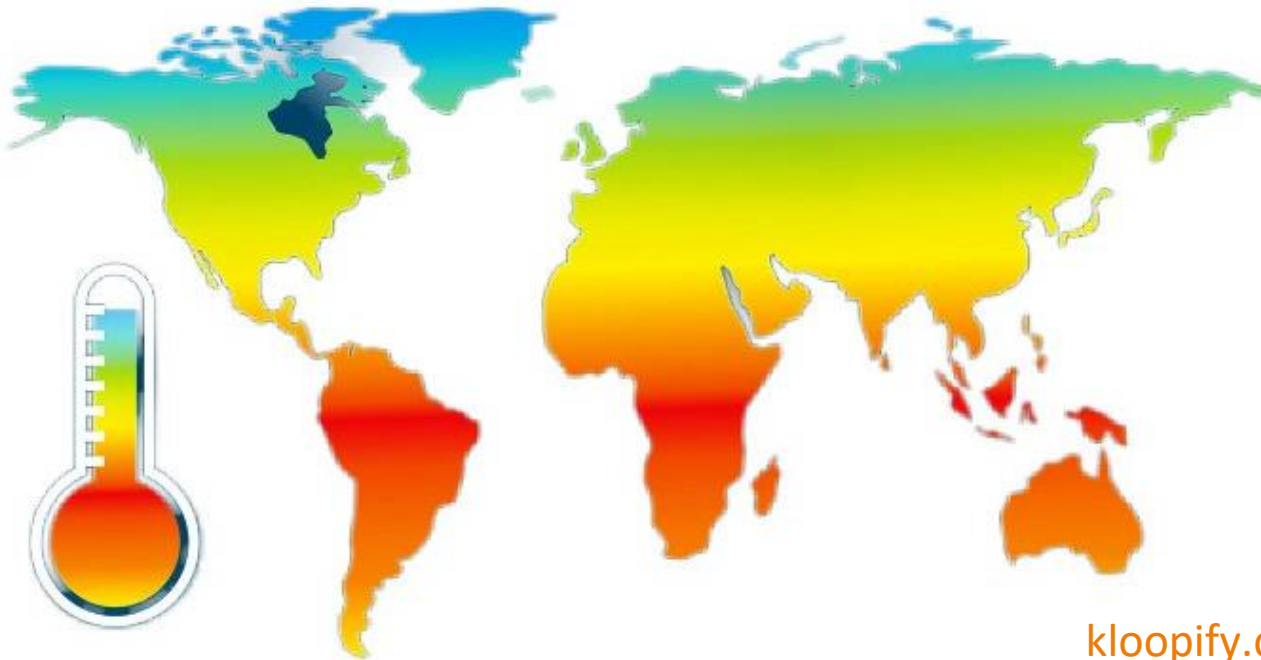
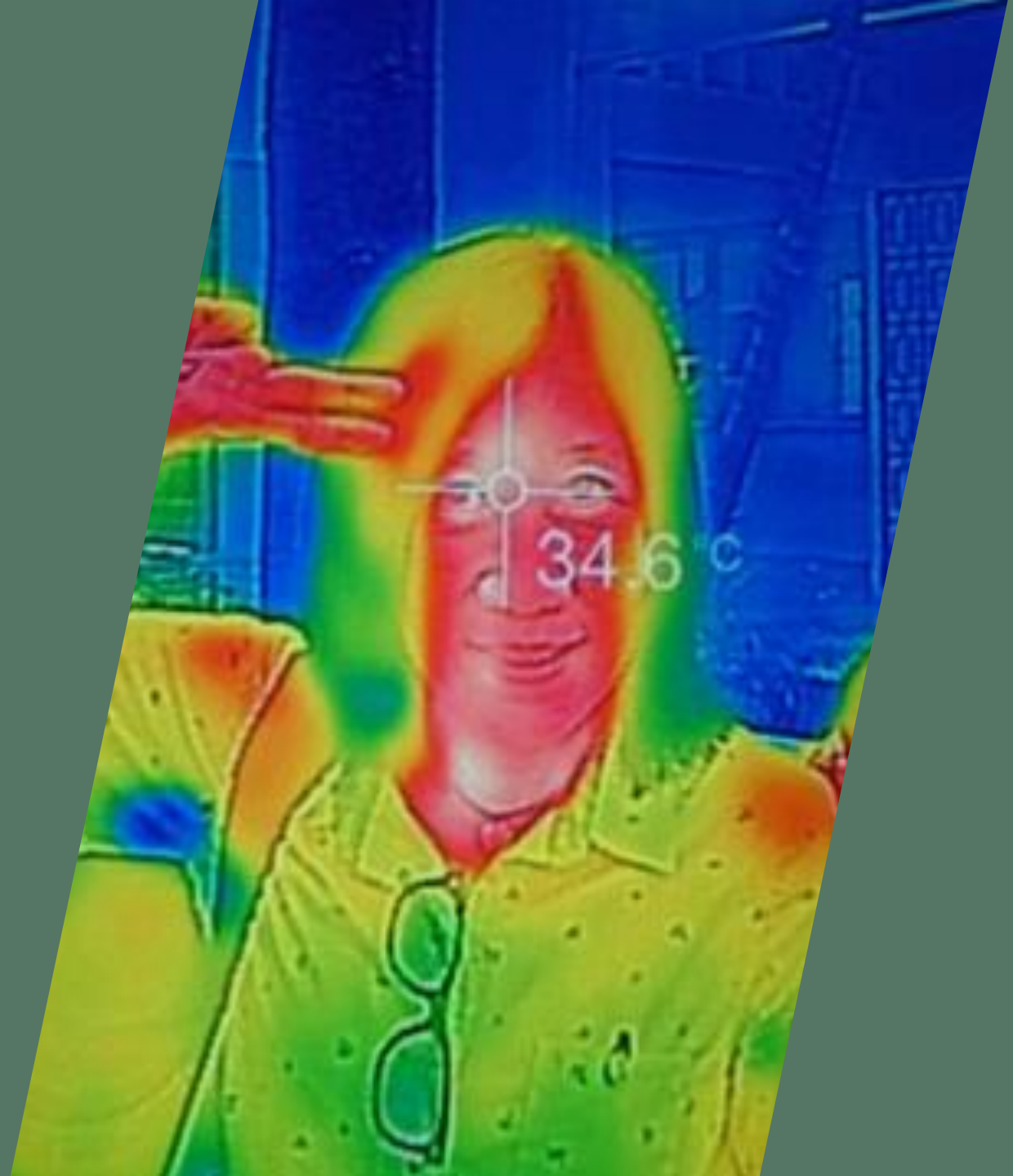World Temperature Scale 2023

popsci.com
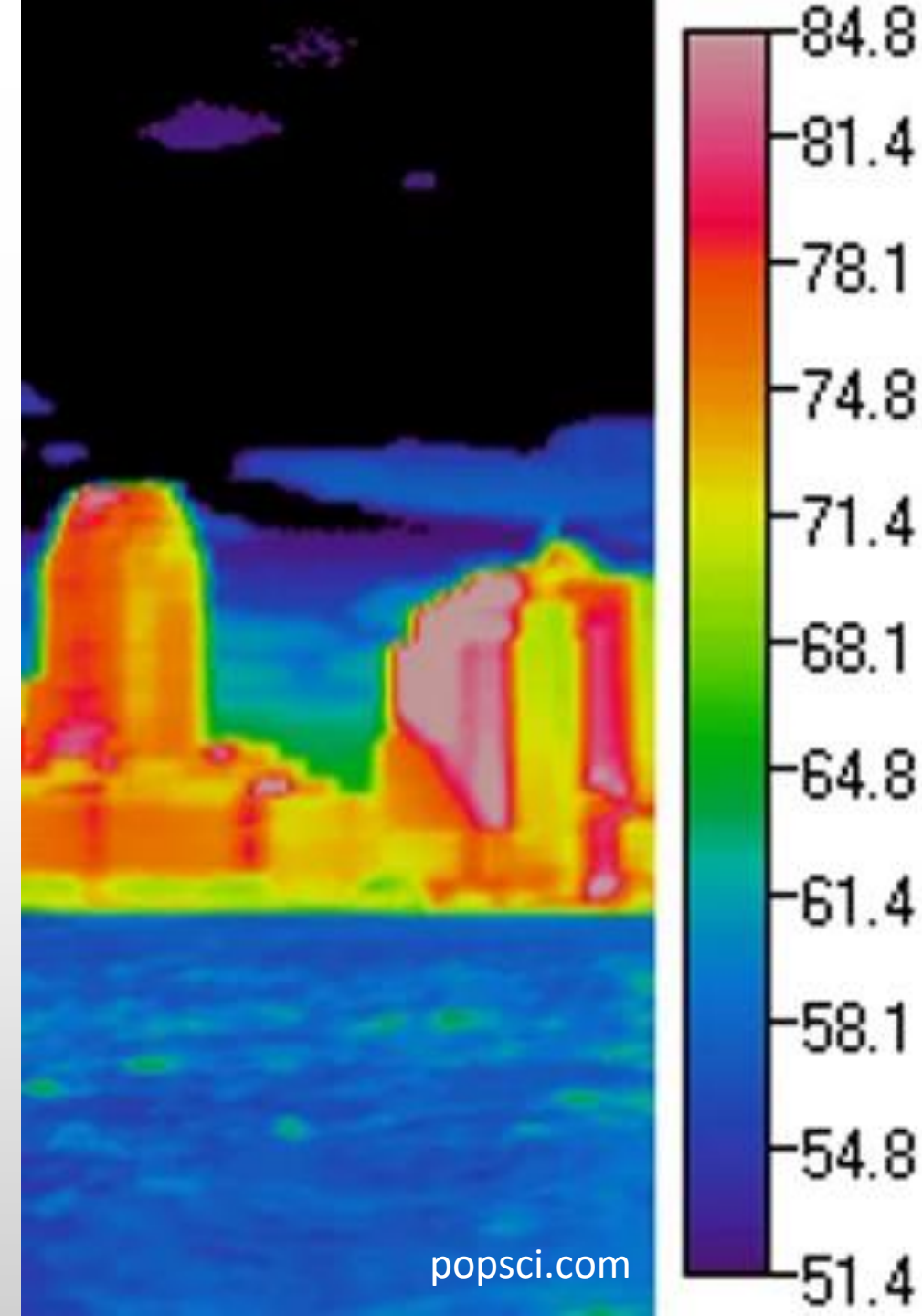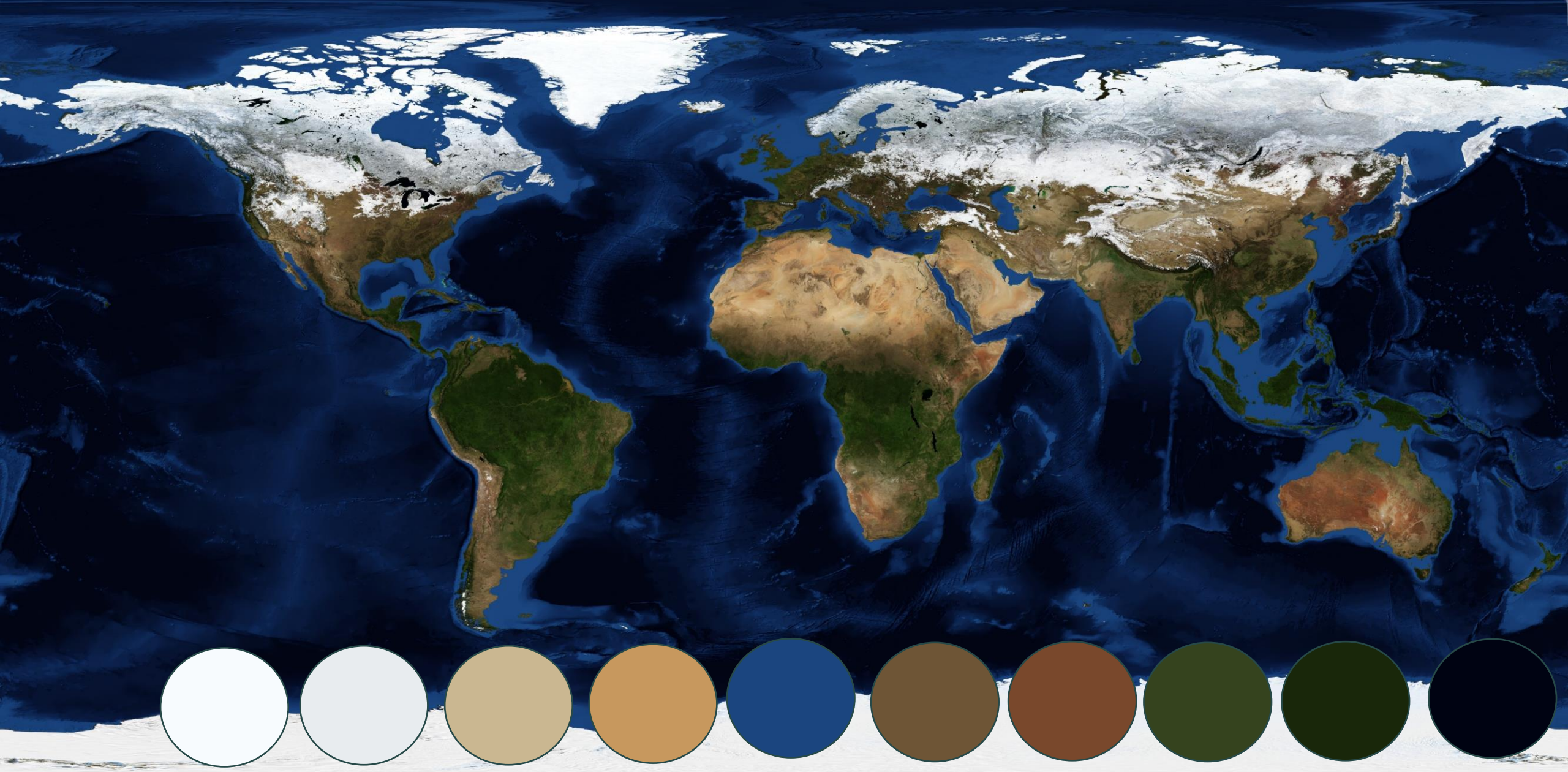
EARTH ALBEDO PALETTE

SKY AND GREEN FACTORS

THERMAL COMFORT

Bangkok : Tropical City

RH - Relative Humidity

Typical outdoor condition of tropical regions where the annual average temperature ranges from 24 to 35°C. The average annual rainfall ranged from 1000 to over 1500 mm and relative humidity ranged from 60% to 96%.

40-60% RH
Ideal Humidity

Bacteria
Viruses
Fungi
Mites
Allergic rhinitis & asthma
Respiratory infections[1]
Chemical interactions
Ozone production

0 10 20 30 40 50 60 70 80 90 100

Percentage of Relative Humidity
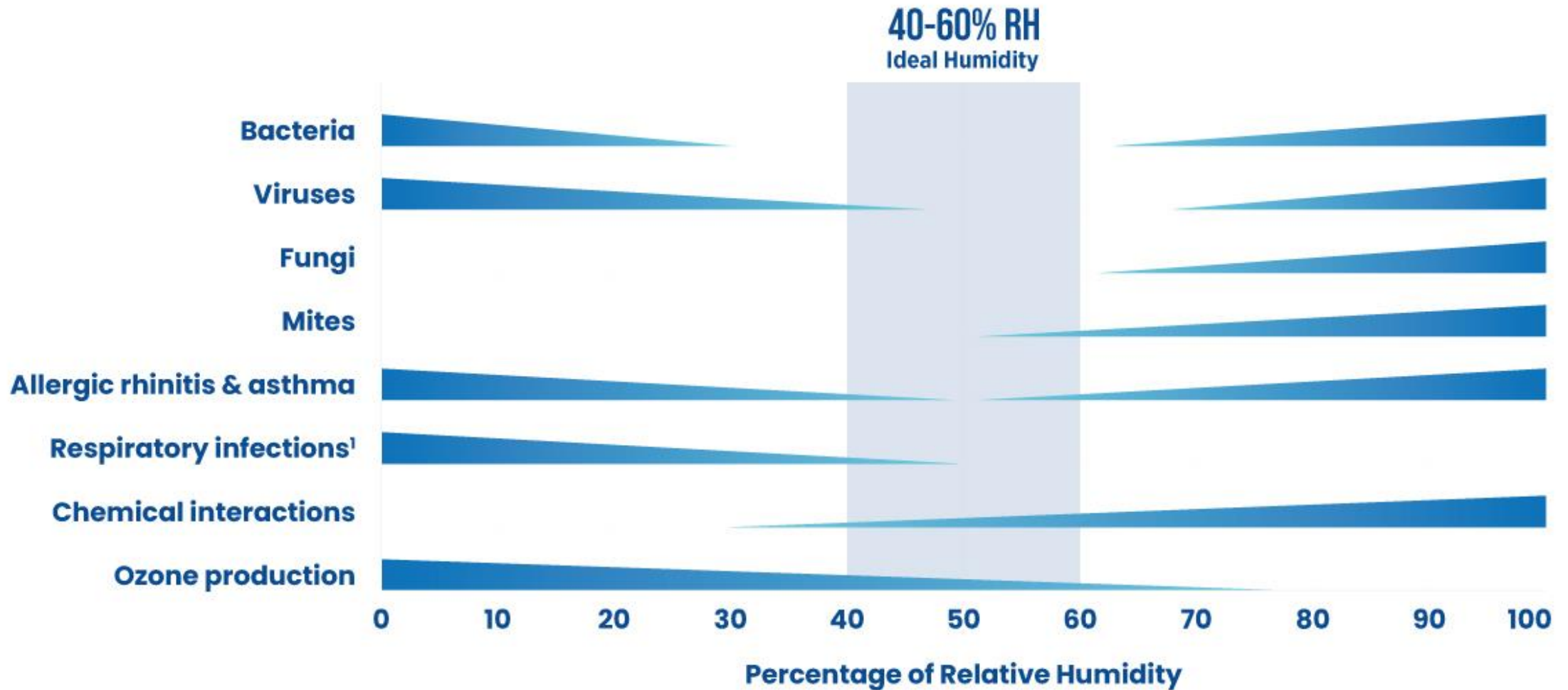
Conclusion

DEVELOPMENT PLANNING PROCESS

Wannida_Siribhodi (2023) Sustainable Ecovillage Learning Center and Research Hub Rayong
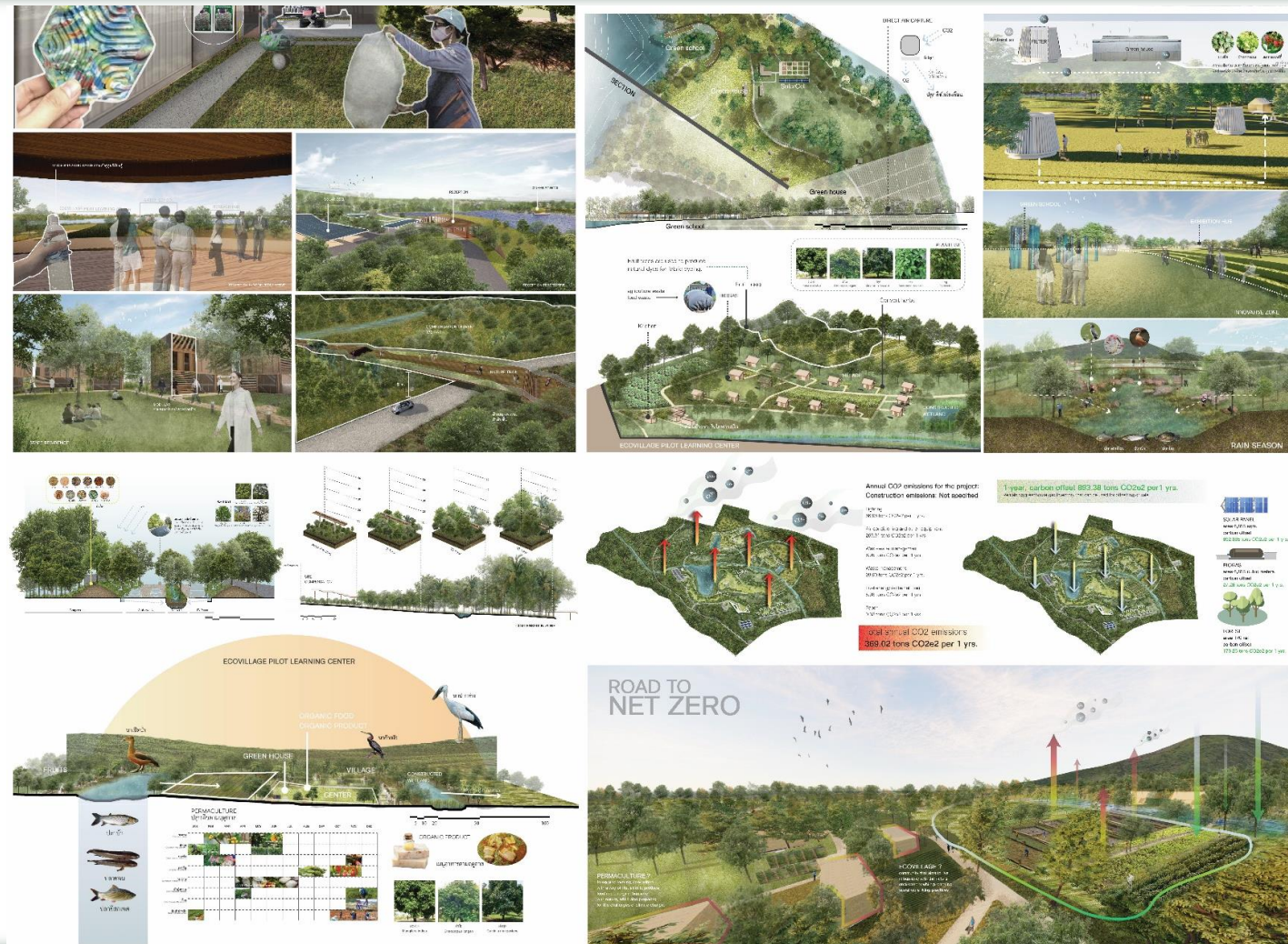
FINAL TIPS & TAKEAWAYS

- Paradigm shift from **Anthropogenic** → **Biophilic** Development

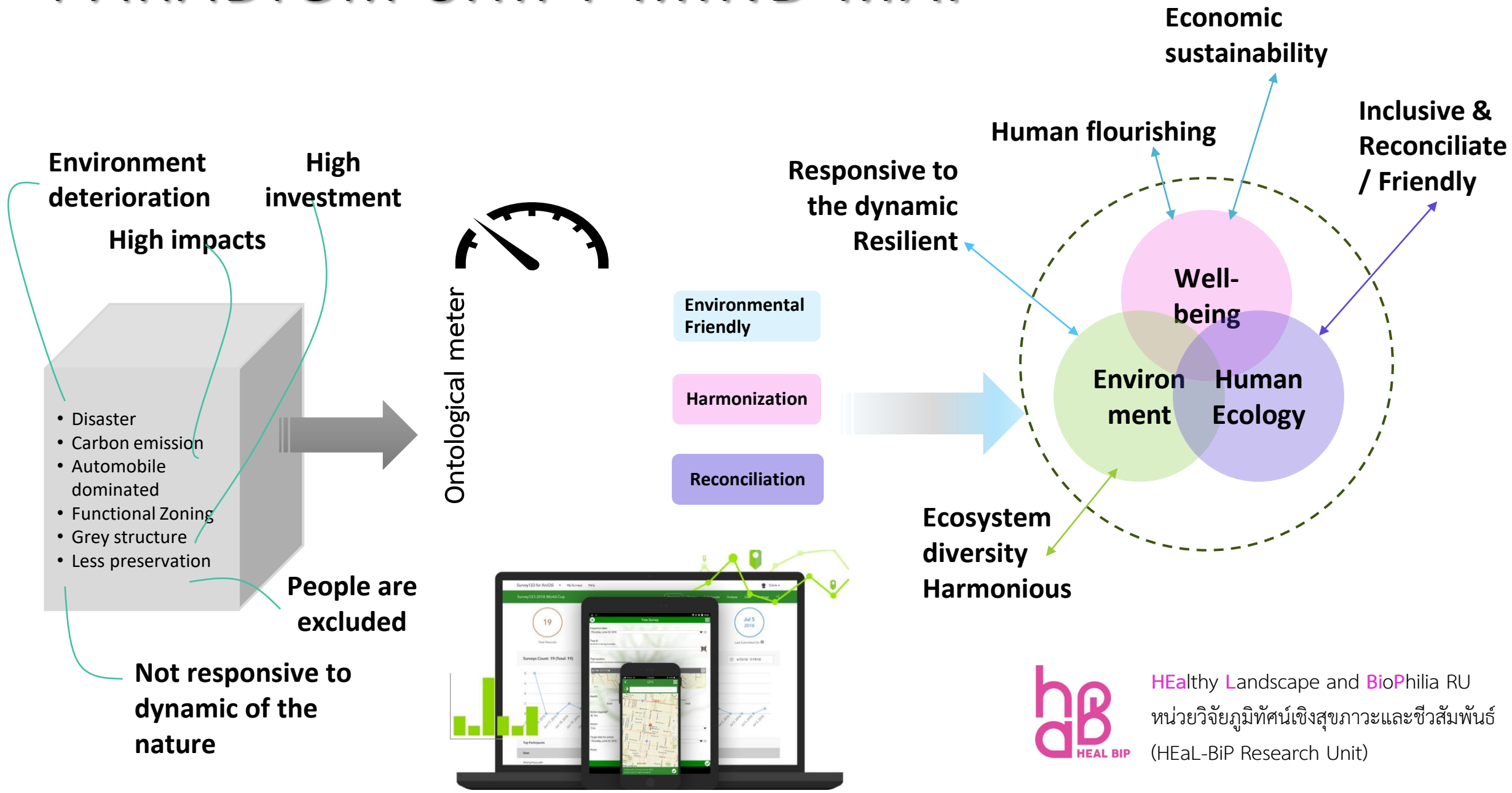- Understanding the **Ontological Landscape** of our cities

- Future actions for **SDGs**

Biophilic Development Archetype :
Paradigm Shift for Harmonization in Ontological
Landscape and the Social Reconciliation

1. NRCT Distinguish Research Professor Grant (2024-2026) → BDAs

2. IoT – Geotagging data collection
   - Voice from all stake-holders
   - Dynamic data collection
   - Spatial specific data

3. Multi-disciplinary sciences / Trans-disciplines → Participatory Design and Planning Process

Biophilic Development Archetype

PARADIGM SHIFT MIND MAP

Environment deterioration

High investment

High impacts

Ontological meter

- Disaster
- Carbon emission
- Automobile dominated
- Functional Zoning
- Grey structure
- Less preservation

People are excluded

Not responsive to dynamic of the nature

Environmental Friendly

Harmonization

Reconciliation

Responsive to the dynamic Resilient

Human flourishing

Economic sustainability

Inclusive & Reconciliate / Friendly

Well-being

Environment

Human Ecology

Ecosystem diversity Harmonious

HEalthy Landscape and BioPhilia RU
หน่วยวิจัยภูมิทัศน์เชิงสุขภาวะและชีวสัมพันธ์
(HEaL-BiP Research Unit)

HEAL BiP

HEAL BIP

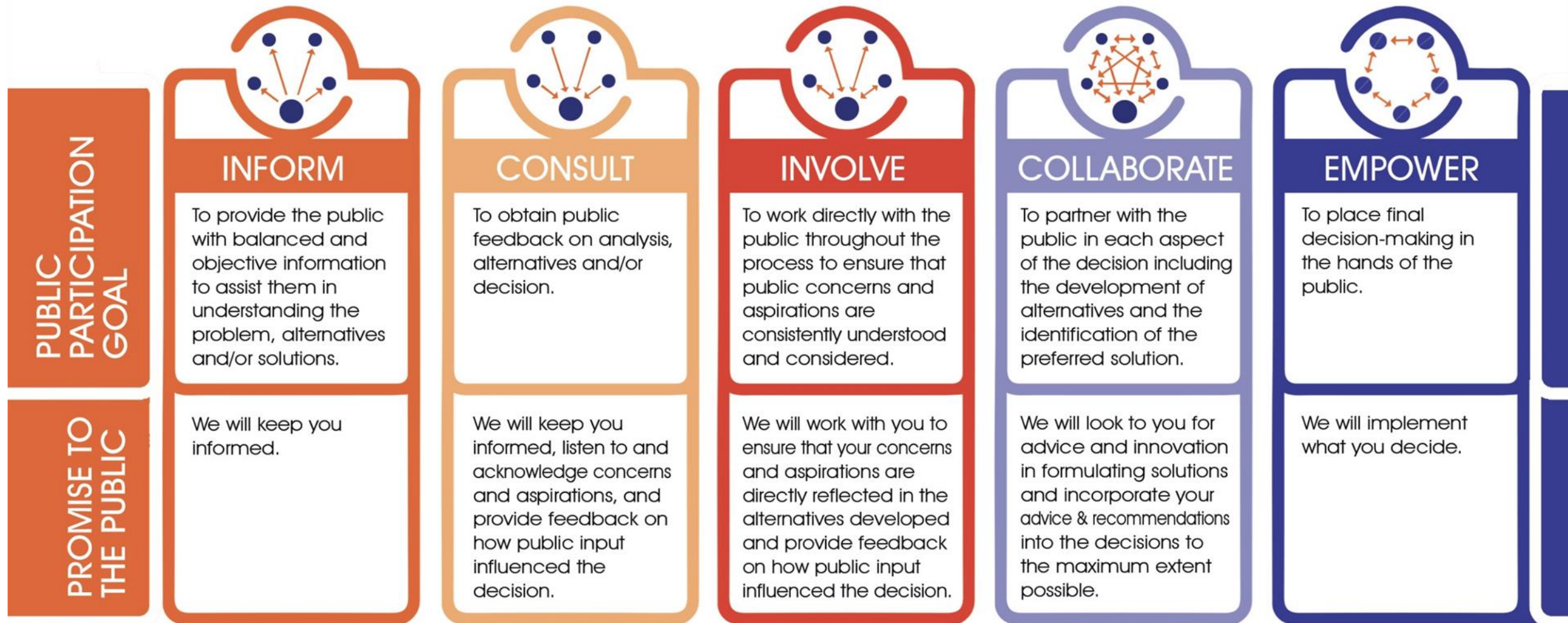## Four categories of BDA

1) Industrial and economic area development
2) Tourism, learning, and recreational area development
3) Institute, corporate, residential and community area development
4) Infrastructure and mega structure development

BiophilicCities

TAKE ACTION

biophiliccities.org/join-the-network

IAP2
Spectrum of Public Participation

THANK YOU
KOB-KHUN KA | ขอบคุณค่ะ

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