

**TURKISH
HEALTHY CITIES
ASSOCIATION**

How Can Cities Become Resilient Against Climate Change?

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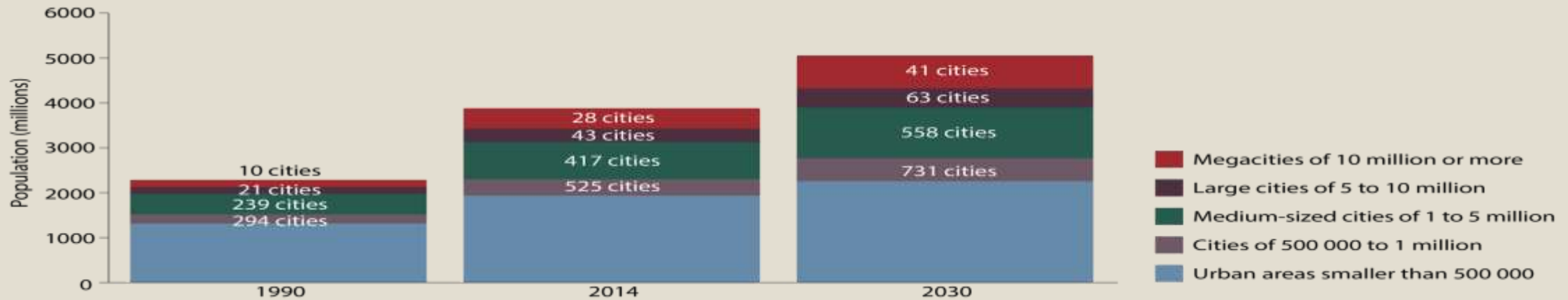
Türkiye National Network Coordinator

We need to understand the issue thoroughly...

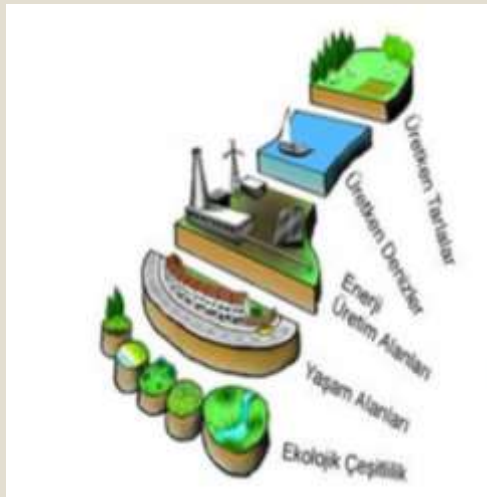
- While we initially thought that climate change was a scientific and technical issue focused on solving environmental problems, we see that its effects are much more comprehensive with increasing research and events.
- Climate change does not only affect temperature and precipitation regimes, but also cities, health, economic and social policies and markets.
- This is an important area that mobilizes the scientific world, politicians and international diplomacy.

An Urbanizing and Populating Planet

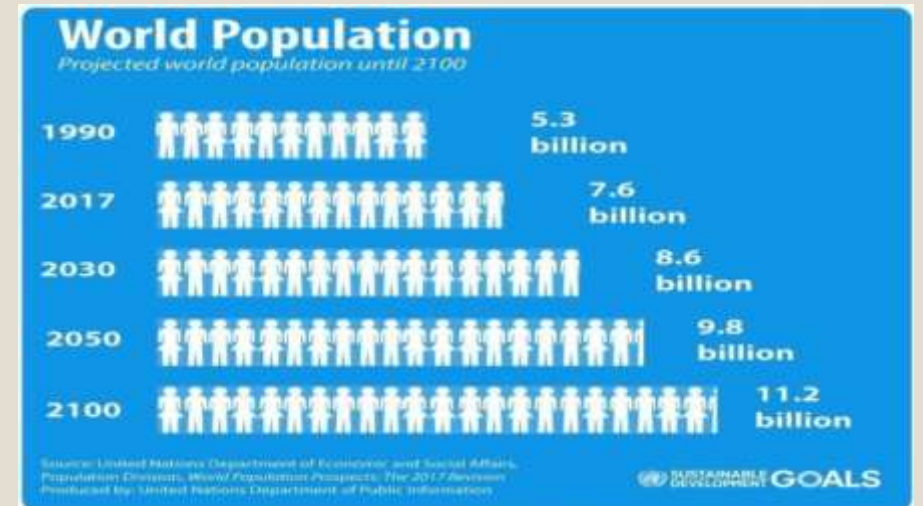
More Cities of All Sizes and Population Density (population per 1km²)



Most of the 2030 Cities have not been built yet!



In order to sustain our lives according to our ecological footprint;
 1.5 planets in 2010
 2 planets in 2030
 2.8 planets in 2050! We will need.



Negative Effects of Global Warming

Why does SOCIETY prepare its own end?

- Population and migration movements
- Urbanization
- Industrial Revolution
- Greenhouse gases
- Agricultural activities
- Irrigation applications
- Interventions in earth waters
- Energy consumption
- Economic approach
- Transport
- International trade



CLIMATES ARE CHANGING!

Industrialization



deforestation



Urbanization



pollution



intensive animal production

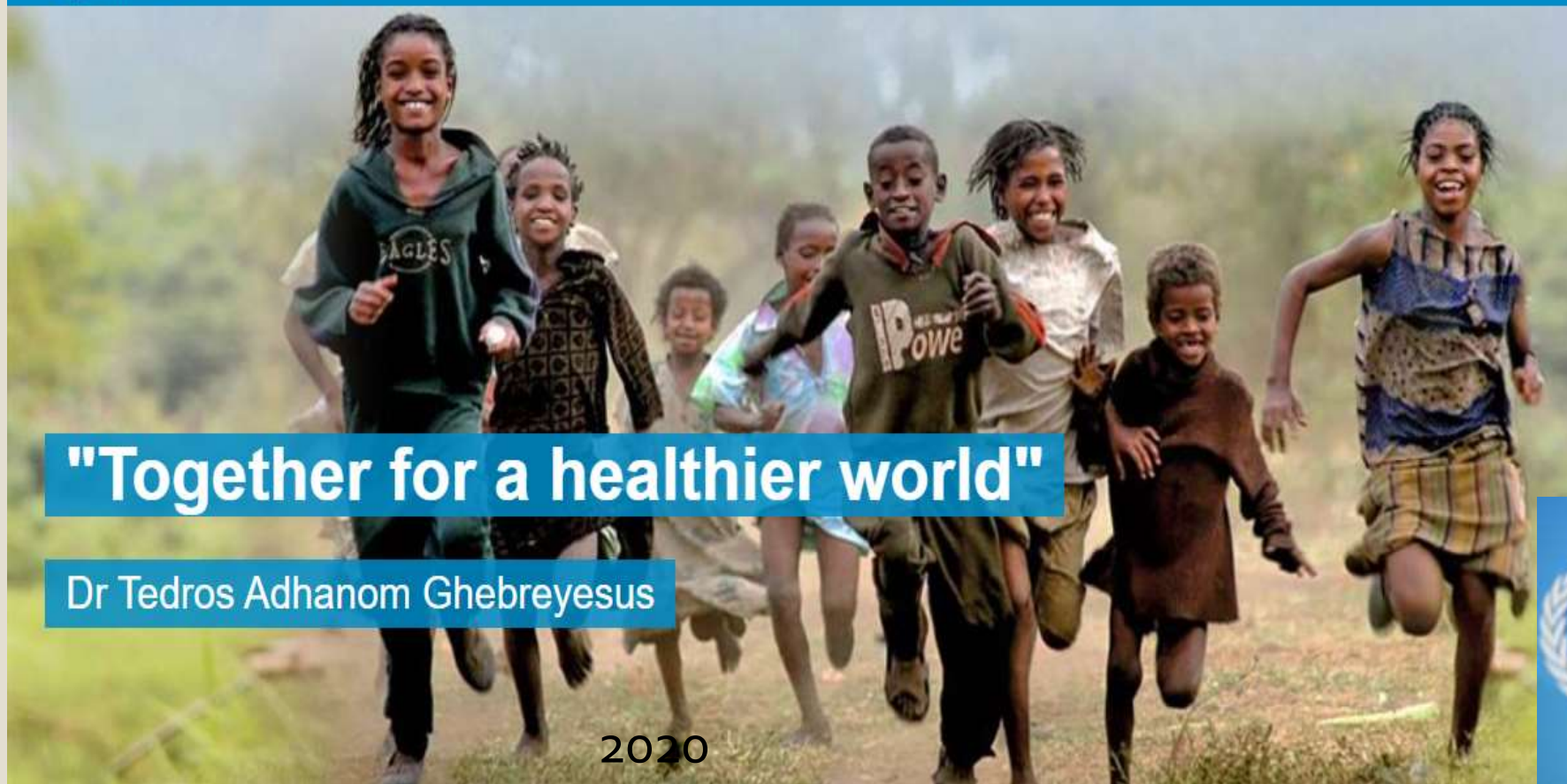


Population growth



fossil fuel use

- Huge increase in extreme temperatures
- Increased risk of drought
- Decrease in rainfall and river flow
- Heavy and frequent rains, tornadoes
- Increased risk of biodiversity loss
- Increasing water demand for agriculture
- Decrease in crop yield
- Increasing risks to livestock
- Increased risk of wildfire
- Increasing competition between different water users/sectors



"Together for a healthier world"

Dr Tedros Adhanom Ghebreyesus

2020



Those Who Respond Quickly to Changes and Adapt to Changes WILL SURVIVE

Climate Change and Health Relationship

Dr. Merritt noted that the female patient in question had symptoms such as asthma and heart failure, and that rising temperatures further increased the effects of these diseases. Dr. Merritt said that for these reasons, he diagnosed his patient with "climate change".



Thus, the health effects of climate change have become visible and supported by evidence in the health sector. 12/11/2021

«Every century has its own public health challenges, climate change is the challenge of our century»

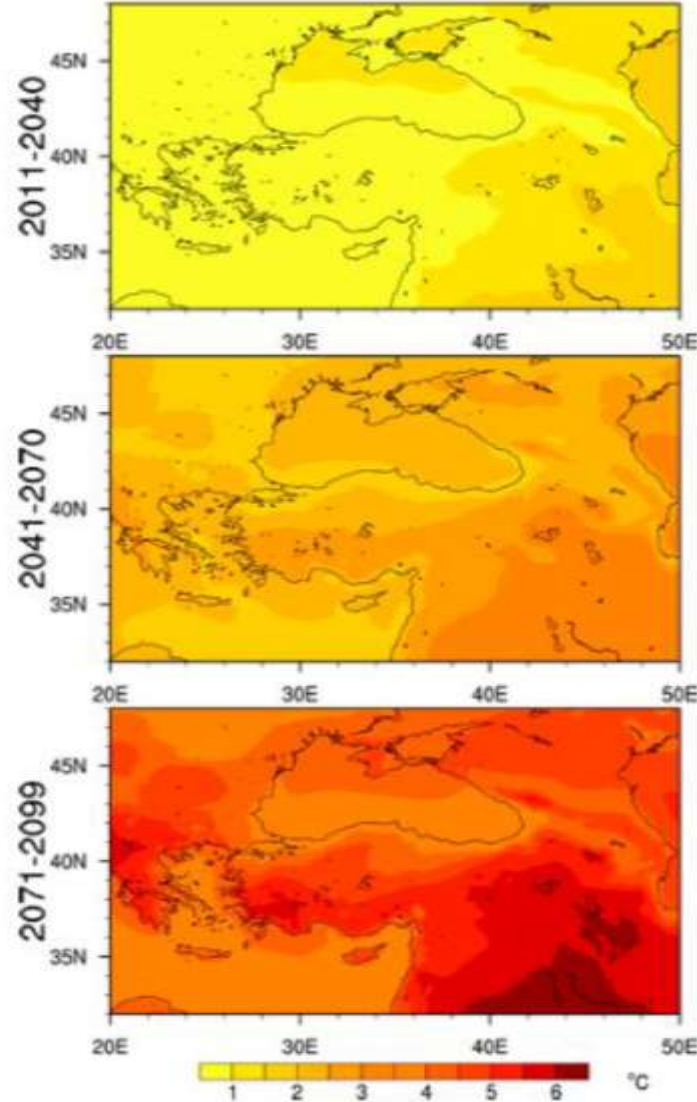
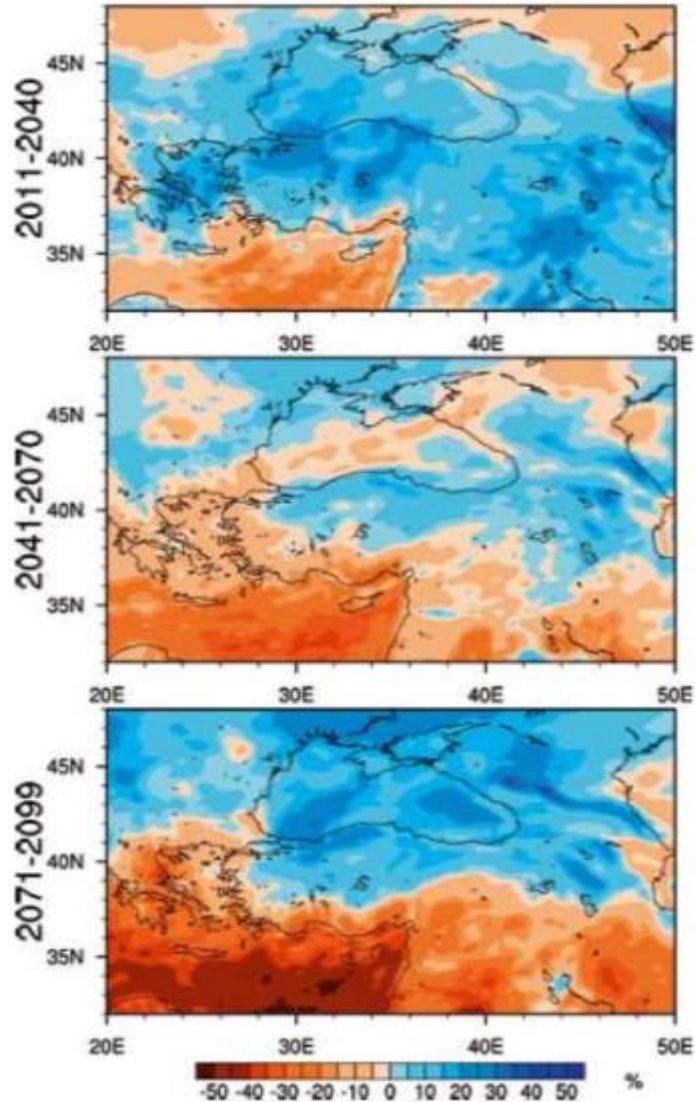
Dr. Margaret Chan, WHO General Director

How Will Turkiye's Climate Change?



Winter Precipitation Anomaly

Summer Temperature Anomaly



The real dramatic effects are expected after 2030.

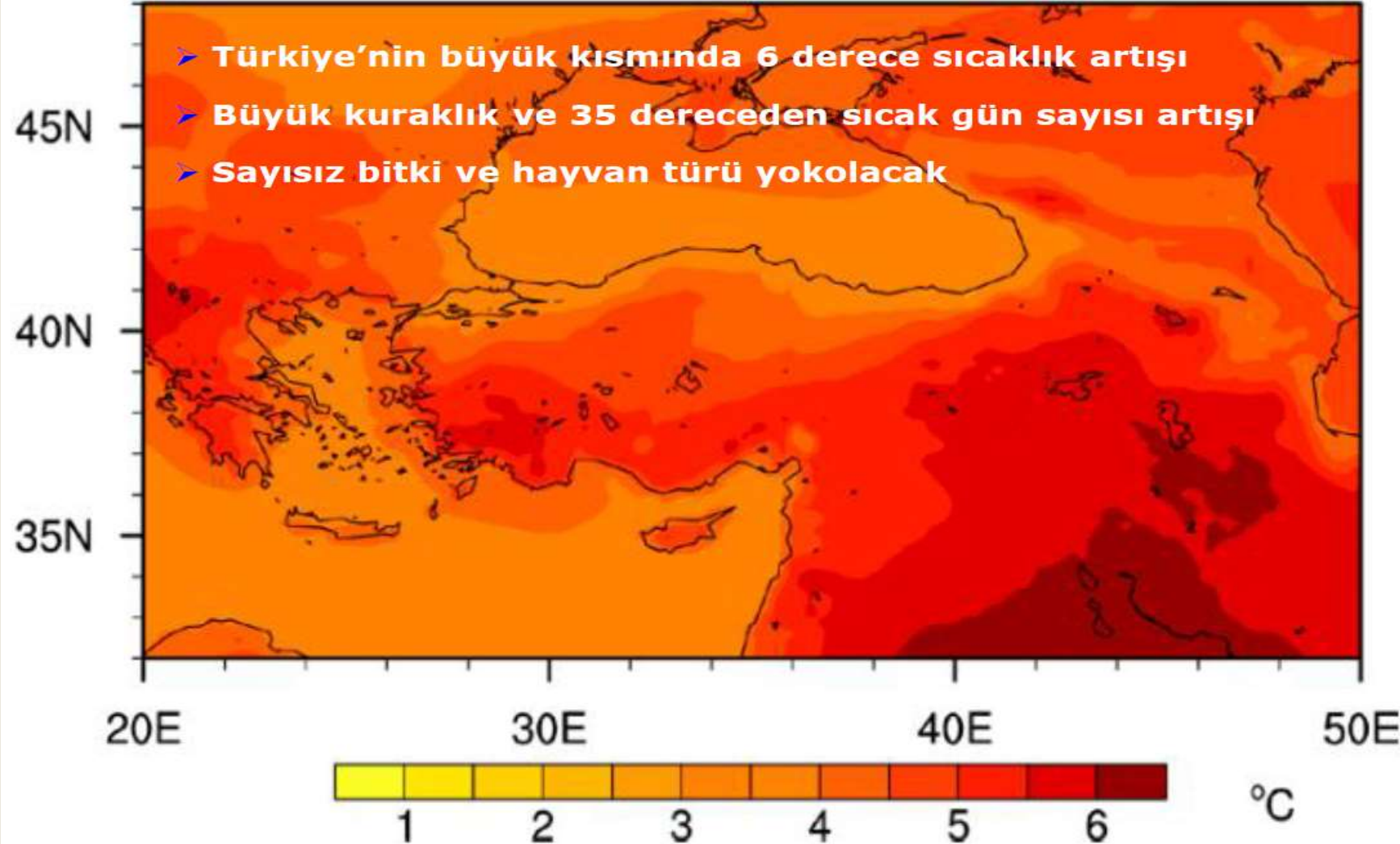
Adverse effects:

- Rising temperatures
- Decreasing water resources; precipitation and runoff
- Coastal erosion,
- Soil degradation and flooding

How Will Türkiye's Climate Change?



Türkiye 2099: IPCC medium pessimistic scenario



- 6 degree temperature increase
- Major drought and increase in the number of days hotter than 35 degrees
- Countless plant and animal species will disappear



sea pollution



MANYAS KUŞ CENNETİ DE KURAKLIĞIN ETKİSİ ALTINDA

Dünyaca ünlü Kuş Cenneti Milli Parkı'nın bulunduğu Manyas Gölü yüzlerce kuşa ev sahipliği yapıyordu.

Önce



Yüz ölçümü 166.000 km olan Manyas Gölü'nün suları, 2 kilometreye yakın geri çekilirken, su derinliği ise gölün büyük bölümünde 30 ile 40 santime kadar düştü.

Sonra



İstanbul floods, 31 kişi öldü



AKŞEHİR GÖLÜ

ÖNCE



ŞİMDİ

sea pollution



SEYFE GÖLÜ KURUDU

Kırıyehir yakınlarındaki, birinci derece doğal sit alanı olan 7.800 hektarlık Seyfe Gölü kültürel açıdan önem taşıyordu.

Önce



İstanbul hoses



BEYŞEHİR GÖLÜ

ÖNCE

before



ŞİMDİ

after



Diğer adı Sife Gölü olan göl kuruyunca binlerce kuş bölgeyi terk etti.

Sonra



Karadeniz floods

Urban Health Challenges

The main problems of planetary health due to climate change in cities:

- **Air pollution and (traffic, industry)**
- **Overcrowding (speed of transmission of infectious diseases)**
- **Lack of green areas (parks, etc.) for recreation and mental health**
- **Food Production and waste (energy/fertilizer pollution)**
- **Energy consuming Cities (carbon problem)**
- **Water use/pollution**
- **Lack of physical activity**
- **Inequalities and poverty & Governance and leadership**

(including economic interest and models)

Resilience To Climate Change Breathing Cities



Cities are complex socio-ecological systems. In cities where the natural and built environment are in harmony with each other, social, physical and economic conditions support each other in a sustainable relationship.



Resilience To Climate Change Green And Livable Cities



- Green cities have many health benefits, including longer life expectancy, better mood and healthier offspring.
- It reduces air pollution, heat and noise levels.
- CO2 capture
- Replacing roads and parking lots with green environments,
- It would be a way to transform an urban environment from harmful to beneficial.

Climate Change And The Situation In Cities

- Great progress must be made in air pollution, greening cities, and reducing motor vehicle use.
- What is needed Policy/law-regulation revisions/ FAST implementation
- Health-oriented city planning needs “COLLABORATION” to reduce infrastructure costs. Open areas should be prepared for healthy environments.
- Heating/Cooling Emissions/decarbonization. The transition to electric vehicles must take into account the environmental footprint (battery production and disposal). IT IS MANDATORY.
- More work needed on hydrogen (vehicles, space heating)
- Agricultural water productivity is poor.
- Food production: Large amounts of food are produced resulting in unmanaged waste.
- Solid waste and wastewater pollution is a serious problem that has not yet been fully measured.
- Legal sanctions are required. Communicable diseases, as well as non-communicable ones, can easily re-emerge in cities.



Not renegeing
on health
commitments

Place:



- City
- Housing
- Public living areas (schools, dormitories, shopping malls, restaurants, hotels, etc.)
- Transport vehicles
- Workplaces
- Social living areas
- Healthcare facilities
- Critical infrastructures (communication, energy, purification, emergency first aid, etc.)

Danger: =

- Failure to improve city health
- Failure to reduce environmental pollution
- Disasters that occur as a result of failure to manage climate change (floods, storms, overflows, fires, pandemics)
- Earthquake
- Fire
- Epidemia, Pandemic
- Disaster

Risks:

- **Sick Building Syndrome**
- **Unhealthy societies and cities**
- **Non-resistive structures and systems**
- **Increasing health problems, although preventable**
- **Death**

Cities Are Sacrifices

Risks and rates (above 1.50C, 2023)

HEALTH

52% floods and sea level rise

38% extreme rainfall

30% water scarcity and drought

29% biological risks

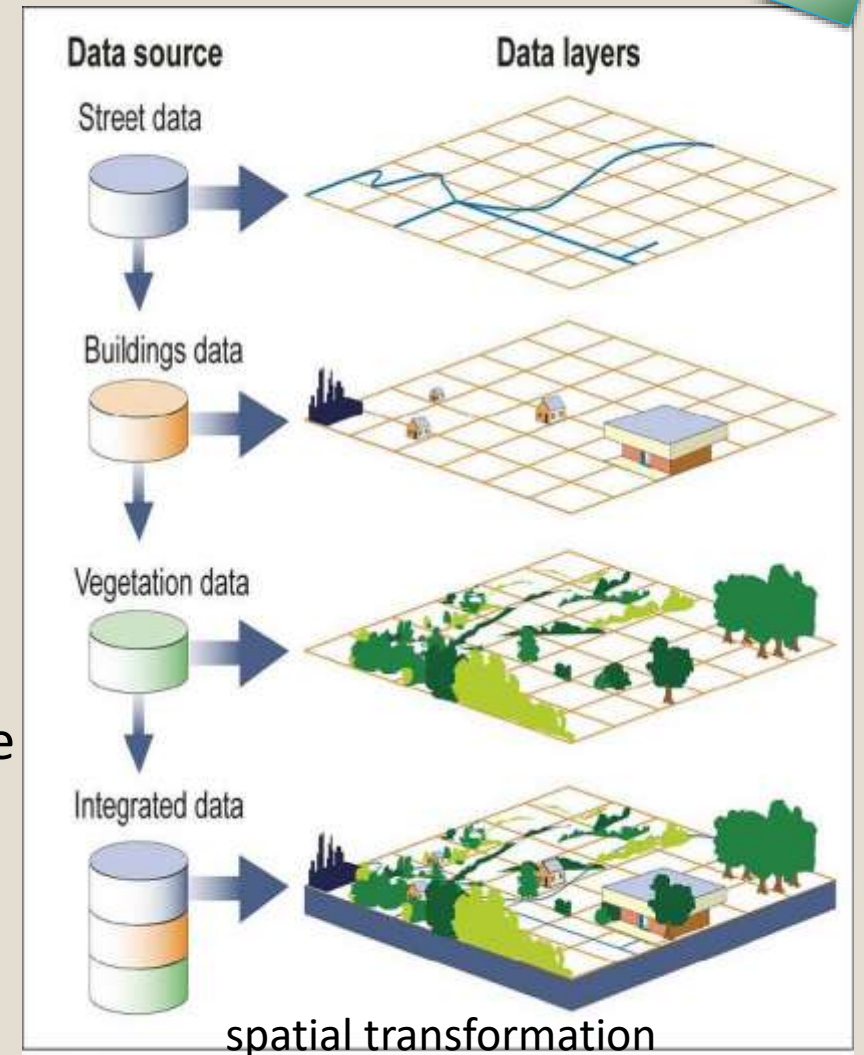
27% extreme temperatures

25% storms and wind

CLIMATE
CRISES

Expected Situation

- In the last 100 years, 40 million urban people have been exposed to floods, and this will increase to 150 million people by 2070.
- It is estimated that the economic damage, which was 400 billion dollars in 2007, will increase to 35 trillion dollars by 2070.
- By 2050, 150-200 million people will have to migrate from the cities they live in to other places.



Source: GAO.



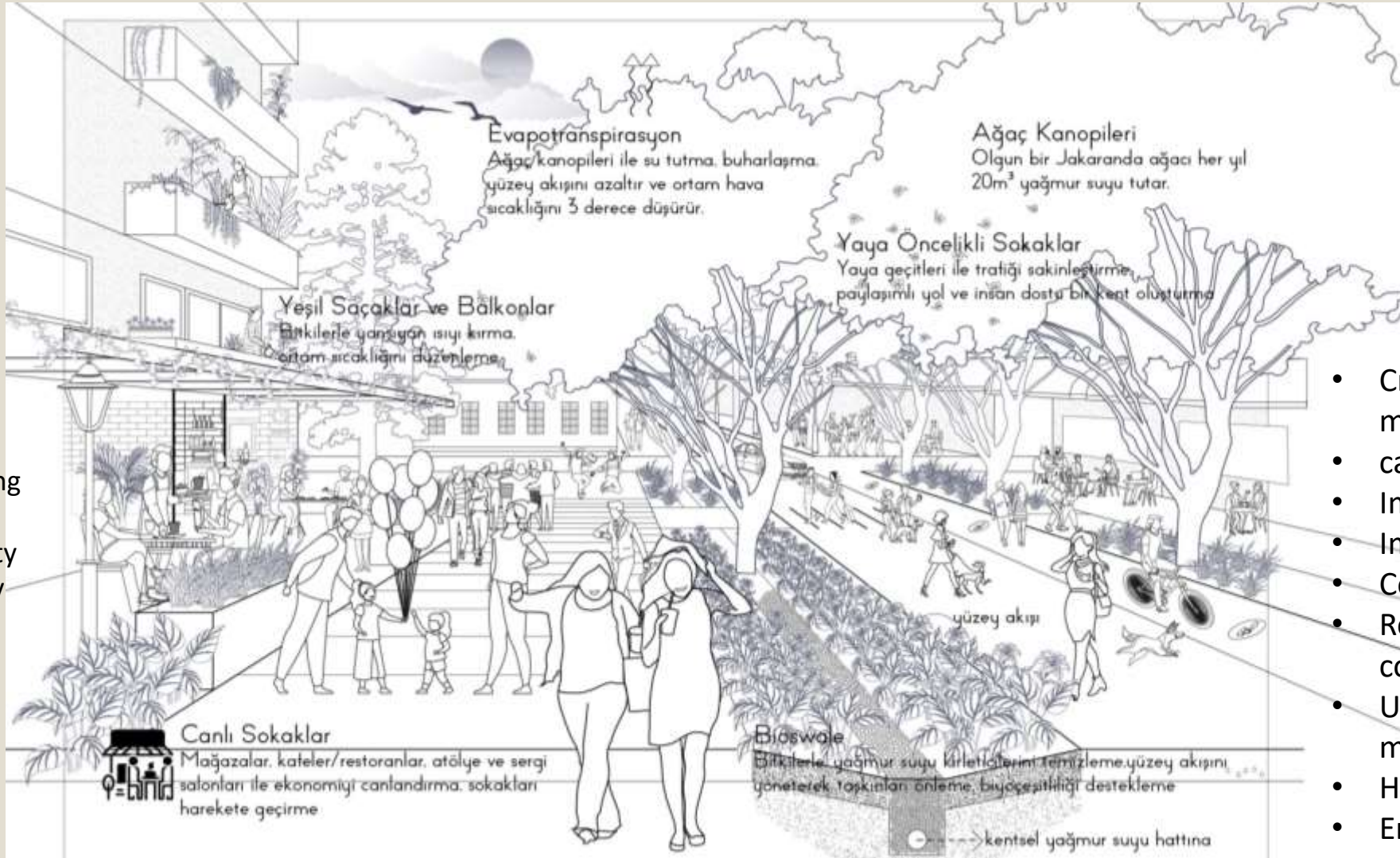
Building
healthier

HOW DO CITIES BECOME RESILIENT?

What should we do to ensure resilience to urban climate disasters?

- If we strengthen the gray infrastructure in cities, will the problem be solved?
- Sectors that feed urban economies are construction, transportation and tourism. Can cities be made climate resilient by conducting impact analyzes on these sectors?
- Coastal cities should also be put under the spotlight! “Can parameters addressing the effects of climate change be included in integrated coastal zone management plans and taken into account in practices?
- Rainwater harvesting methods are not implemented, can every drop that falls be utilized?
- Can green areas/systems that serve to retain water be increased in cities?
- Can management plans be developed for water resources in the basins where cities are located?
- Turkish Healthy Cities Association is actively working for collective effort and cooperation!!

Green infrastructure in a city provides many services to the city within the scope of regulating, providing and supporting ecosystem services.

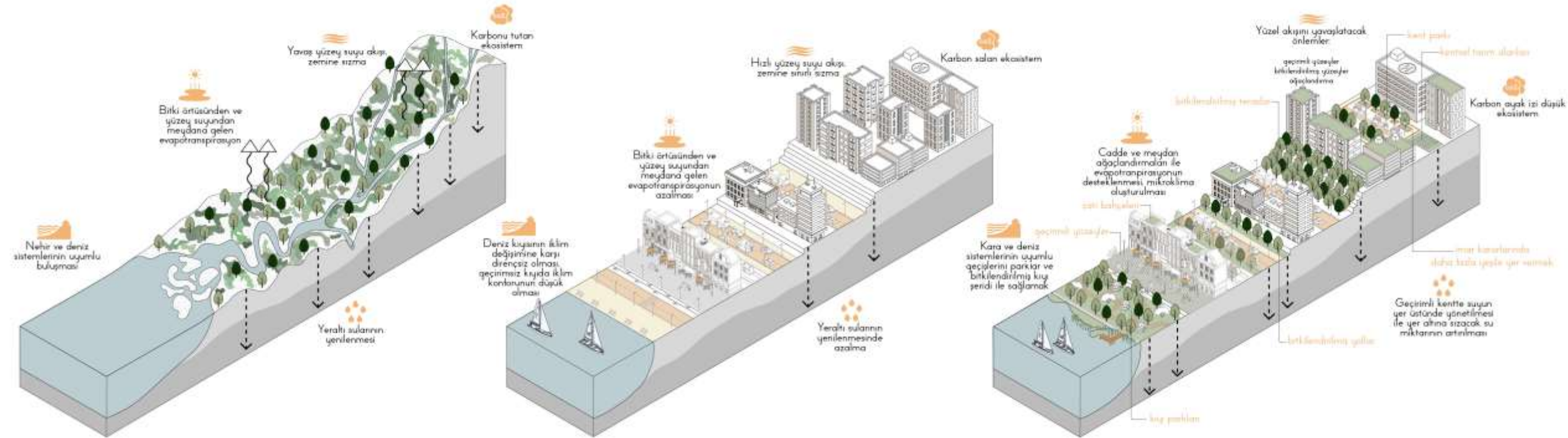


- active life
- healthy society
- Psychological benefits
- sense of belonging
- biophilic life
- productive society
- conscious society
- vibrant economy

- Creating a microclimate
- carbon capture
- Improving air quality
- Improving soil quality
- Control the noise
- Reducing energy costs
- Urban stormwater management
- Habitat creation
- Ensuring biodiversity

Green Infrastructure Network

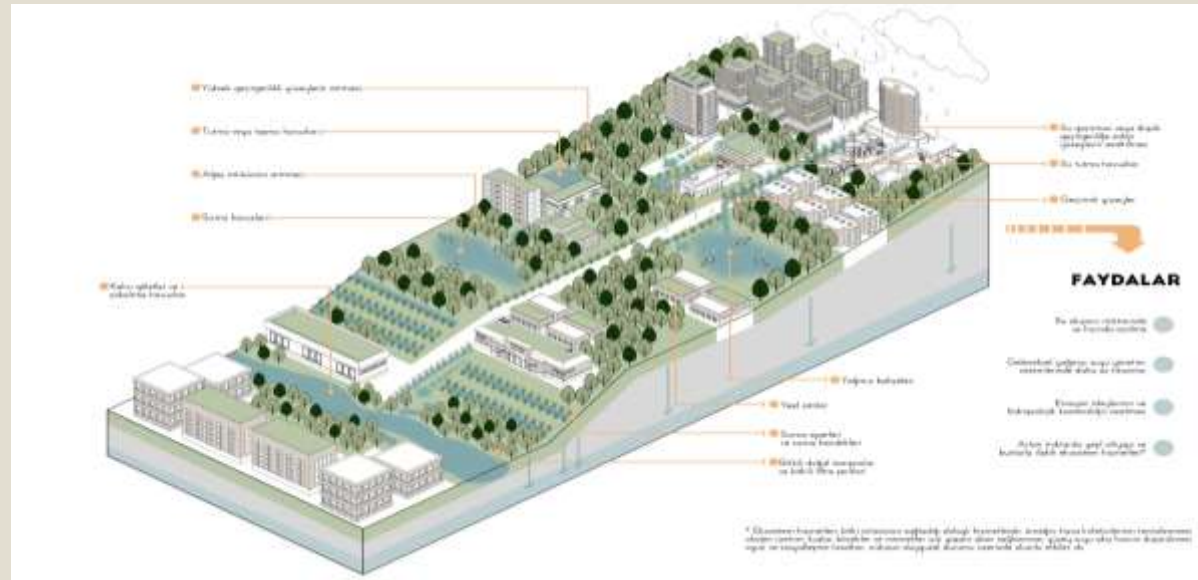
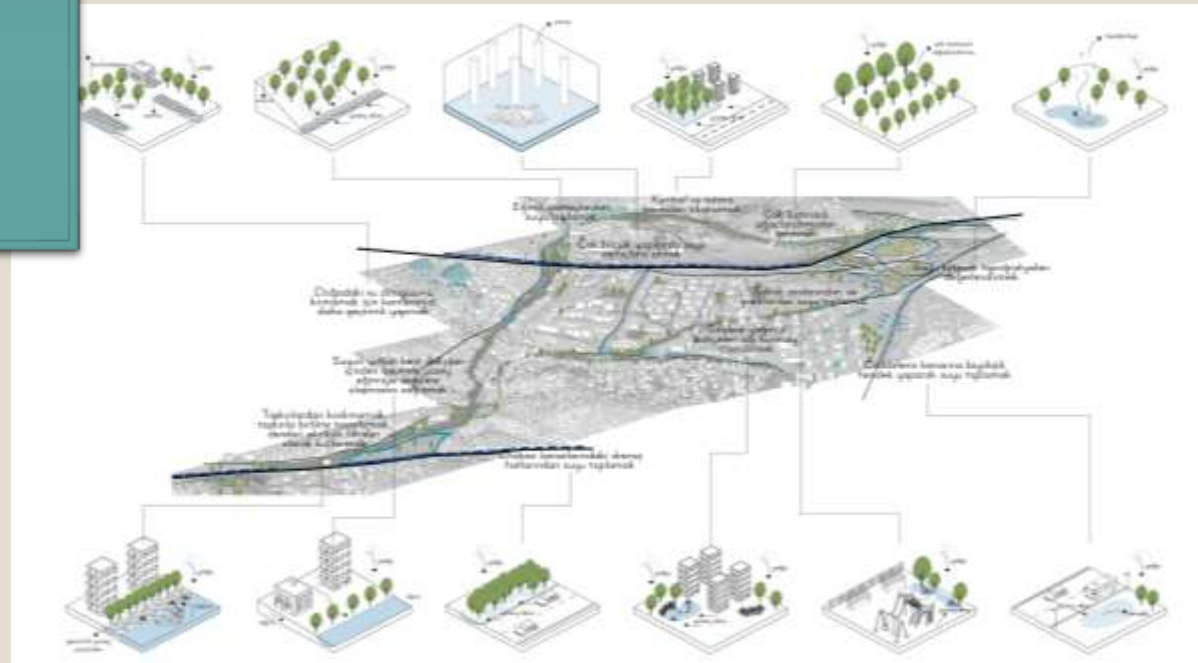
In order to prevent and cope with the problems mentioned in our cities' relationship with nature, a green infrastructure network, which is a nature-based approach, needs to be introduced to cities.



Sustainable Green Infrastructure Systems

In this context, the points to be considered in cities are as follows:

- Getting involved at an early stage
- Viewing surface water as a resource
- Managing pollution
- Checking at source
- Managing water at the surface
- Establishing a Sustainable Urban Drainage System
- Reduce surface runoff



Sample: ISTANBUL



Impermeable asphalt surfaces, a parking area in front of the building that creates a heat island effect, where no precautions have been taken in terms of water management, a spatial order that does not support social cohesion and belonging...





- Drains water naturally
- Filters water
- creates habitat



- Increases visibility of existing elements
- Brings natural species to the area
- Reduces the heat island effect



CITIES IN CLIMATE CRISIS: PLANNING PRINCIPLES

Citywide Programs and Policies

Environmental Plan

Smart City Strategic Action Plan

Youth-Child-Disabled Programs

Transportation Master Plan

Climate Change Action Plan

Sustainable Energy and Climate Change Adaptation Plan

Stratejic Plan

Renewable Energy Applications

Carbon Footprint Inventory

City Health Development Plan

Noise Management Plan

Integrated Solid Waste Management Plan

ISO 50001 "Energy Management System"

Zero Waste Project

Green Area and Park Applications

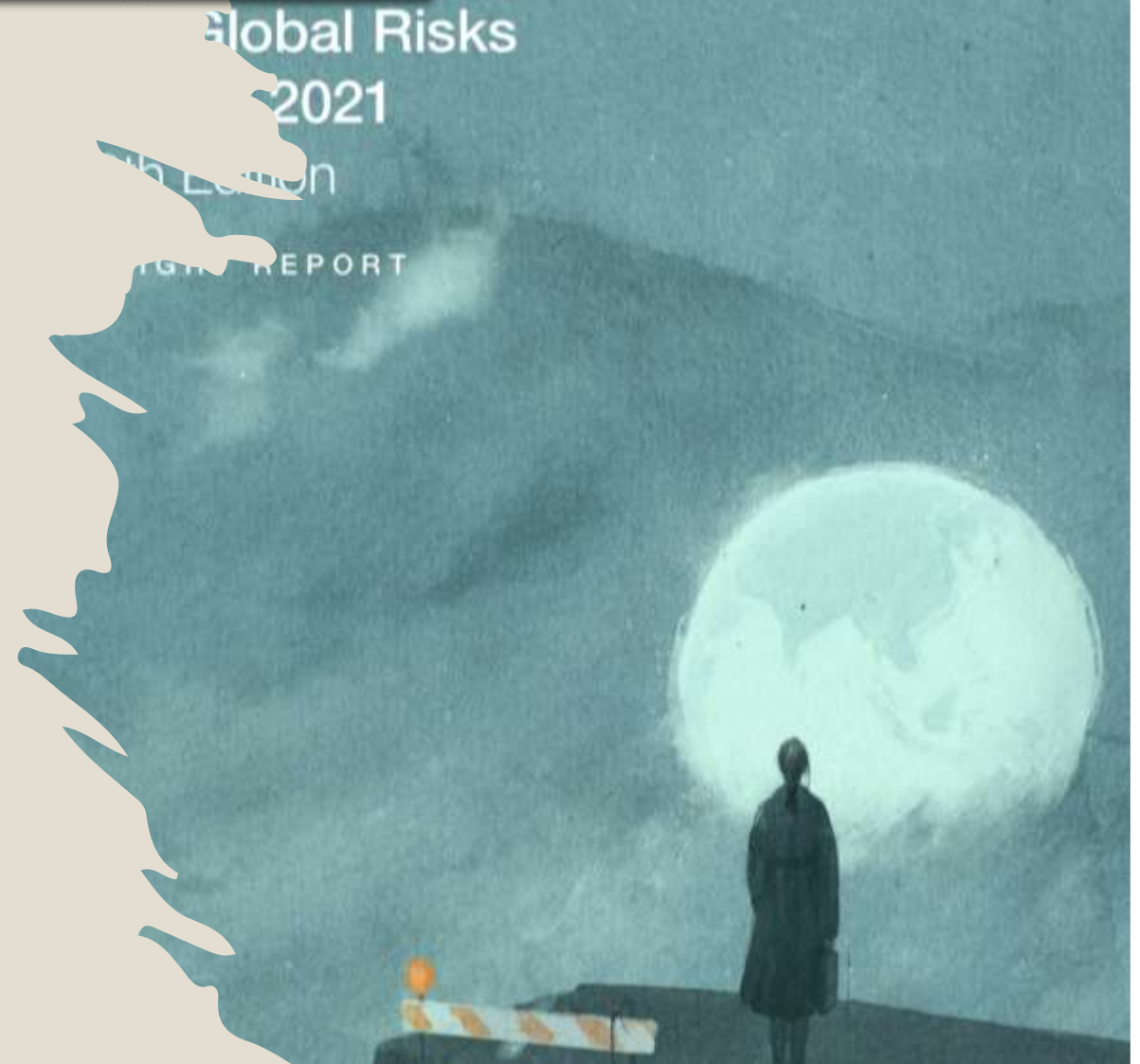
Social Services Programmes

Sustainable Transportation Practices

Etc.....

Global 5 risks

1. Extreme weather conditions,
2. Weaknesses in climate action,
3. Environmental destruction,
4. Epidemic diseases,
5. Loss of biodiversity



Megatrends for resilience to climate change

Waste →
source

**CIRCULAR
ECONOMY**

Ex: Being able to recycle
organic/material waste

Consumer →
Prosumer

**NATURE-BASED
ECONOMY**

Ex: Being able to regenerate
resources while consuming them
within the Food-Energy-Water nexus

Ownership →
User

**SHARING
ECONOMY**

Ex: Garden/Field Equipment; Home
Repair etc. Creating Shared Spaces


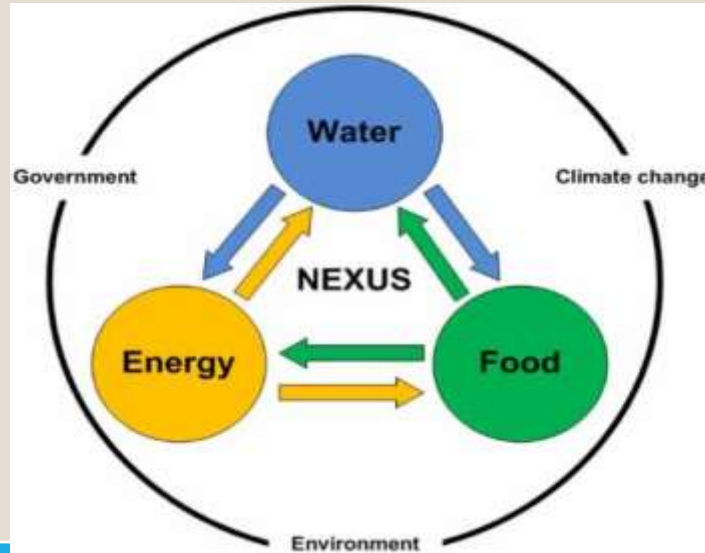
The circular economy model:
less raw material, less waste, fewer emissions



Source: European Parliament Research Service




1. We Must Consider the Water-Food-Energy Nexus as a Priority in All Climate Compatible Planning Studies!



Döngüler

The Circular Urban Regenerative Economies Transition Pathway (CURE)

Circular Urban Economies



Yenilene bilirlilik

The Positive Energy Districts Transition Pathway (PED)

Positive Energy Zones



Sistem düşüncesi

The 15-Minute City Transition Pathway (15minC)

Sustainable Mobility



Sample: IZMIR SPONGE CITY

İZMİR BÜYÜKŞEHİR BELEDİYESİ | İKLİM DEĞİŞİKLİĞİ VE ÇEVRE KORUMA KONTROL DAİRESİ BAŞKANLIĞI
İZMİR METROPOLITAN MUNICIPALITY | DEPARTMENT OF CLIMATE CHANGE AND ENVIRONMENTAL
PROTECTION CONTROL

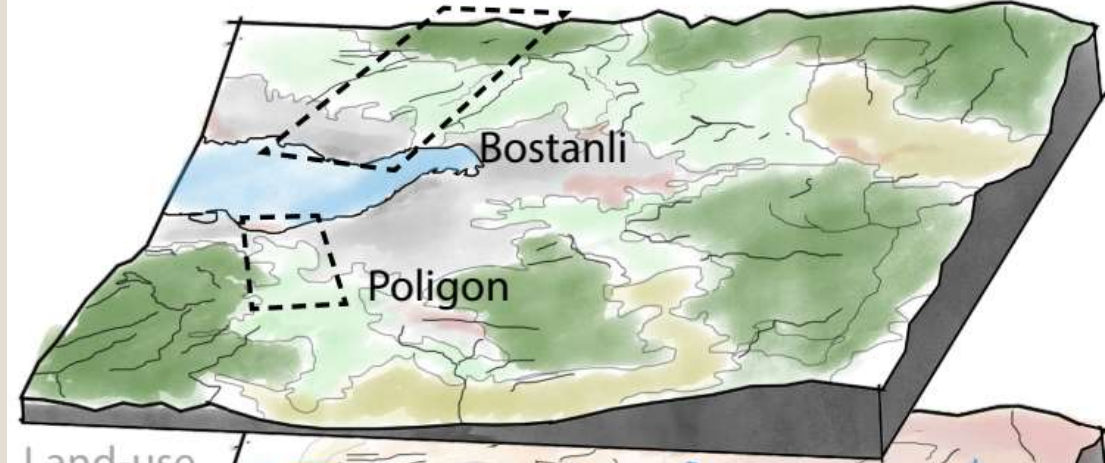
İZMİR SPONGE CITY

SÜNGER KENT İZMİR

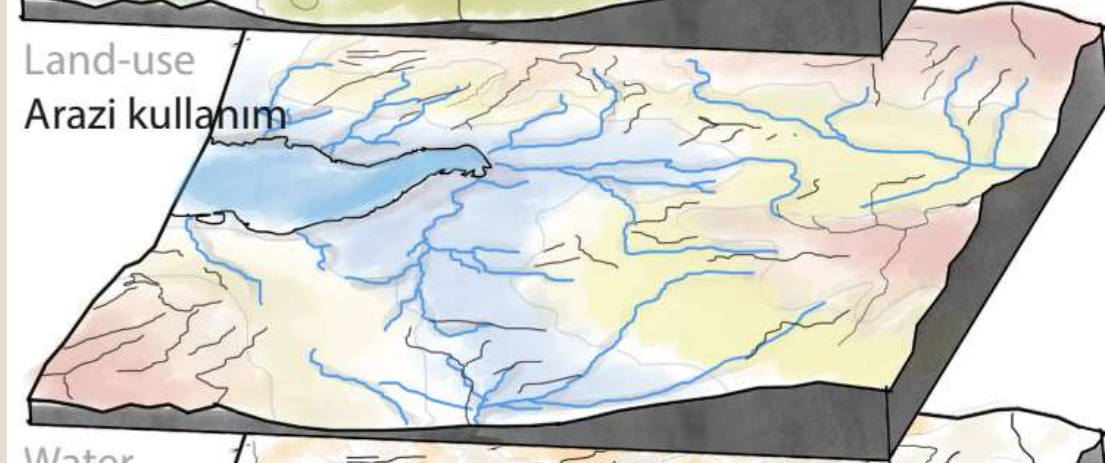


**SÜNGER KENTLER, YEŞİL ATLYAPI ÇALIŞMALARINDA
DAYANIKLILIK VE YENİLİK ÇALIŞMASI**

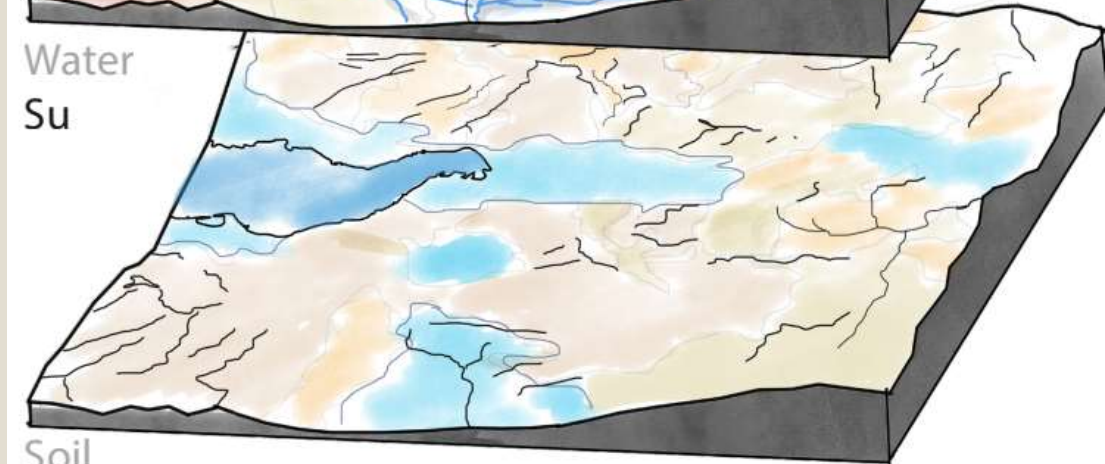
*SPONGE CITIES, RESILIENCE AND INNOVATION IN GREEN
INFRASTRUCTURE WORKS*



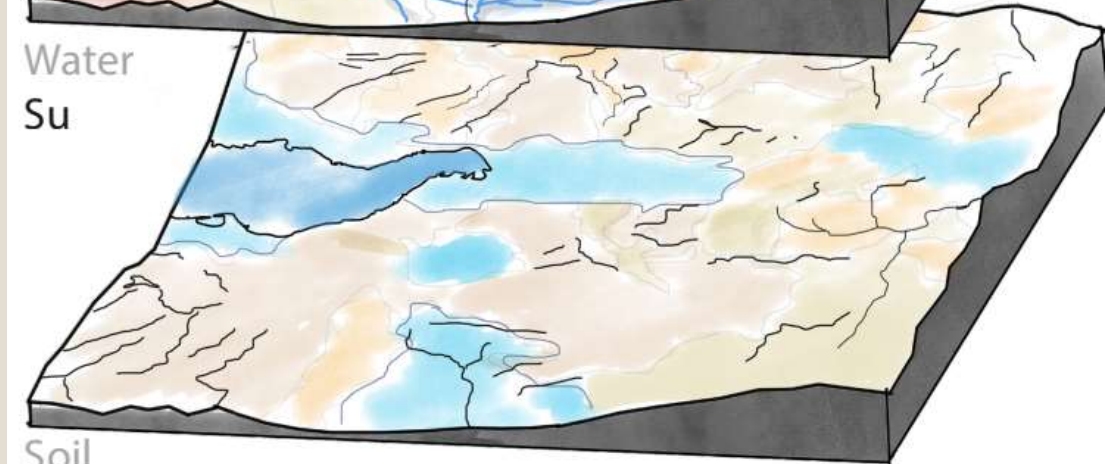
Land-use
Arazi kullanım



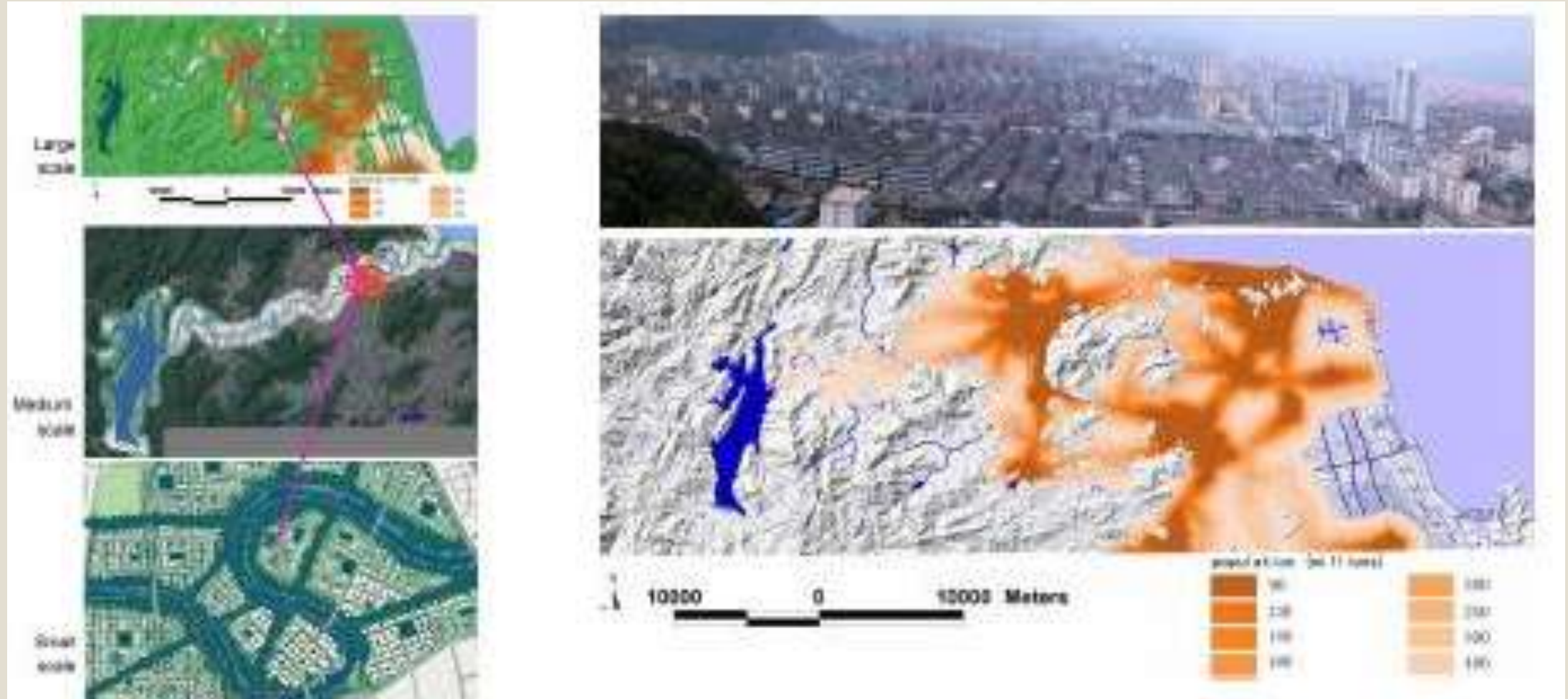
Water
Su



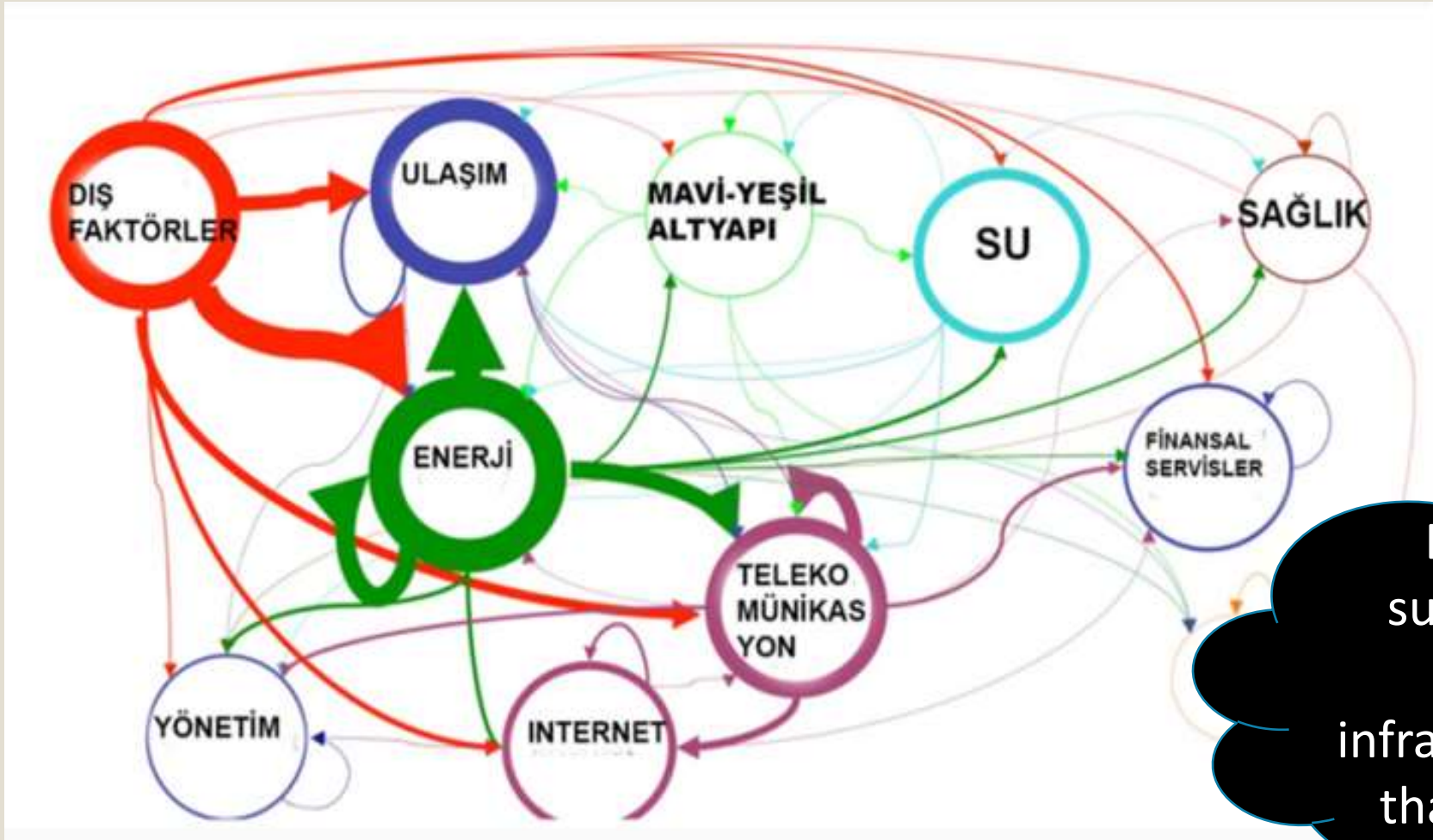
Soil
Zemin



2. We Must Think Multi-Scale and Multi-Layered: Biogeography and Historical Geography Should Be Fundamental!



3. We Must Find New Ways to Deal with High-Density Metropolitan Centers.



We must protect critical infrastructures

Ending financial support pollution = Supporting infrastructure that have that improve health

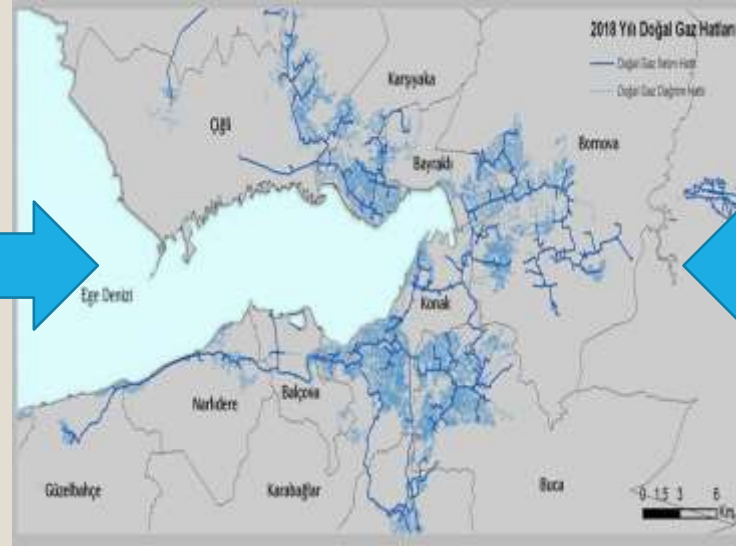
MICRO



Neighborhoods and Micro Living Spaces

Implementation programs such as 'quiet neighbourhood' and participatory planning/design practices

MEZO



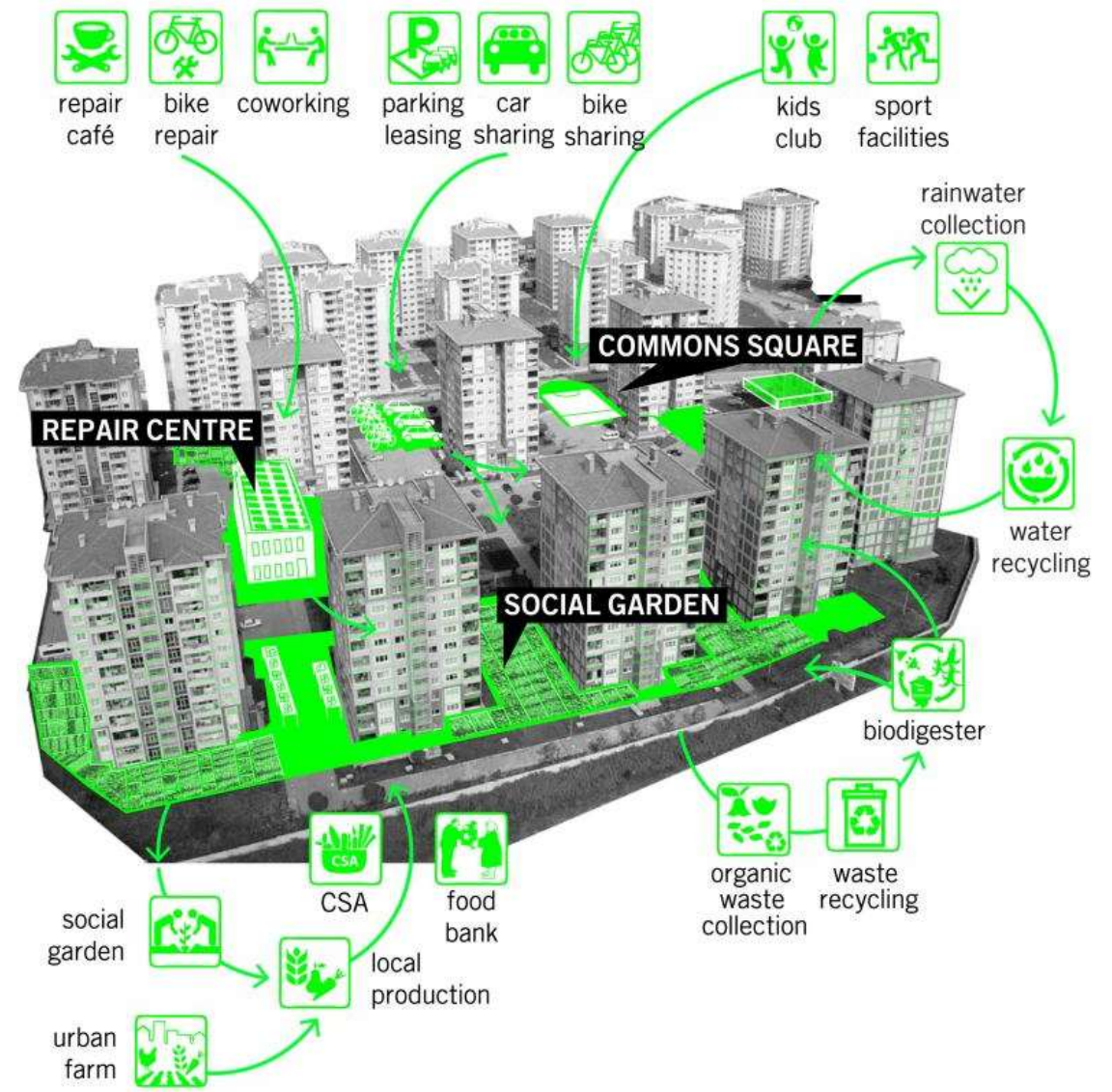
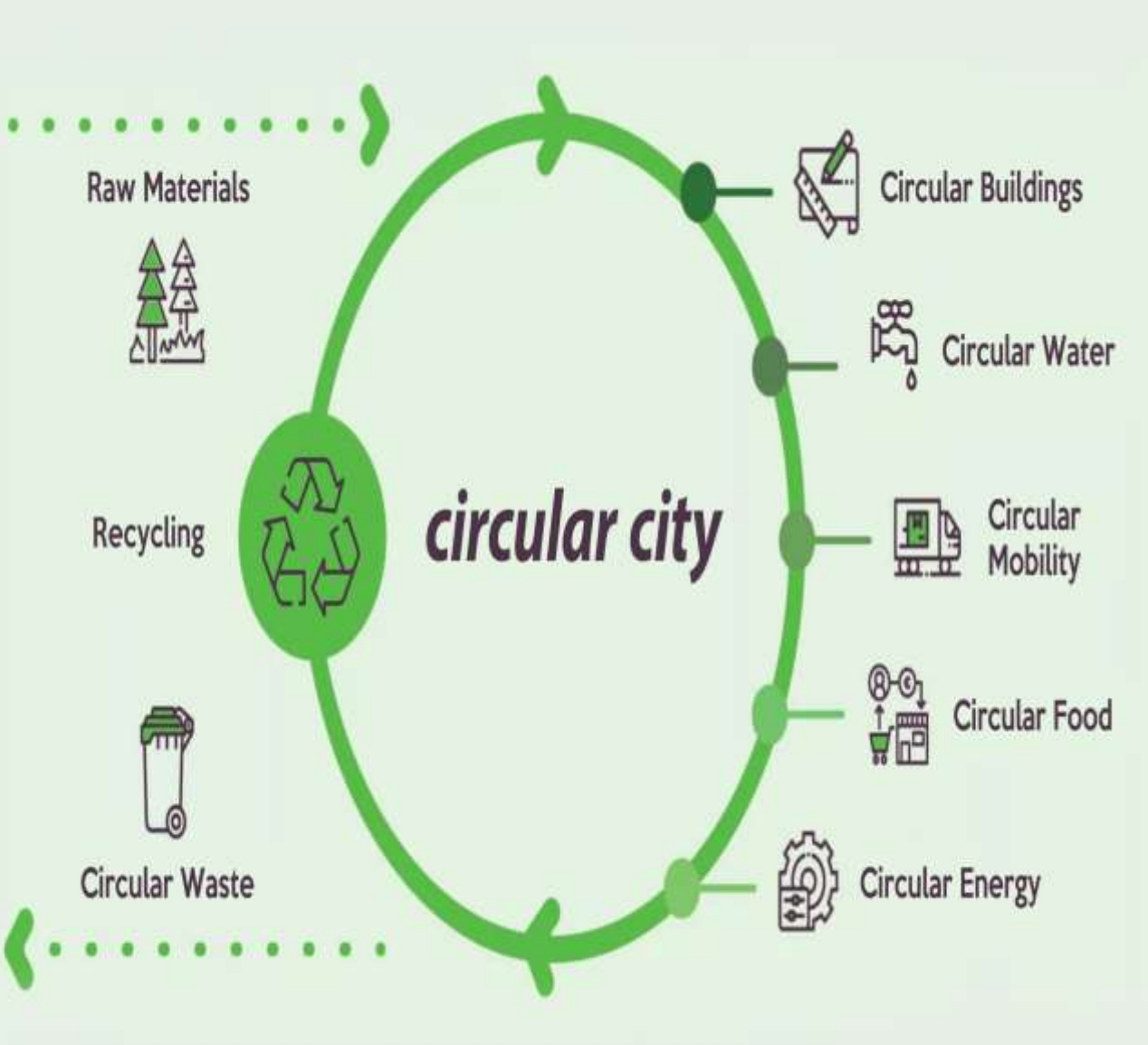
Critical Infrastructures, Urban Transformation and Development Strategic/Physical Facilities targeting the Blue-green restoration of the city in selected critical infrastructure sectors

MACRO



Critical Infrastructures, Urban Transformation and Development Strategic/Physical Facilities targeting the Blue-green restoration of the city in selected critical infrastructure sectors

4. We must understand the Transition to Circular Cities.



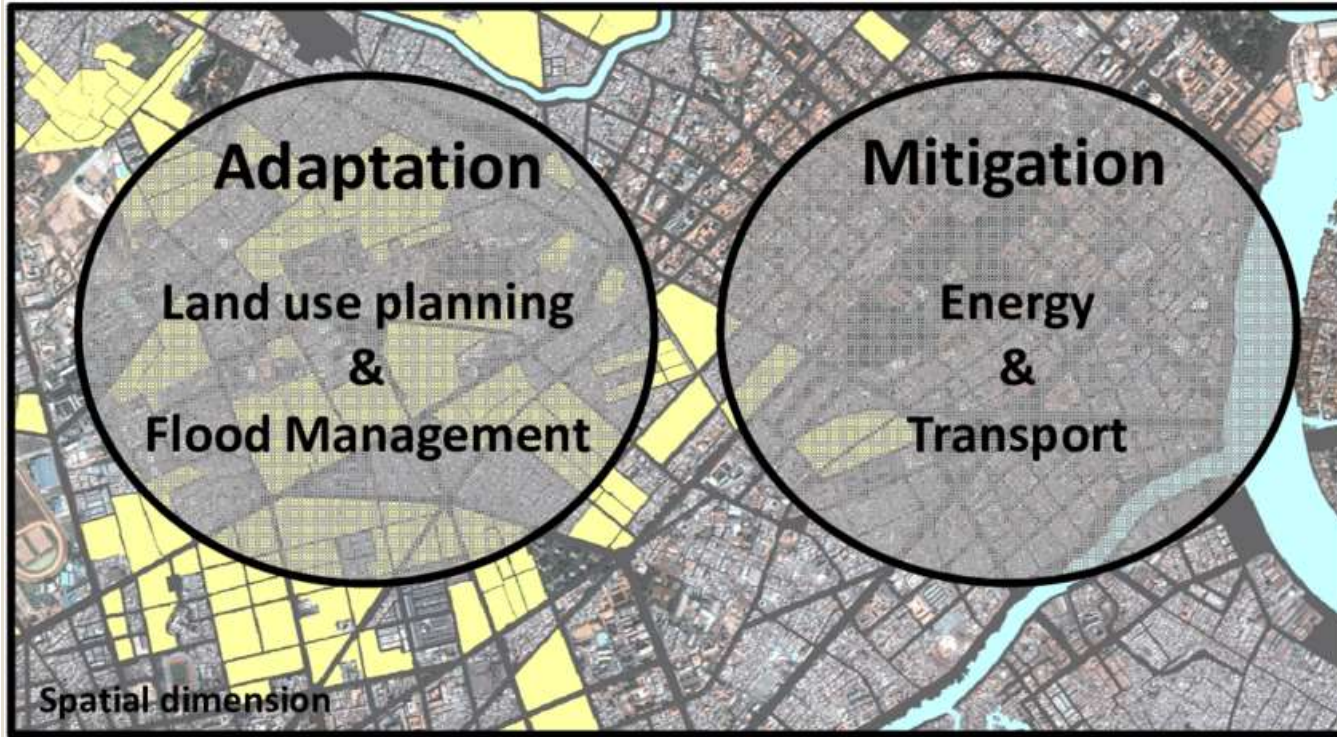
5. We must produce, manage and monitor together!



Mobilizing for a
resilient society:
Time, manpower



6. We Should Put Climate Adaptation Strategies at the Center of Spatial Planning!

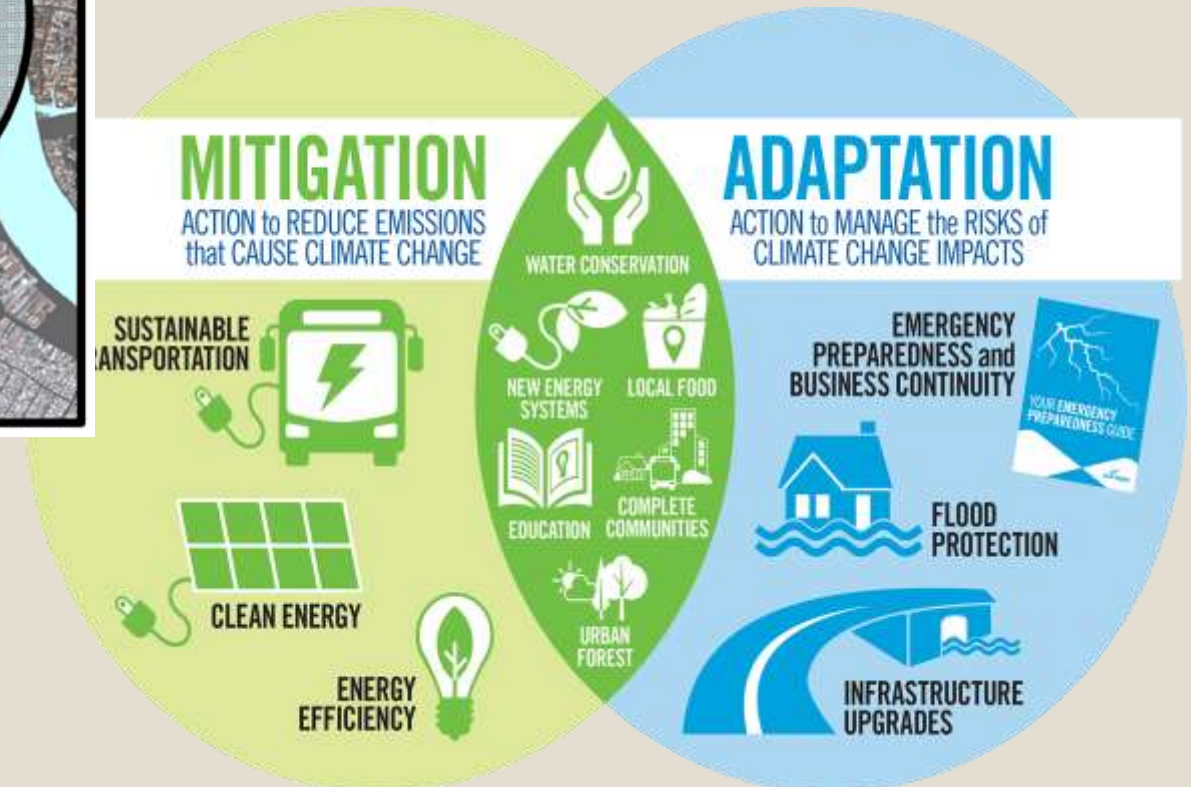


Mitigation

Measures to control, reduce and retain human-induced greenhouse gases that cause climate change

Adaptation

Strengthen, develop and implement strategies to combat the effects of climate events (risks), be resilient, benefit and manage the effects



A healthy city should offer a healthy lifestyle against climate change: RESILIENT CITIES

Good Housing

Safe job
opportunities

Clean Water,

Clean
weather ,

Quality and
Safe Food

Adequate
Transportation
Facilities

A good social
environment



When people live in a healthier environment, it positively affects both the economic, ecological and social structure.

Water and biodiversity are a dwindling resource. Therefore, we have to know that we, who have to cope with climate change that is difficult to control in the 21st century world, must live much more carefully.



Health is not negotiable



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HEALTHY CITIES
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Thank you...

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