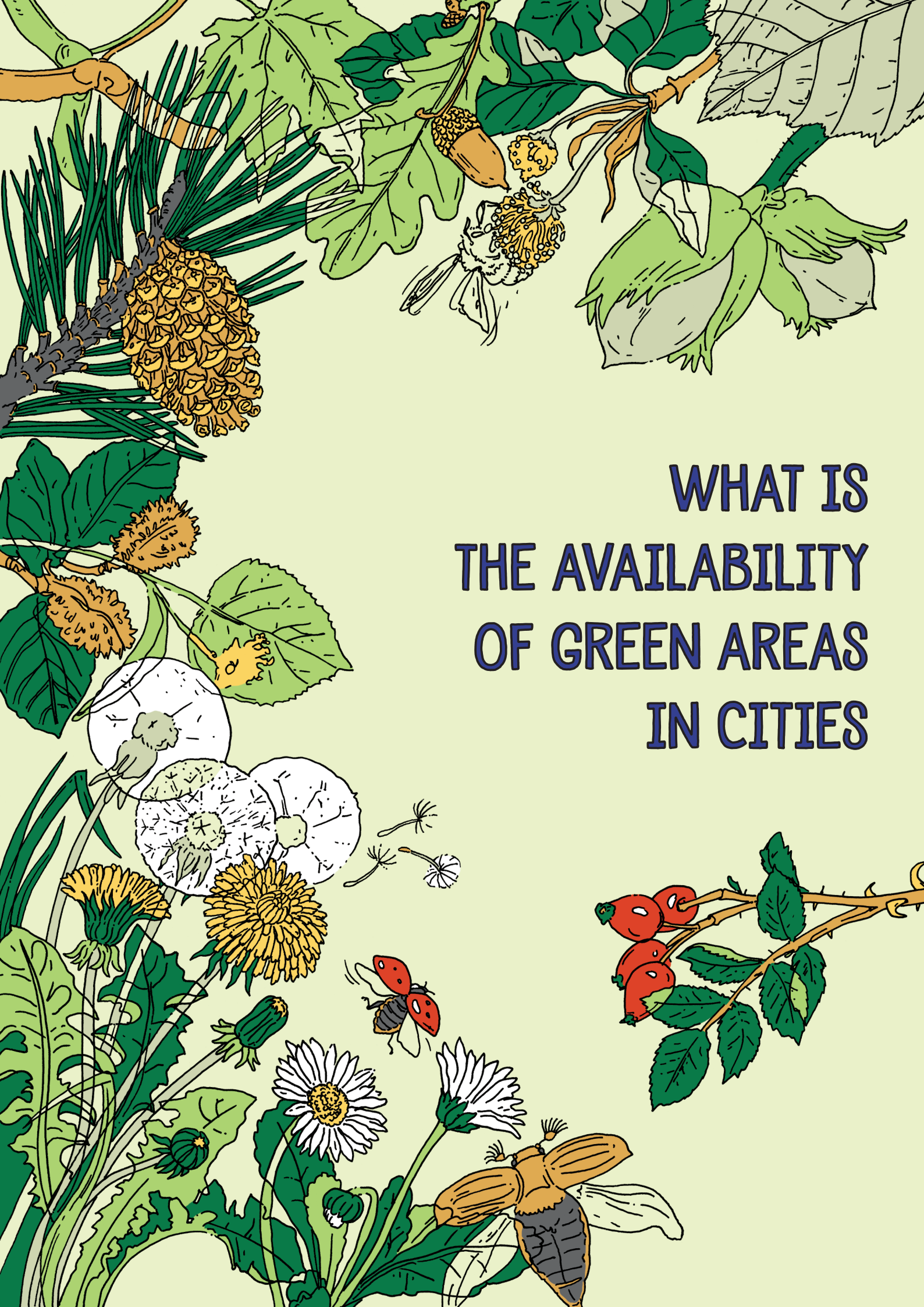


WHAT IS THE AVAILABILITY OF GREEN AREAS IN CITIES

INTRODUCTION

This indicator book is part of the Teaching green project and aims to support teachers of students ranging from 10 to 16 years old dealing with climate change education and its implementation. This educational unit is divided in five parts:

As a baseline task, all students must fill out an online questionnaire about their present attitudes linked to green areas (in this case).

1. Step: Team creation, depending on class size (4-5 groups of 4-5 students each.)
2. Step: Theoretical preparation, start working with the online learning module and your own resources about this topic.
3. Step: Practical monitoring of this indicator (at least twice).
4. Step: Result, a practical monitoring presentation prepared by students containing the findings from the practical part of this unit.
5. Students will fill out again the attitude questionnaire for an evaluation of character qualities changes.

Project activities support development of 6 essential character qualities:

- **mindfulness**
- **curiosity**
- **courage**
- **leadership**
- **resilience**
- **ethics**

You can find these icons next to the exercises.

Mindfulness
wisdom, self-awareness, observation, insight
"The awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experiences moment by moment."

Curiosity
open-mindedness, exploration, passion, initiative, enthusiasm
"The essential desire for information, the drive to resolve uncertainty."

Courage
bravery, determination, confidence, risk taking
"The ability to act despite fear or uncertainty, in risky situations or when we are feeling vulnerable."

Leadership
responsibility, accountability, dependability, reliability, selflessness
"The relational and ethical process of people attempting to accomplish positive change."

Resilience
perseverance, grit, tenacity, resourcefulness, self-discipline
"The ability or set of qualities that allow one to overcome obstacles."

Ethics
benevolence, humaneness, integrity, respect, justice, fairness
"The moral principles that govern a person's behavior or the conducting of an activity."

CLIMATE CHANGE IMPACT

By 2050, 68% of the global population will live in cities. That's 2.5 billion more people than today. In Europe, three out of four of us already live in urban areas, and the consequences of that are becoming more and more clear. Researchers estimate that 9 million people could die as a direct result of air pollution. In London, 2 million people - of which 400,000 are children - are living in areas with toxic air.

The heat generated by people, transport, shops, and industry is trapped in narrow roads and concrete structures, unable to escape to the atmosphere. This can bring **the temperature in urban areas up 3-4°C higher than the surrounding countryside,** and with that comes a vicious cycle. This is called the *"urban heat island effect"* and appears in towns and cities because of human activity.

Green spaces in cities are mitigating these effects of pollution and they can reduce the phenomenon of urban heat island effect.

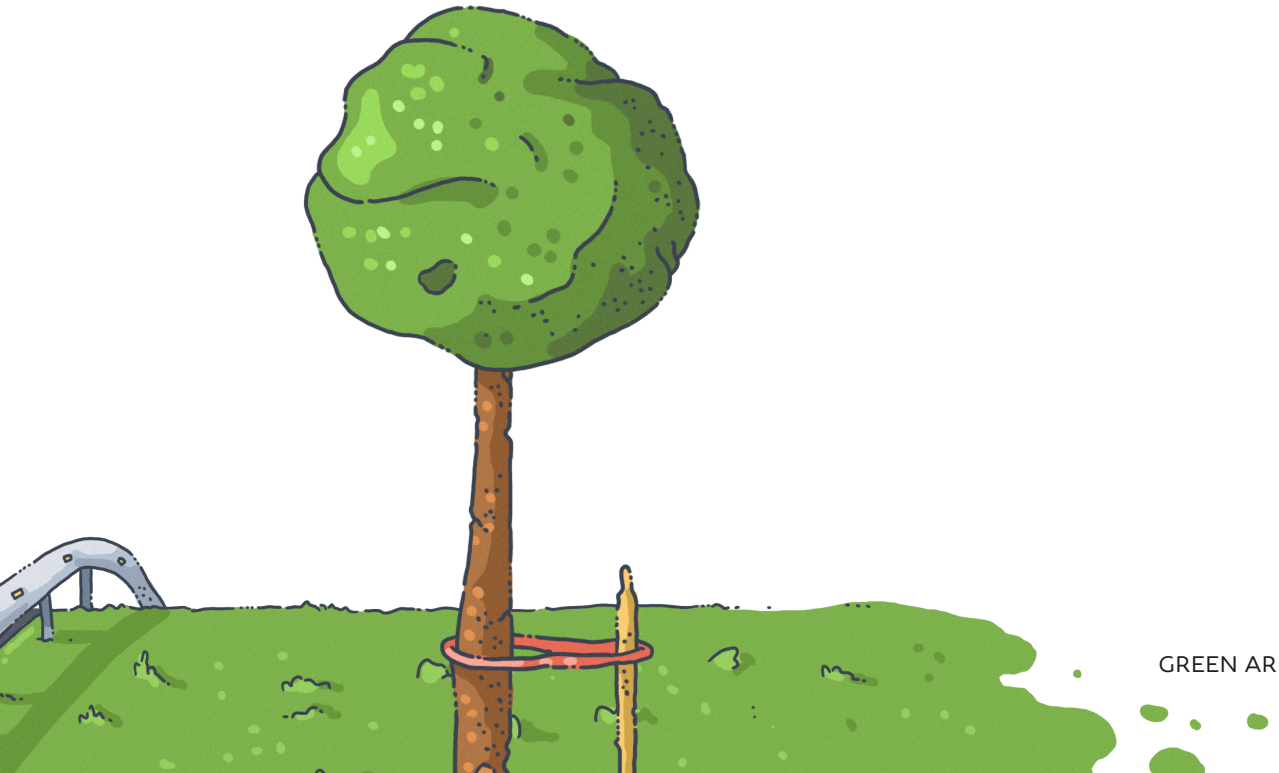
Planning cities to include green spaces wherever possible is the first step in making our urban areas healthier. For example, adding a layer of vegetation to rooftops and creating green roofs and walls, as well as bigger urban gardens and parks have proven to reduce the urban heat island effect. Do not forget your plants at home, your balcony, your garden or green spot near you.

VALUE OF GREEN SPACES IN CITIES

The potential for green spaces to boost our health and well-being is increasingly recognised, both in science and policy. Accessible green areas are especially important for children, the elderly, and people with lower incomes, minorities, and refugees, many of whom have limited opportunities for contact with nature close to where they live.

People use their local green spaces for physical exercise and social interactions, for relaxation and mental restoration. These have several benefits ranging from reduced risks of obesity in children, to better cardiovascular health and lower rates of depression in adults. Parks, trees, and other green areas improve air quality, reduce noise, moderate temperatures during hot periods, and boost biodiversity in city landscapes.

In her book "Losing Eden ", Lucy Jones (2020) explains why our minds need the wild, making a hymn to the healing power of nature. In chapter 4, "Physiological Resonance", she cited an Illinois University researchers' group who found that "20 minutes in the park was sufficient to improve attention performance compared with the same amount of time at the other settings" .... When a person is in a natural area, rather than an urban, non-natural environment, their brain tends to be less stressed, which in turn leads to better mental health.



THEORETICAL PART

There are two main ideas while promoting biodiversity in urban areas, helping to be closer to natural environments:

1. Cities must be immersed in the surrounding landscape.

2. The remoteness perception of the natural world ought to be obliterated.

This means that cities must not destroy or totally replace the original landscape.
Read the Mannahatta / Manhathan story to make an initial reflection about this.

Introduction to students

If we are talking about green spaces in cities, what exactly are we talking about? What are we measuring? Here is the answer following thhe European Environmental Agencies method :

Look for athese aspects and try to estimate "how green is your hometown?"
1. Public green spaces (%).
2. Total energy needs from renewable energy (%)
3. Population (%) using public transportation to go to work
4. Particulate Matter 10 Concentration (µg/m3) in the air, we breathe
5. Water consumption (litres) per capita per day
6. Walk Score in the city
7. Availability of city-wide recycling program
8. Availability of city-wide composting program
9. Number of quality farmers markets

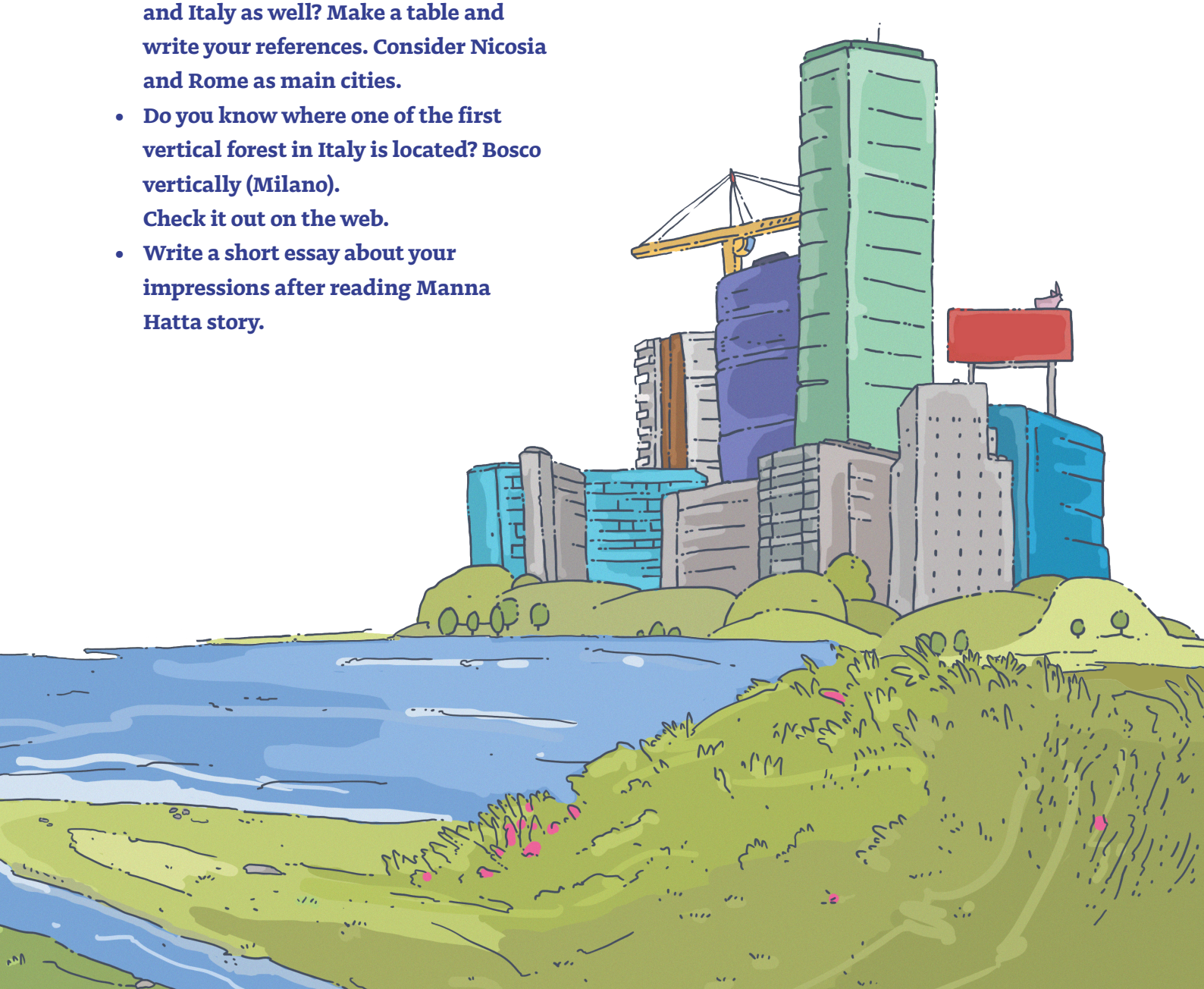
Questions & Facts for students

- **Have you ever wondered which is the city with highest/lowest green area proportion in Spain and which is the highest/lowest green area in a city in Slovakia?**
- **The city with the highest proportion of total green space (96%) is Caceres in Spain, where the city's administrative area incorporates natural and semi-natural areas around the city core. The city with the lowest total green space at just 7% is Trnava in Slovakia.**
- **Could you find similar proportions for total green infrastructure in Cyprus and Italy as well? Make a table and write your references. Consider Nicosia and Rome as main cities.**
- **Do you know where one of the first vertical forest in Italy is located? Bosco vertically (Milano).**
  Check it out on the web.
- **Write a short essay about your impressions after reading Manna Hatta story.**

Use the following paragraph to inspire you about human rights and environment while writing your small essay (use your national language and then translate using *DEEPL*)

"Framework principles on human rights and the environment"

Human beings are part of nature, and our human rights are intertwined with the environment in which we live. Environmental harm interferes with the enjoyment of human rights, and the exercise of human rights helps to protect the environment and promote sustainable development".



RESOURCES FOR FURTHER STUDING:

- MODULE 1

1. GREEN AREA PER CITIZEN
2. Urban data Platform
3. Simbaloo for organizing information.
4. World City Culture Forum
5. Aquaponics
6. Green walls

- MODULE X

7. Human Rights and Environment
8. Green Cities in Europe
9. GIS applications
10. Green urban data
11. Healthy and Sustainable report
12. Who benefits from nature
13. European Capital Greenness evaluation

NECESSARY TOOLS:

Internet access,
PC, office software
Emotional map, available at:

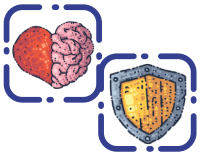
PRACTICAL PART

Aims of activity

a. To Learn ***"backwards design"*** to work on citizen science.

b. To work on outdoor activities linked to school surroundings.

Orientation or Engagement



We are going to use a project based-learning approach.
Let's learn backwards design. This is going to be fun. Starting from the end....

STEP 1. Start with the end in mind.

STEP 2. Decide what would be acceptable evidence. What are going to be the precise results?

STEP 3. Design your work to maximise the likelihood of success. Draw a **Chart** or a **Mind map.**

HANDS-ON !

STEP 1. **Our Research:**
Which is the main question?

Is our town filling with the UN recommendation to have (minimum) 10 m² of green area per inhabitant?

Keep this in mind:
Generating data that are valid and reliable for school community dissemination.

STEP 2: **Define these parameters for your research:**

I. Level of scientific rigor
(Low, Medium, High)

II. Instrument validity
(Description and sharpness of each instrument or equipment to be used)

III. Design research level
(Steps / project design/ Diagrams)

IV. Scientific standards
(sample size selection)

STEP 3.

I. Method to be used.
How should I procced in my research?

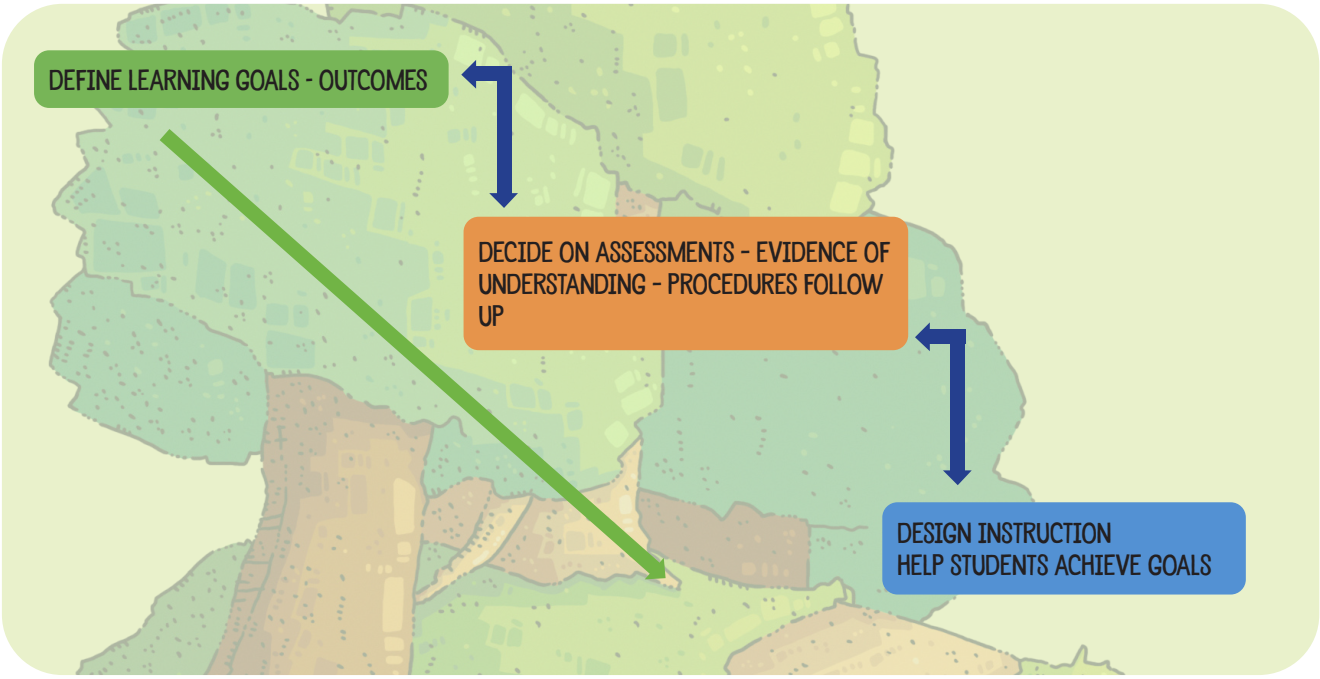
II. Causes. (Root questions)
What is the problem or question to be solved?

III. Targeted outcomes (expectations)/Results.

Green vs. Gray

There is a present estimation about green area per Earth inhabitant which is 9 m², but ideally it should be 50m².

Investigation



You are welcome to use the backward design for any local project in your school. Consider one need of enhancing green areas near the school: starting a green wall, planting trees... You can choose, use your creativity and imagination but keep in mind the green areas near your school.

? Questions & Reflexions for students

1. **Monitoring green areas at local level. Make and experiment on the field, school grounds and city or neighbouring area. You can measure them, count them, and draw them using google maps.**
2. **How does the loss of green areas affect us? (personally, family, community) State your case and have a small team presentation.**
3. **Change and adaptation – Dealing with the change. What is happening in different levels? Use an example of your body (e.g. getting bigger with age) and also your own community areas (urban, rural, suburban, peri-urban). Explain social and environmental dynamics during the past 10 years for your site / community. Take some pictures and compare them with old ones from same area.**
4. **How to deal with the availability of green areas near you at local, regional, and national level?**
5. **How can each person be involved in addressing the lack of green areas?**
6. **Make a table, with your ideas or write an article for school website.**
7. **If you interested in knowing more about how you can deal with the decline of green areas, examine how you fill out the following tables.**

TACTICS FOR COURAGE	DESCRIPTION/ IDEAS
1. Role model	
2. Opportunities to learn	
3. Steps towards a higher achievement	
4. Encourage revision	
5. Discuss narratives and look for successful outcomes	

ASSESSING COURAGE	IDEAS / VALUATION / APPROPRIATENESS
a. Determination to push towards a goal despite boundaries	
b. Self-confidence (Mastery)	
c. Assertiveness (Positive energy and time invested).	
d. Venturesome to cope with uncertainty / fear	
e. Degree of effort to overcome challenges (Altruistic - risk-taking)	

ACTIVE PART

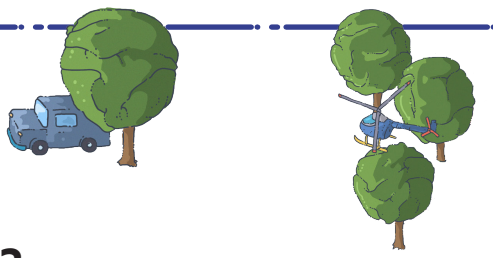
Do the following activity:
Natural cultural heritage – **Emotional map**.

RESEARCH:

STOP and think about this, and then act:
"I am interested in this topic", or "I have a different, serious reason for doing it".
Do not forget to estimate green areas on a map to compare it with other students or schools.

REFERENCE TABLE
FOR EMOTIONAL MAP ACTIVITY

- GREEN: here I feel good and safe, I like it, there's nothing to disturb me or require a more fundamental repair
- BLUE: At this point, I feel good and safe, but something requires correction or repair
- BROWN: I feel neutral, I have no positive or negative emotions in this place
- ORANGE: I am not happy here because it is dangerous, neglected, or dilapidated, or I have a different reason for it
- RED: I feel uncomfortable at this point, and I would prefer to avoid it because I am afraid/dont like it



? Questions for students

- **Try to describe how you feel at each site while walking and arriving to designated places. Start on your school grounds and then do a similar experience in your neighbouring area o city. You can use google maps to calculate the area or, if possible, measure it.**

- **Try to describe your opinion on the situation, if you had to stay in that place for 8 hours, for instance. How do you cope with noise/ silence? Traffic? Polluted air? Insecurity? Dirtiness? Other factors...**

- **How do you cope with/face city noise or dirty areas, litter on the street, the homeless, street artists, festival parades, loneliness?**

Conceptualization

Let's find satellite images ranks of green and not so green cities

Once, we have our data for European cities, let's contrast this information with this **article** (*Europe's Greenest Cities Might Not Be the Ones You Think*)

- **Think about living options in urban environments or rural areas and discuss their pros and cons. Consider the *Normalized Difference Vegetation Index (NDVI)* for both cases and try to contact another school with different surroundings and carry out the same experiment to contrast educational community perceptions.**
- **Why do you think people are gathering in cities and abandoning rural areas? Compare the present situation in some EU countries (Spain, Italy, Slovakia, Cyprus...)**

Conclusion

Make a summary of measurements:

Suggestions for possible solutions

- Emotional map activity. Graphic Results.
- Ranking based on satellite images of green cities in Europe.
- Living in urban or rural areas. Pros- cons.
- Green houses - are they a true solution?
- Explain Normalized difference vegetation index (NDVI) in your own words and see if its useful for knowing more about green areas.

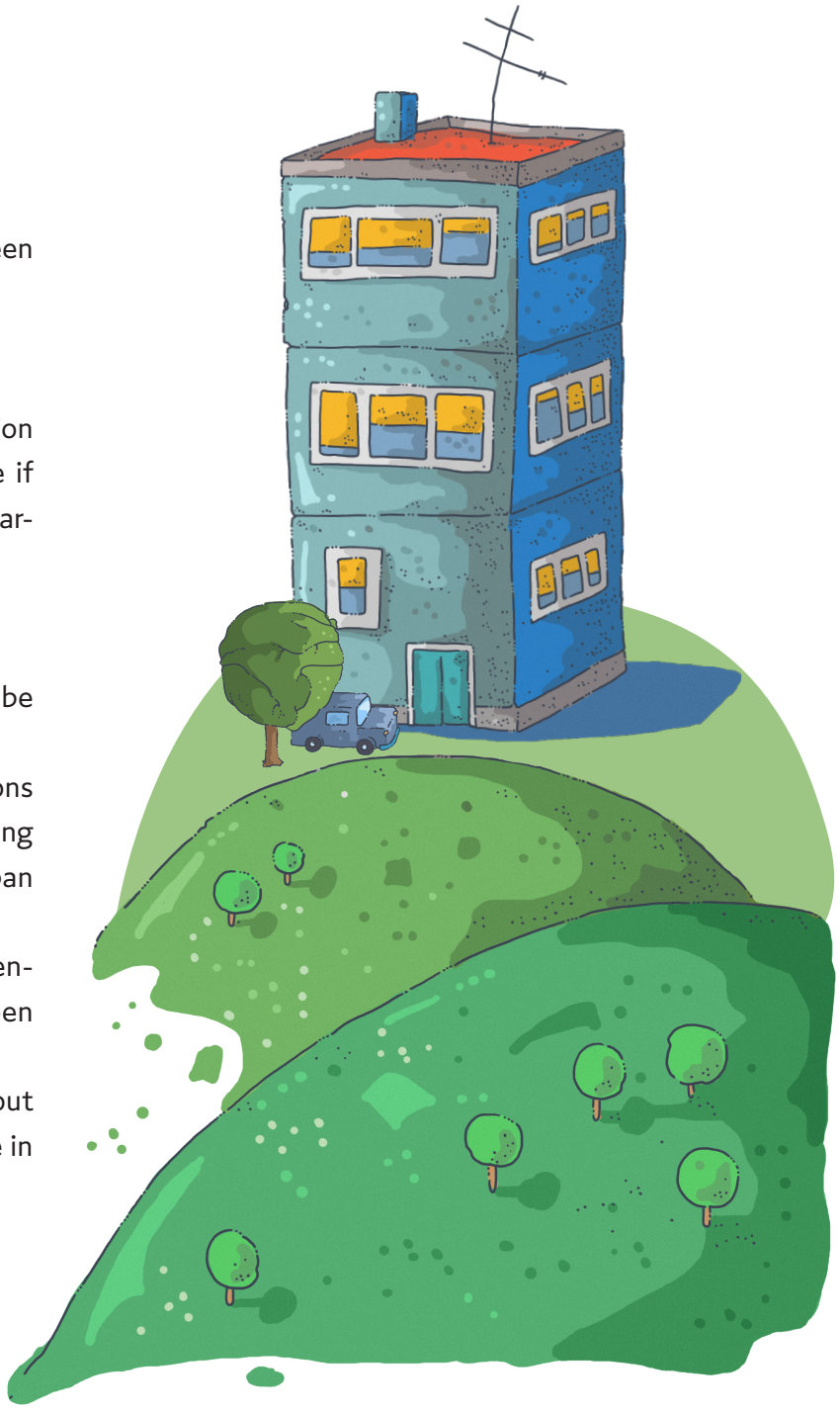
PAY ATTENTION AND FOCUS ON:

- How to promote outdoor activities to be healthy?
- How are governments / institutions and / enterprises involved in promoting green area planning and their use in urban areas?
- How can we motive communities to enhance, protect and care about their green areas?
- How can you include time for caring about green areas in your hometown and home in your schedule?

- Could you explain your feelings when you are outdoors in the wilderness, walking in the woods, near a river, by the seaside, or any green area and contrast this situation while being indoors ?
  Exchange ideas with your classmates.

SLOGAN (MAIN MESSAGE)

What are you doing in your 9m² Green spot for you at your hometown?



RESOURCES

SIMULATIONS (Climate- En-roads). Available at:
<https://www.climateinteractive.org/en-roads/>
Doughnut Economy. Available at:
<https://doughnut-economy-fxs7576.netlify.app/>
A health Economy should be designed to thrive not grow. K. Raworth (15 min) . Available at:
<https://youtu.be/Rhcrbcg8HBw>

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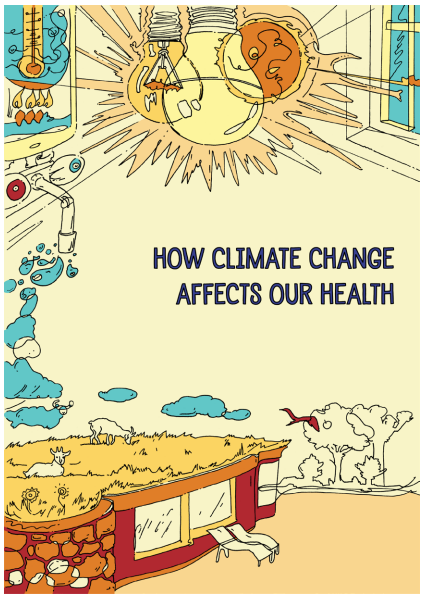
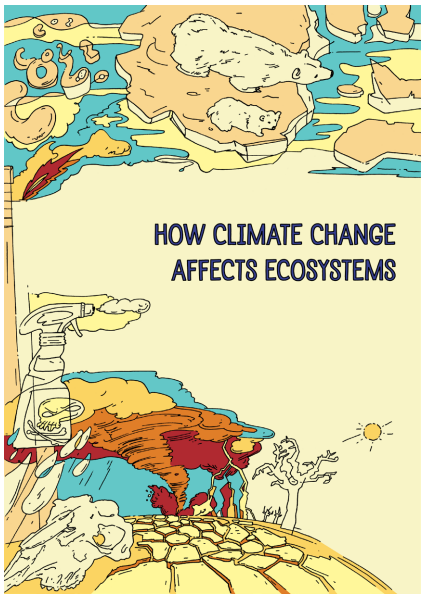
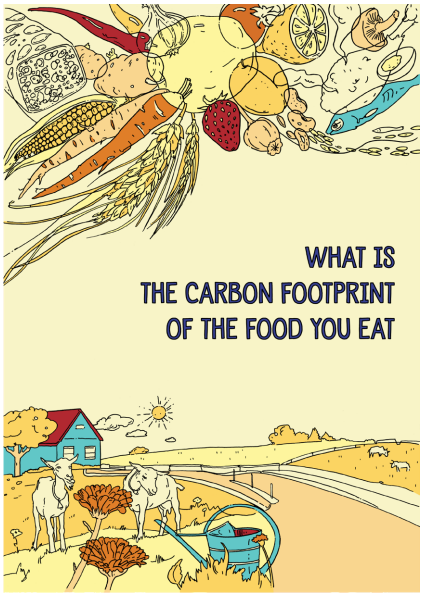
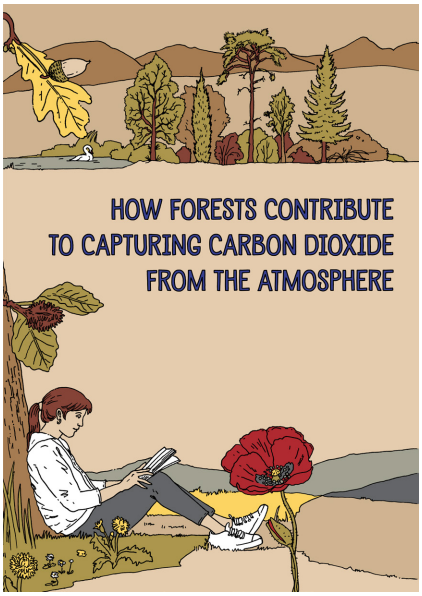
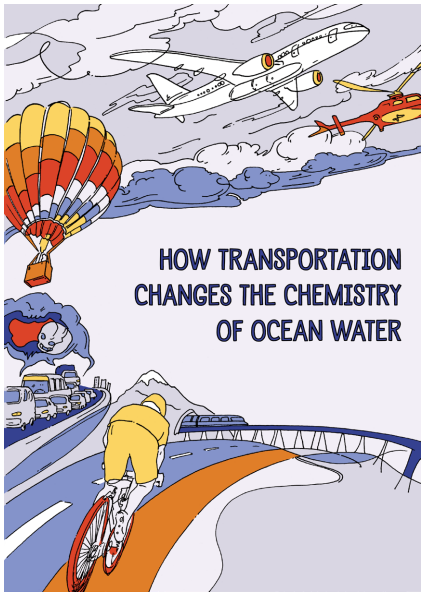
OTHER INDICATOR´S BOOKS YOU MAY LIKE CAN BE FOUND ON: TEACHINGGREEN.EU

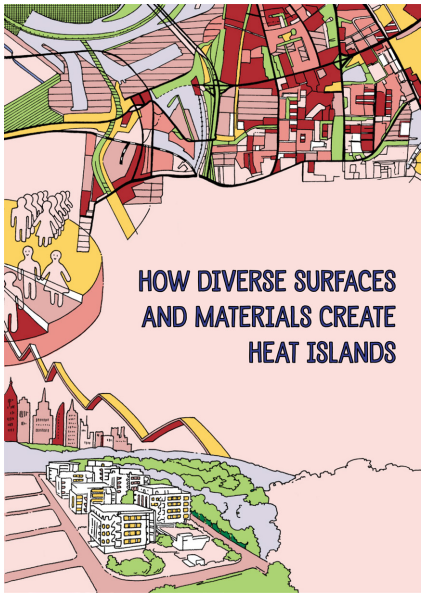


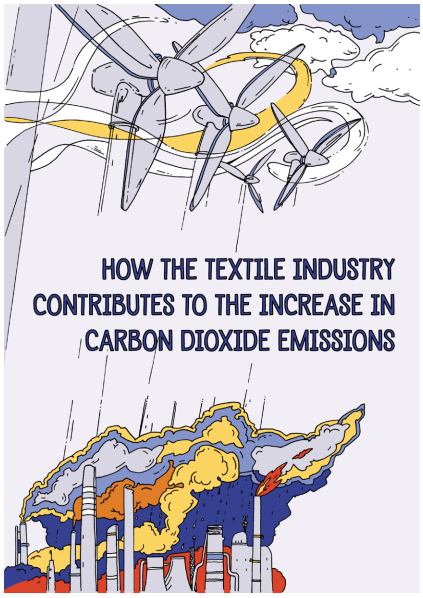


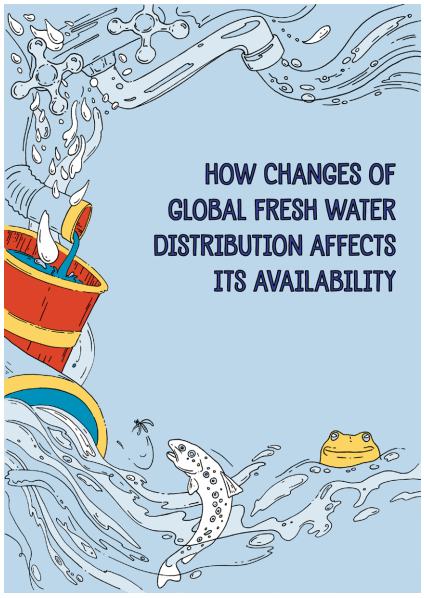












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