



BUILT 05

Nature and the built environment

How nature influences our health and what we can do to create a greener and healthier environment.

[Start course >](#)



Warsaw University
of Technology



Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.





BUILT

MODULE 5

Nature and the built environment

In this module, you will learn how nature can influence our health and what we can do to create a greener and healthier environment. This is very important as many challenges are expected and we need to tackle them.

Introduction

Nowadays, we are witnessing very dynamic changes caused by demographic ageing, climate change, and enormous technological progress. All this influences our way of living and we need to adapt to the new conditions.

In order to find balance in the rapidly changing world, we should try to live in harmony with nature. The natural world will help us to reduce stress hormones, and find tranquillity but also will protect us from heat waves and other consequences of climate change. Let's go and check what we can do!



What will you learn in this module

- 1 The role of nature in maintaining health in modern times.
- 2 Health and gardening.
- 3 Climate change and adaptation to it.
- 4 Nature as a therapy against loneliness and isolation.
- 5 Beautiful, effortless and natural gardening.



Chapters in this module

1 The role of nature in maintaining health

2 Adaptation to climate change

3 Nature unifies

4 Casual gardens



BUILT

MODULE 5

CHAPTER 1

The role of nature in maintaining health

Our health is highly influenced by the quality of the environment we are living in. The more it is natural and clean the better we feel. Why it is not always so? Let's take a glance into the history and look into the current concepts of nature-based design and therapy.

What will you learn in this chapter

- 1 A bit of history on environmental treatment.
- 2 Car traffic and the air pollution.
- 3 Environmental treatment against common diseases.
- 4 Horticultural therapy.



A bit of history

19th-century cities were very unhealthy places to live in. Numerous newly constructed industrial plants produced widespread and harmful pollution. People lived in very overcrowded conditions. It was typical that one family with five kids lived in one-room homes. The sanitary conditions in workers' districts were also very poor. This all contributed to a very quick spread of infectious diseases. For example, it is estimated that one in four of all deaths in the mid-19th century in New York was caused by tuberculosis.



Environmental treatment

It was discovered that access to clean air, greenery, and sunshine has a very beneficial effect on human health. As a solution to the health problems associated with urban living, health resorts were established in beautiful surroundings far away from congested cities. Many people suffering from tuberculosis and other conditions were successfully treated there.

However, while public parks began to appear in some countries in the 19th century, only affluent citizens could afford environmental treatment. The rest of society was deprived of these wellness services and facilities.



Modernist urban planning

At the turn of the 20th century, urban planners, medical doctors, and socially involved individuals started to discuss ways to improve the living conditions of low-income people. In the 1930s they postulated developing free-standing multi-family residential buildings, surrounded by greenery and providing enough sun and fresh air to each apartment, as opposed to the dominant 19th-century block housing.

This is how modernist urban planning emerged.



Car traffic

Awareness of the positive impact of nature on our health has evolved over the years. However, at the same time, car usage has grown considerably, leading to huge congestion in cities and health problems for many people.

Nowadays, cars are one of the main sources of pollution in cities. We should try to cut down on using them.



Activity 1:



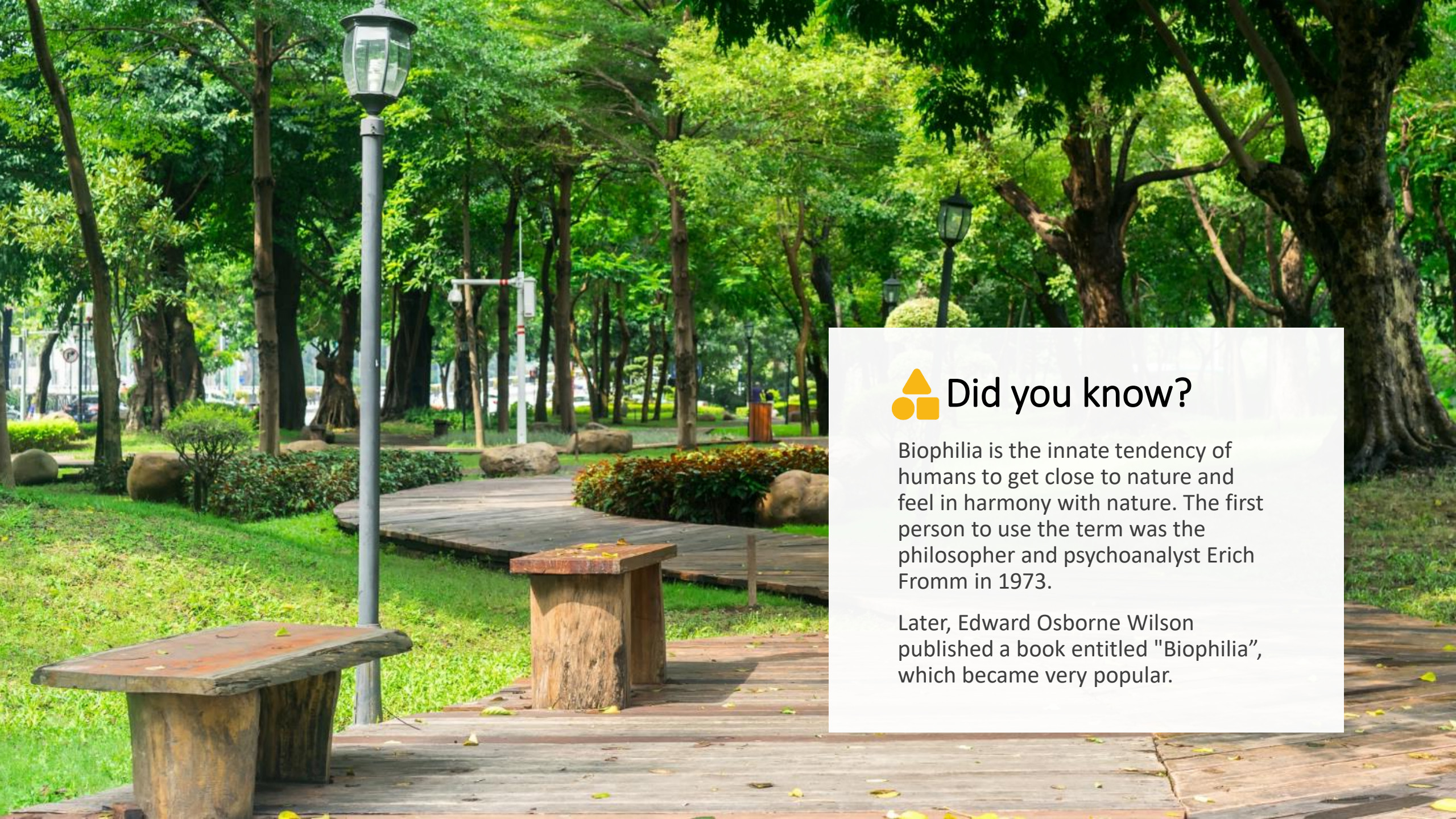
Do you really need to drive?

Think how often you or your friends drive a car. Do you need to do that? Is it possible to use public transportation or a bicycle? Or maybe you could go on foot? What are the obstacles?



Human power: cycling and walking are best...

Try to cut down on using a car. Walking or cycling is not only good for the environment but also for your health. By using your own feet you also increase your chances of meeting someone.



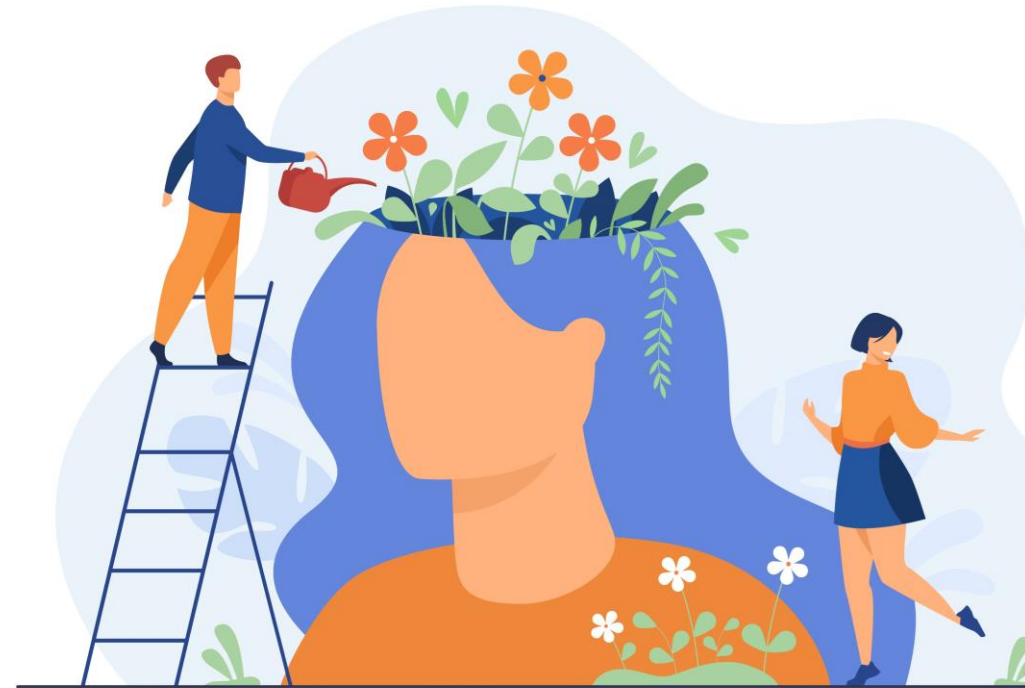
Did you know?

Biophilia is the innate tendency of humans to get close to nature and feel in harmony with nature. The first person to use the term was the philosopher and psychoanalyst Erich Fromm in 1973.

Later, Edward Osborne Wilson published a book entitled "Biophilia", which became very popular.

Influence of contact with nature on our health

Contact with nature has a very beneficial influence on our mental and physical health. Research shows that it reduces the level of cortisol, which is the hormone released in our body as a stress response. It can cause weakness and problems with the nervous system. At the same time viewing the natural world or working in the garden stimulates the secretion of the hormone of happiness, which in turn improves our wellbeing.





Did you know?

Working in the garden reduces the risk of developing dementia by 36%, as it increases the ability to concentrate.

One may say that the mind stays younger when involved in gardening.

Moreover, for older adults who are active in gardening, the risk of heart attack and stroke is lowered by 30%.

Mental health benefits of using a garden for older adults



- Reducing stress
- Improving wellbeing
- Motivating, inspiring
- Feeling connected with nature
- Helping you come to terms with life changes
- Engaging in social interaction
- Motivating to connect with people
- Shaping the habits of being among people
- Strengthening sense of security



Physical benefits of using garden for older adults



- Improves vital functions
- Improves physical fitness
- Stimulates the senses
- Improves eye-hand coordination
- Affects the body's immunity
- Gets body functioning in a rhythm
- Teaches perseverance



Educational benefits of using garden for older adults



- Arouses passions
- Improves concentration
- Experience of reality
- Teaches planning
- Teaches problem solving
- Motivates to connect with people
- Enriches experience
- Trains memory



Horticultural therapy

In horticultural therapy, all senses are being used. There are two types of horticultural therapy:

- **Passive therapy** is based on being in the garden, walking between plants, looking at them and touching them. Each of these activities leads to the stimulation of the senses through contact with plants.
- **Active therapy** stimulates the senses directly by working in a garden e.g. planting plants, growing vegetables and herbs, and collecting flowers and leaves for bouquets.



Eyesight and colours

Vision is the sense that we rely on the most. Each person perceives colours differently because our brains do not process light in the same way.

Colours have different meanings and connotations. Let's see what they mean!



The meaning of a colour



Red and yellow

Red is the colour of energy, strength, passion, and vitality.

Yellow is identified with happiness, wisdom, concentration and improved memory.



Blue and green

Blue signifies gentleness, calmness, relaxation, fights tension, nervousness and insomnia.

Green is the colour of harmony, nature, balance and hope.



Violet and orange

Violet is the colour of meditation, contemplation, and prayer. It calms the body down and balances the mind.

Orange affects merriment, fun, celebration and pleasure.



White

White is the colour of purity and innocence.

It is considered neutral which is why it is often combined with other colours.

Hearing

The sounds of wind, dripping water, birds singing, leaves falling, and crunching of various surfaces under your feet affect your sense of hearing when you are in green areas.

In gardens that support horticultural therapy, the sounds of nature are intense so as to have a positive effect on our wellbeing.



Elements affecting hearing



Rustle of grasses



Dripping water



Bird singing



Different surface

Smelling

Many different scents accompany you in the garden. Scents have also a healing effect on the body. They may reduce headaches, help to open airways and improve sleep quality.

You can use plants with a strong and aromatic smell. You can create your own mixtures of dried herbs, flowers and fruits, which you can use in the wintertime.



Properties of essential oils



Basil oil

Herbal fragrance, analgesic, stimulating, and refreshing, improves the efficiency of mind.



Mint oil

It affects concentration, improves the work of the mind, and clears the respiratory tract.



Lemon balm oil

Reduces stress and tension.



Lavender oil

Calms down, relaxes and reduces depression.

Stimulating touch

Touching stimulates the body. If your eyes cannot see very well, you can feel the garden through the sense of touch and smell.

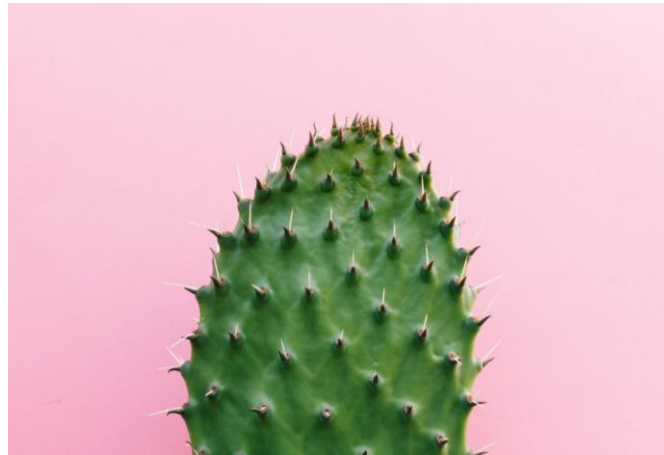
Be cautious when choosing plants. Avoid those with many thorns or spikes, which could cause injury.



Careful about



Thorns





Spikes



Sensitizing

Quiz

Click the **Quiz** button to edit this object

**BUILT** **MODULE 5** **CHAPTER 1** The role of nature in maintaining health

The environment we live in does not have any impact on our health.

True

False

Chapter summary

1

You have learnt about the origins of environmental treatment.

2

You know that car usage is neither good for the environment nor your health.

3

You know about the positive influence of contact with nature.

4

You have learnt about horticultural therapy.

5

You know how our senses are stimulated by the natural environment.

Chapter completed!

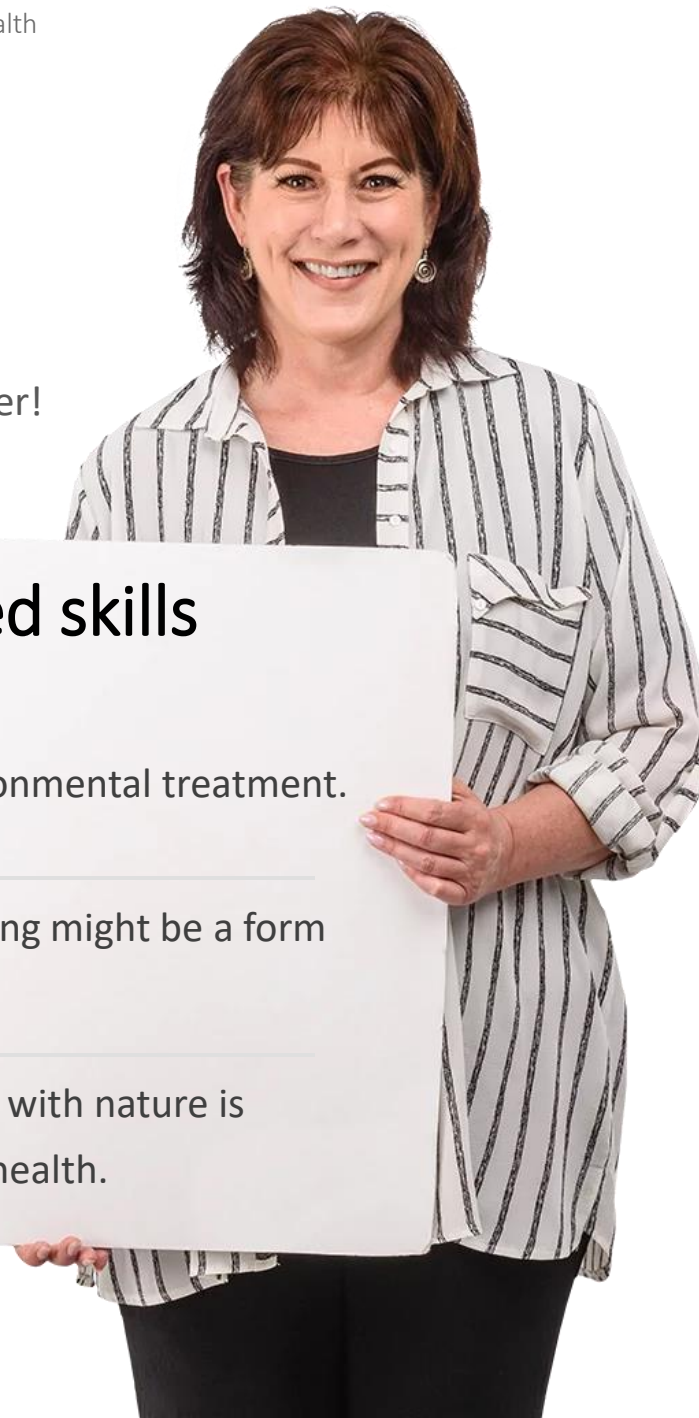
Congratulations! You have successfully completed this chapter!

Summary of acquired skills

- 1 You know about environmental treatment.

- 2 You know that gardening might be a form of therapy.

- 3 You know that contact with nature is indispensable for our health.



What is next?

Now you can either repeat this chapter or follow our study recommendation by clicking on one of the buttons below:

[Restart](#)

[Next](#)





BUILT

MODULE 5

CHAPTER 2

Adaptation to climate change

Nowadays, we are standing in front of a huge challenge to which we cannot keep silent: climate change. Climate change will force us to modify our living behaviours and it may also influence our health. We are not able to stop it but we need to slow it down and adapt to it. Let's see what we can do!

Adaptation to climate change

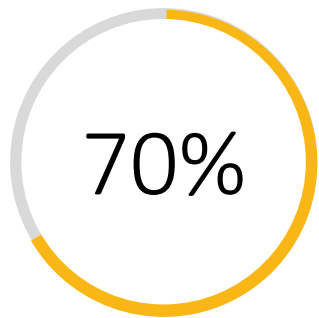
Climate change is unstoppable. What we can do, and in fact should do, is to make it as slow as possible. Only in this way we can keep our planet alive.

However, we should not treat climate change solely as a threat. It is also an opportunity to rebuild our living environment so that it not only fits better to the challenges linked with climate change but also improves our wellbeing.



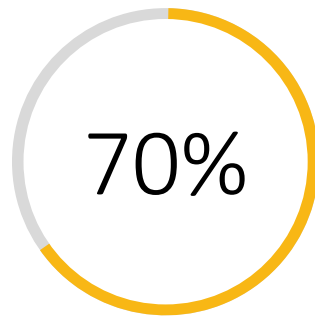
Some data

The Intergovernmental Panel on Climate Change (IPCC) report gives some statistics about the current land and water use on a global scale:



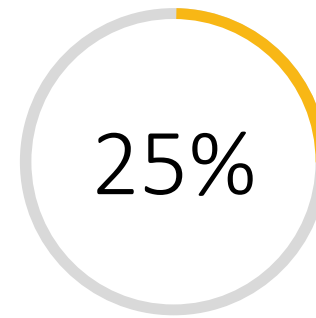
Land use

70% of the land (not including the ice surface) is currently used by humans



Water & agriculture

70% of fresh water is used for agricultural purposes



Land degradation

25% of land has been degraded by human activity



Desertification

We are currently witnessing a process of desertification of land around the world

What will you learn in this chapter

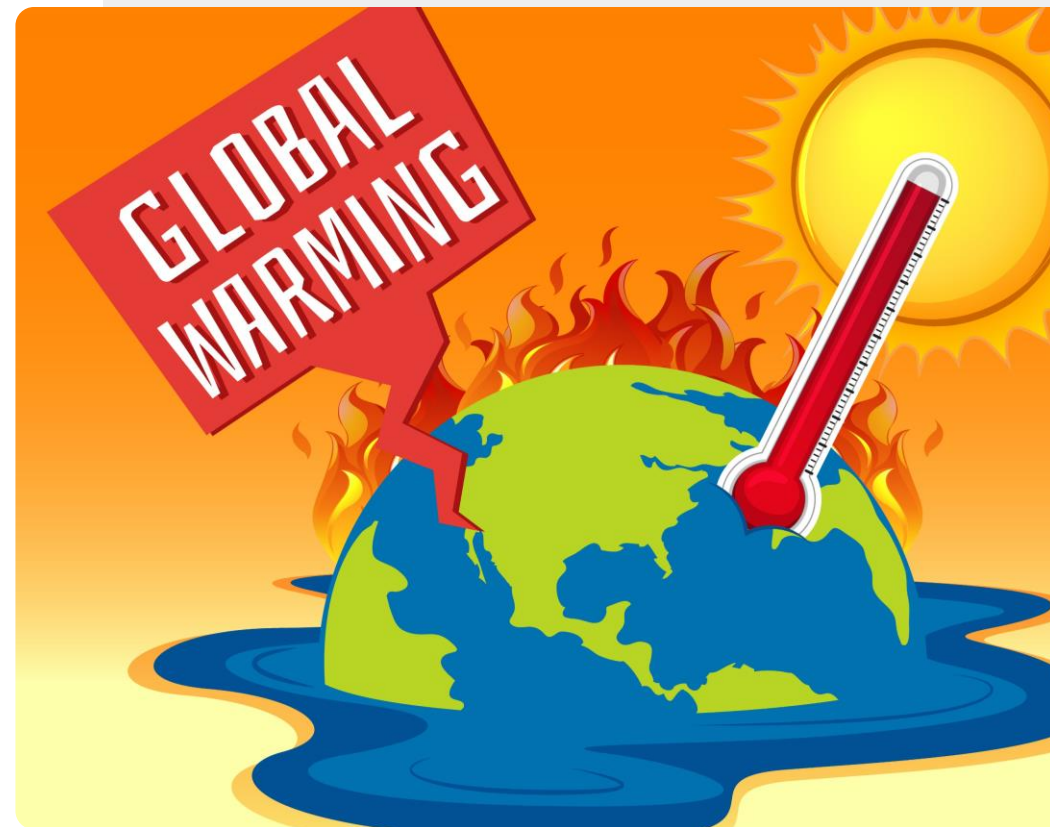
- 1 Global warming.
- 2 Water management need.
- 3 How can we adapt to climate change?



Global warming

From 1850 to 2013, the Earth's surface temperature rose by 1.33 degrees Celsius. This has resulted in an increase in the number and intensity of so-called “heat waves”.

According to the IPCC report, we should strive to keep the temperature growth to 1.5 Celsius degrees in 2050. If the temperature increases more our existence will be endangered.



Activity 2: show your stripes

Please visit the website:

<https://showyourstripes.info/>

There you can check how much the temperature rose on Earth, in your region or country over the last 170 years.

Climate strips are a simplified visualisation that allows us to see how the average temperature has been changing. They were developed by prof. Ed Hawking from the University of Reading, in order to trigger discussion on climate change.

If you click on the link, you will notice different colour stripes. A stripe, that is dark blue indicates colder temperatures in that zone. The redder stripes indicate that the temperature in that zone is higher.

What did you observe when looking at your stripes?



Did you know?

Global warming is particularly dangerous for older people. Mortality among this group increases drastically during heat waves.

In the summer of 2010 55,000 people, mostly older adults, died in European countries due to heat-related health problems.

Heat waves are particularly troublesome in cities.

Remember Teresa?

Teresa, who is 83 years old, lives with her 87-year-old husband in an urban area. It is a densely built-up area with scarce green spaces.

During summertime, the area becomes very hot. It is much warmer than suburbia. The phenomenon is called an urban heat island and it is very frequent in dense cities.

Have you ever experienced an urban heat island?

Can you think of the ways you could support Teresa and her husband during the heat wave?



Tips on how to take care of older adults during the heat wave

If there are older adults in your family or among your neighbours, it is important to check whether:

- somebody is visiting this person at least twice a day
- curtains or blinds are drawn, or shutters are closed in the flat
- the temperature in the flat is below 25 degrees Celsius
- the fridge is in good working order
- the person has access to refreshments, particularly water
- is wearing light
- is eating enough
- has a telephone to contact in case of need
- has a list of emergency telephone numbers and contacts for at least two of his or her relatives
- knows how to protect oneself from the heat

Need for water management

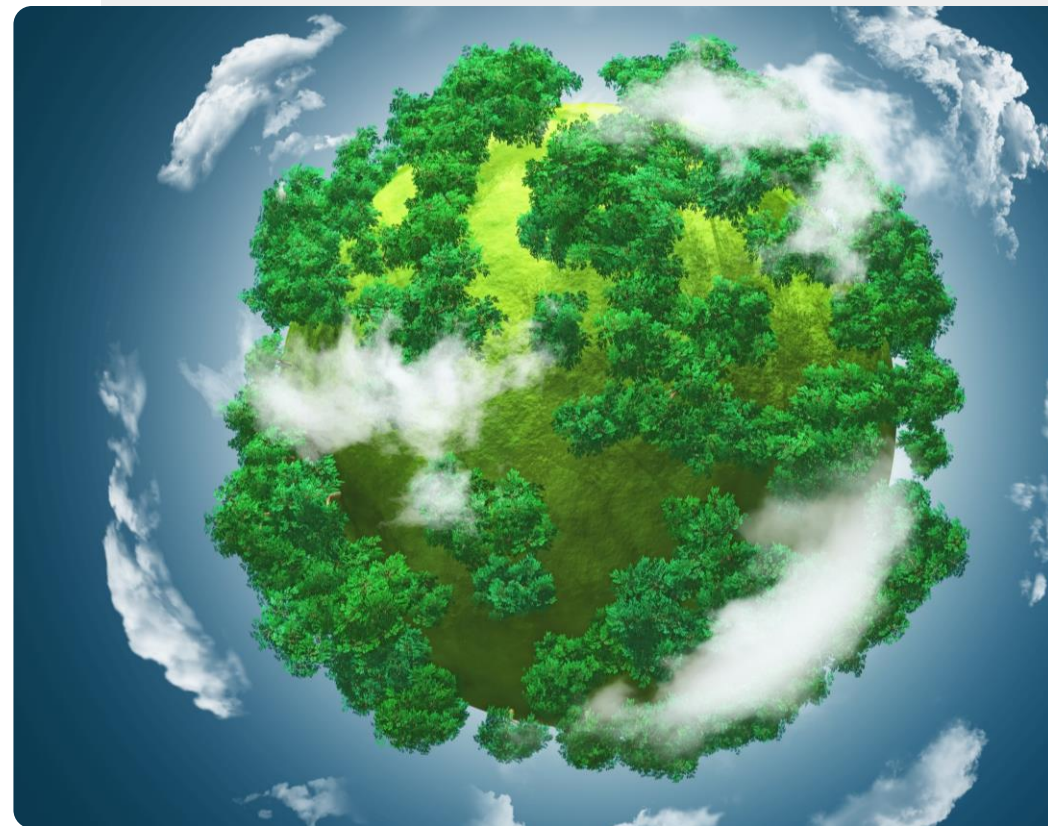
Global warming leads to long periods of drought. Already in many European regions in summertime water is becoming a more and more scarce resource, which badly influences agricultural production.

At the same time, however, it is expected that severe weather events will be more frequent bringing heavy rainfall which the soil will not be able to absorb. This may result in severe flooding.



What can we do?

In order to slow down climate change, we need to abandon our current exploitative attitude towards the environment and start to live in harmony with it.



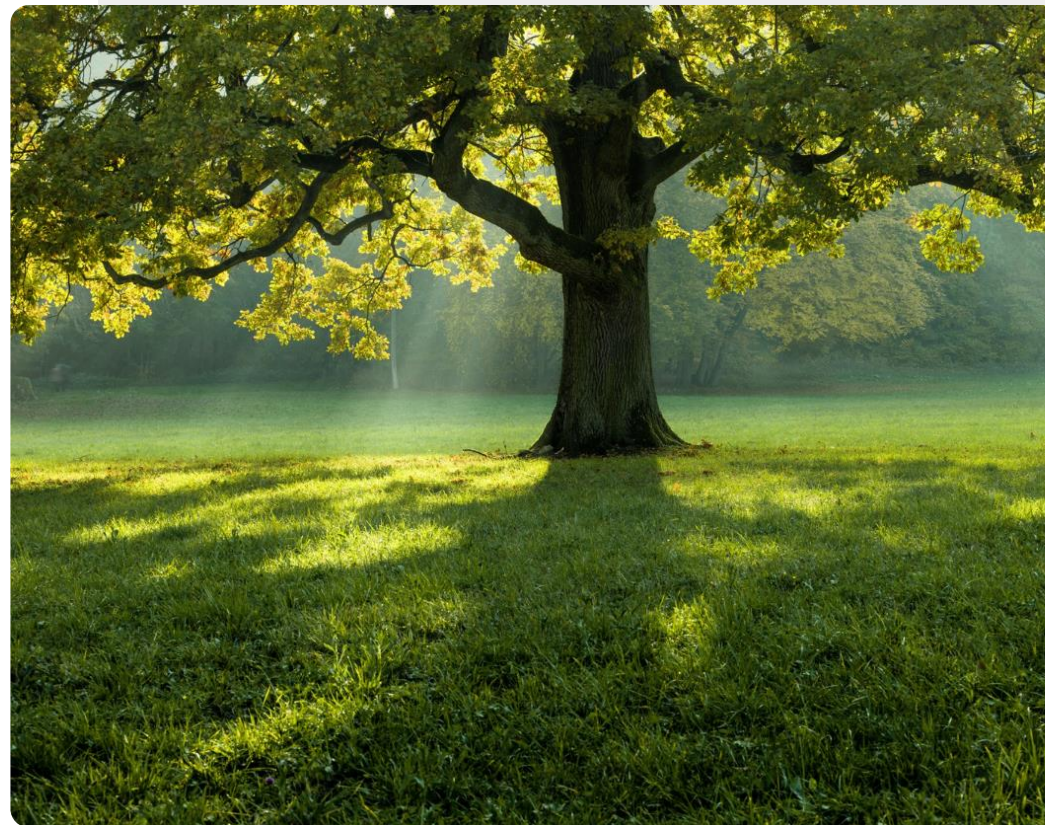
Plant trees!

The temperature in the shade of an old tree can be dozens of degrees cooler than on heated asphalt. Therefore, it is good to plant trees along city streets.

Trees can clean the air by absorbing toxic gases along with CO₂. The leaves also trap dust particles.

Moreover, the role of trees in reducing the impact of stormwater drainage is invaluable.

Try to avoid cutting old, big trees. New plantings only slightly compensate for their removal.



Harvest water!

As we are going to witness long periods of drought in the future, interrupted by extremely heavy rainfall and associated flooding, it is necessary to think about the solutions which could help us to harvest water and use it during the dry periods.





Did you know?

Lawns are not ecological. They require a lot of watering and they lack biodiversity.

Let's have meadows instead, where not only many different plants may grow but also insects and small animals may find their homes.

Wild nature is beautiful!

Protect the soil!

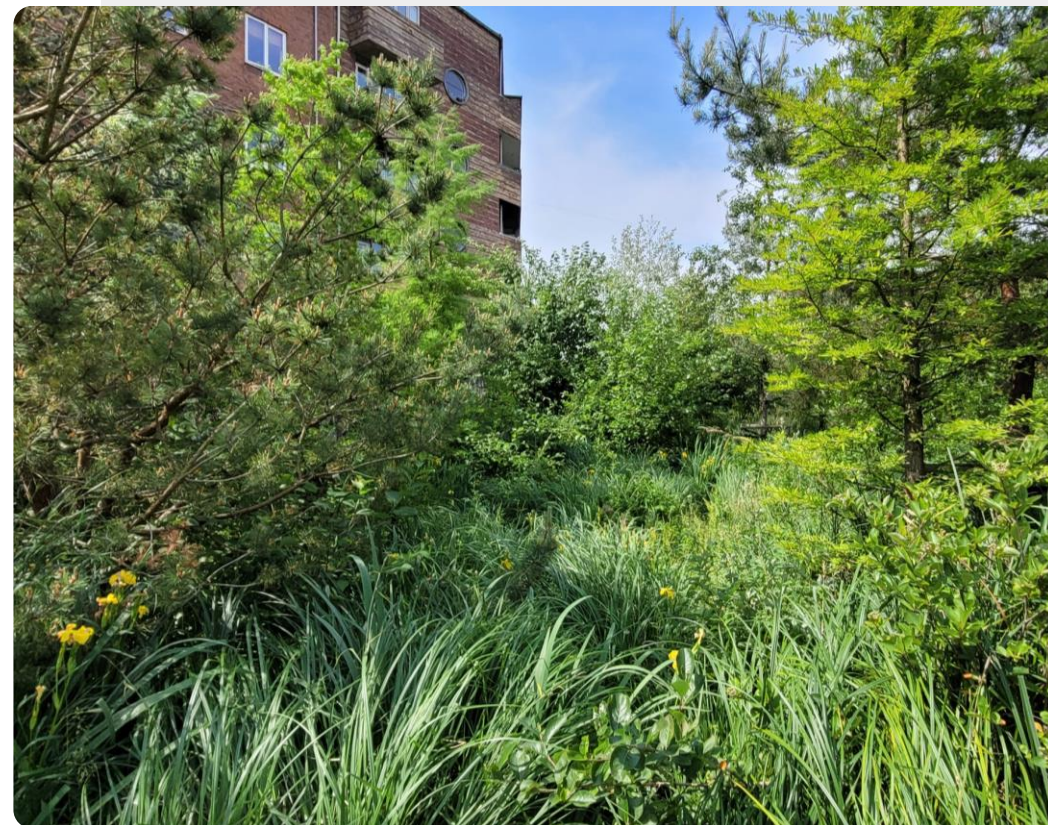
Without the soil, we will not be able to nurture ourselves. Nonetheless, vast areas of soil have already been devastated and nothing can grow there anymore. These are e.g. post-industrial sites like mining heaps or large areas of clogged ground.

The soil should be covered with vegetation so as to reduce erosion caused by over-drying and wind. It is also important to avoid the use of artificial fertilisers and to protect it from pollution.



Good example: Østerbro, Copenhagen

Østerbro is a district in Copenhagen that for several years has witnessed a successful development of green infrastructure. Instead of shaved lawns, beautiful scrublands with lots of flowers and biodiversity-friendly habitats were developed. Residents enjoy the changes a lot and it seems that the lush greenery is uniting them.



© Agata Cieszewska





Did you know?

In response to global warming, the European Union approved on 2020 the European Green Deal – a set of policy initiatives with the overarching aim of making the EU area climate neutral in 2050. Its targets are among others to make one-quarter of food production organic and to plant 3 billion trees by 2030.

Quiz

Click the **Quiz** button to edit this object

 **BUILT** | **MODULE 5** | **CHAPTER 2**

Climate change is not taking place.

- True
- False

Chapter summary

1

You have learnt about climate change.

2

You have learnt about the processes which are linked with climate change.

3

You have learnt about measures which can be taken in order to adapt to climate change.

Chapter completed!

Congratulations! You have successfully completed this chapter!

Summary of acquired skills

1

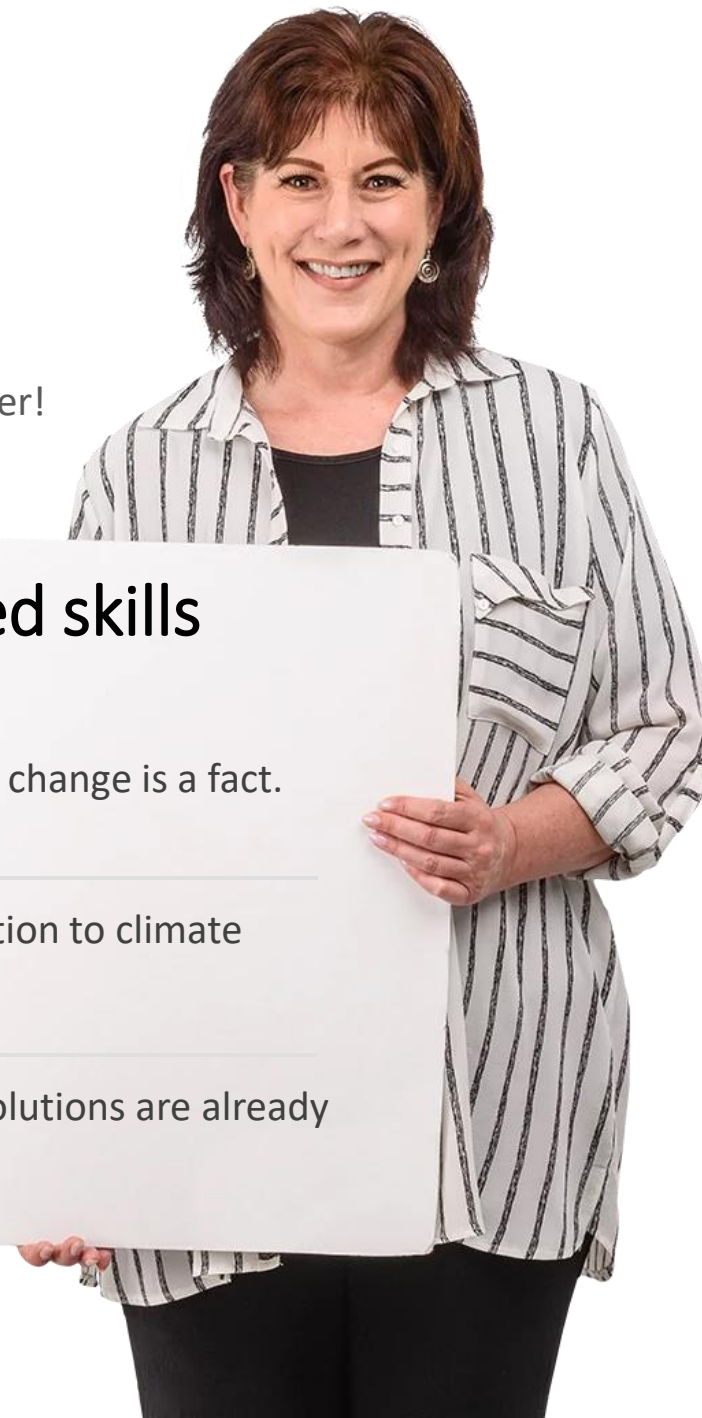
You know that climate change is a fact.

2

You know that adaptation to climate change is necessary.

3

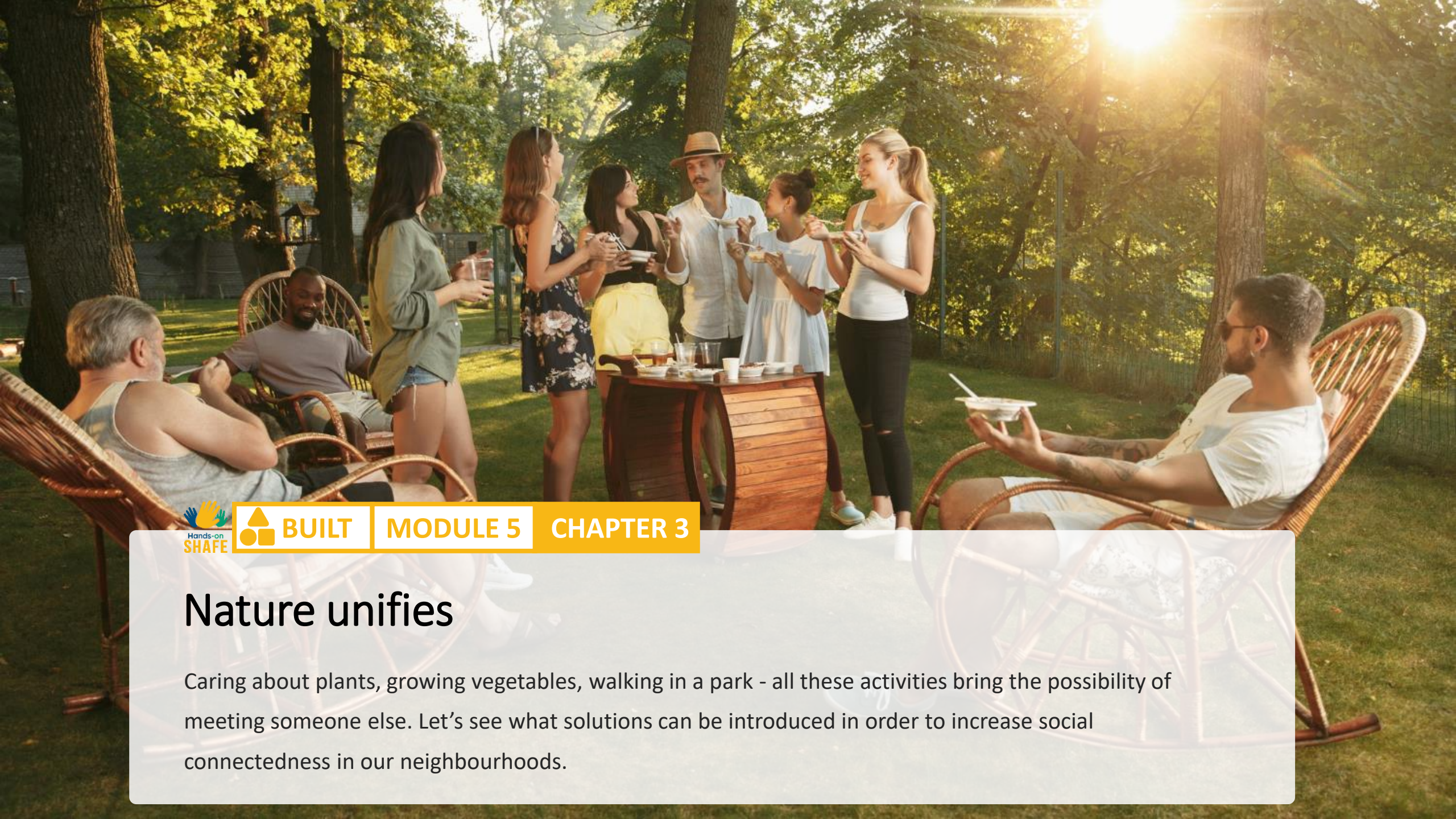
You know that good solutions are already there.



What is next?

Now you can either repeat this chapter or follow our study recommendation by clicking on one of the buttons below:

[Restart](#)[Next](#)



BUILT

MODULE 5

CHAPTER 3

Nature unifies

Caring about plants, growing vegetables, walking in a park - all these activities bring the possibility of meeting someone else. Let's see what solutions can be introduced in order to increase social connectedness in our neighbourhoods.

Nature unifies

One can say that we are living in a time of loneliness and pandemics. The lockdowns caused by Covid-19 largely contributed to social loneliness and isolation.

Nature is not only good for our physical health but also our mental health. It can bring us many possibilities to enjoy meetings with others.



What will you learn in this chapter

- 1 Some solutions to increase social connectedness linked with nature.
- 2 The role of urban farming.
- 3 Things you can do to make your neighbourhood greener.



Pocket parks

Pocket parks are publicly accessible small-scale parks.

They can be created in various locations:

- In suburban areas, where everyone lives for himself. In this case, pocket parks give possibilities for neighbour meetings
- In densely built-up areas, where there is not enough space for a normal park

They can be created on public or private land, and quite often they are the outcome of citizens' initiatives.





Did you know?

In modern city planning, it is recommended to provide access to greenery for everyone within the maximum distance of 300 metres.

Research shows that this will keep us healthier and that in this way we can mitigate the heat island effect.

Urban farming

Urban farming is very important in times of climate change. Local food production lowers the transport needs, and it is also good for the local economy.

Urban farming based on organic farming principles (excluding the use of synthetic fertilisers and pesticides) is currently gaining popularity. It can be done by a single person for their own needs or by a company with the purpose of selling the produced food.

Remember: growing your own food is like printing your own money!



Community gardens

Community gardens are places where you and others can cultivate plants and vegetables.

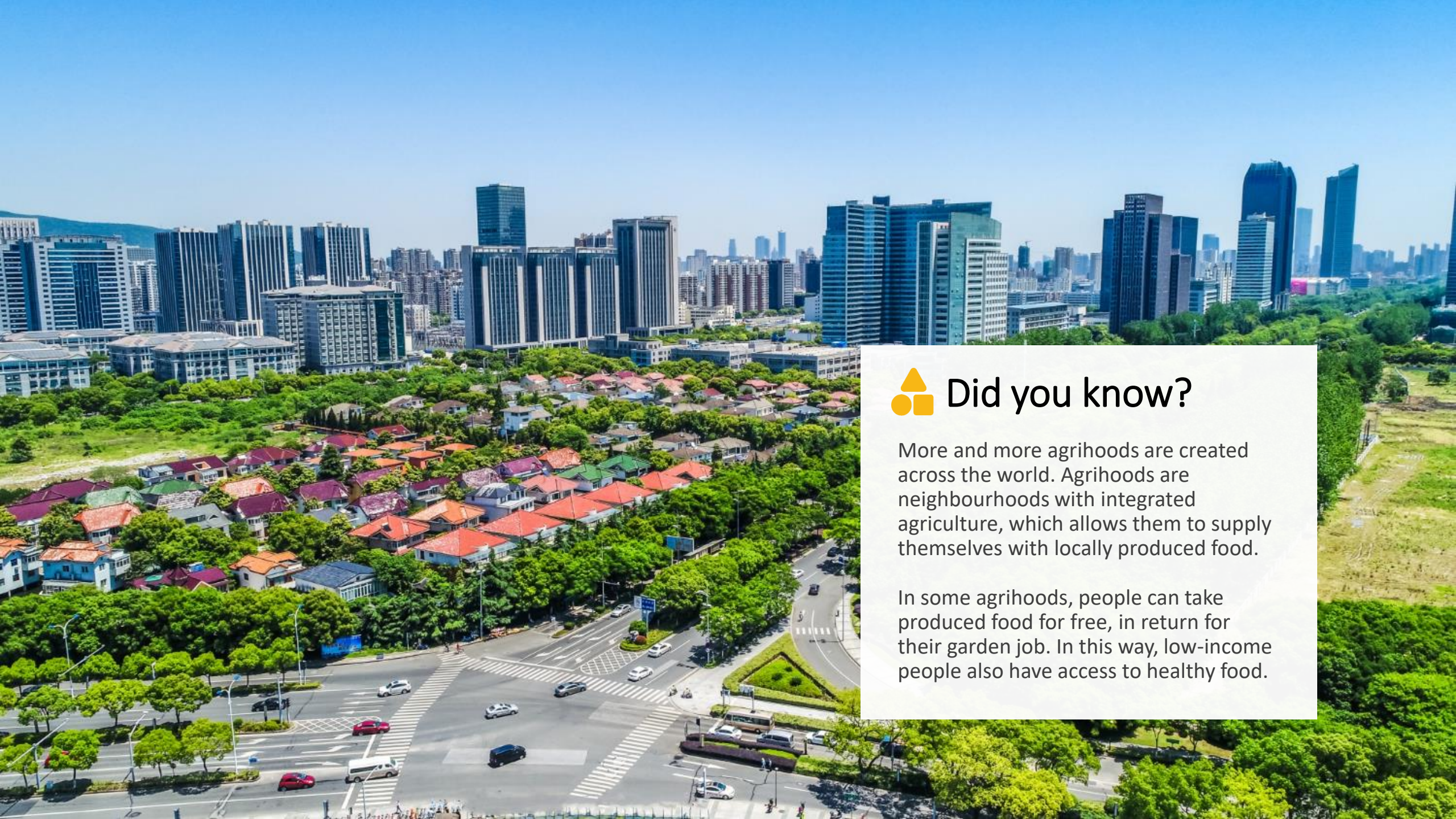
They can be located in many different places, even on top of buildings (but the construction needs to be checked as floor loads can be high).

The beds can be cultivated jointly by all users or can be allocated to individuals.

The creation of a community garden is described in detail in the module **HEALTHY 02 Lifestyle And Therapy**.



HEALTHY



Did you know?

More and more agrihoods are created across the world. Agrihoods are neighbourhoods with integrated agriculture, which allows them to supply themselves with locally produced food.

In some agrihoods, people can take produced food for free, in return for their garden job. In this way, low-income people also have access to healthy food.

Allotments

In some countries like Poland, allotments are more popular than community gardens. An allotment garden is composed of small plots of land of not more than 500 sqm. These plots of land are rented to individuals, who can use them for gardening and recreational purposes.

Quite often they are located in inner city districts and are a very important component of green urban infrastructure.



Guerrilla gardening

In case you do not have the opportunity to get involved in a community garden or rent a plot in an allotment garden maybe guerrilla gardening will be of some interest to you. You can start planting plants in front of your housing, or in a place that is abandoned and could be nice for recreation.

Be aware of the fact that although these actions are taken in good faith, they might be balancing on the edge of the law. Put a poster with information on the taken action. Try to involve other neighbours and when possible, try to get the relevant permits.



Activity 3: What could you do?

Which of the presented solutions for increasing social connectedness based on gardening is most interesting for you?

Could you talk about it with your neighbours?

Think together about what you could do in your neighbourhood. It does not have to be large. A small elevated bed like the one on the picture on the right side would be a good starting point.



Balcony and windowsill

You can let your imagination run wild on your windowsill and balcony. You decide what you want to grow and how you want to grow it, you are only limited by space.

Beautiful plants on the balcony will be a pleasure not only for you but also for pedestrians.

Every little garden, green balcony or plant box is one step forward to greener neighbourhoods that are more resilient to climate change.



Plant and seed sharing

Plant and seed sharing could also stimulate social connectedness. Search on social media for local gardener's groups, they surely exchange seeds and cuttings. This can save you a lot of money and you can get acquainted with new people.



Wintertime



Read books about gardening

Winter is a good time to delve into gardening handbooks to enter the new season in spring with fresh knowledge.



Do some gardening courses

You may also attend workshops and garden design courses. They can be stationary or online.





Make plans!

Do you want to make a new garden? Or do you want to make the existing one even more beautiful? Both require cautious planning and wintertime is very good for it.

Quiz

Click the **Quiz** button to edit this object

 **BUILT** | **MODULE 5** | **CHAPTER 3** Nature unifies

Gardening may increase social connectedness.

- True
- False

Chapter summary

1

You have learnt about different forms of urban gardening.

2

Organic and inclusive farming is the future.

3

You have learnt that plant and seed sharing instead of buying is a good option.

Chapter completed!

Congratulations! You have successfully completed this chapter!

Summary of acquired skills

1

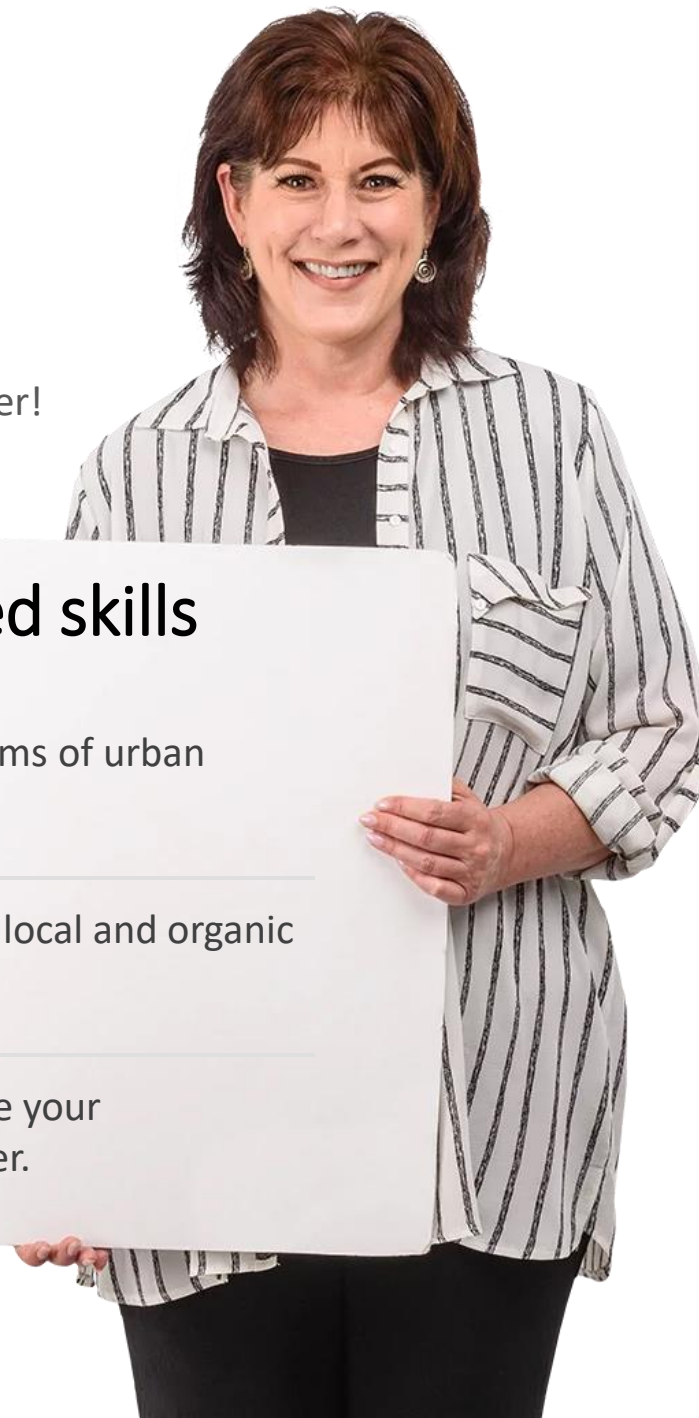
You know different forms of urban gardening.

2

You know the value of local and organic food production.

3

You know how to make your neighbourhood greener.



What is next?

Now you can either repeat this chapter or follow our study recommendation by clicking on one of the buttons below:

[Restart](#)[Next](#)



BUILT

MODULE 5

CHAPTER 4

My casual garden

In this chapter, you will learn how to create a casual garden. This is a type of garden which does not require a lot of care and is home to many species of flora and fauna. Sounds interesting? Let's see it!

My casual garden

What should a garden be like to give us pleasure for many years to come? Effortless, cosy and beautiful, in short casual.

The casual garden is full of biodiversity. It lacks manicured lawns and evenly trimmed shrubs. The size is not important, you can create it even on a small space of a balcony.



What will you learn in this chapter

1 Creating a casual garden step by step.

2 Components of casual garden.



Create the casual garden step by step

1**2****3**

Planning

Regardless of the size of your garden you need to start with cautious planning. You should take into consideration the sunlight and soil conditions and whether it is a windy or sheltered location.

In case of doubt, you may ask for advice in a local garden shop or from a friend who is an experienced gardener.

When planning to plant, try to choose local species.

Create the casual garden step by step

1

2

3



Groundwork

Tidy up the plot. If you are planning to cultivate vegetables, make sure that the soil is not contaminated. If this is the case, make special beds with new soil, which will be dedicated to the vegetable garden.

Create the casual garden step by step

1

2

3



Installations

An irrigation system is important particularly when the area of the garden is large. Nonetheless, a watering installation is also advisable for smaller areas like vegetable beds. The system will save you a lot of time and effort and it is worth considering.

Consider also appropriate lighting of your garden.

Create the casual garden step by step

4

5

6



Paths and garden furniture

After placing proper installations, you can start with developing paths and placing garden furniture like benches, elevated beds, etc.

Create the casual garden step by step

4

5

6



Planting

Finally, comes the most pleasant part: planting. Remember that the plant species should be chosen at the planning phase, at the very beginning. But don't worry: there are no gardening mistakes, only experiments.

Create the casual garden step by step

4

5

6



Enjoy!

The last step is taking care of the garden and watching the plants grow.

Components of a casual garden: water



Water storage

Harvesting water is indispensable nowadays. This can be a simple barrel connected to a gutter or more sophisticated tanks which can keep the water fresh for a long time.



Rain garden

If there is sufficient space you may think of creating a rain garden with a water reservoir. It relies on plants and natural or engineered soil medium to retain stormwater and increase the lag time of infiltration.



Use stored water

Avoid using tap or well water to water plants in the garden.

Components of a casual garden: soil – the basis of your garden



Compost bio-waste

To nurture the soil organically, you should have a composter. A composter can be even placed on a balcony (such small sizes are already available on the market). In this way, you will use your organic waste most effectively and you will enjoy great crops!



No herbicides and artificial fertilizers!

There is no place for chemical products in the casual garden. They destroy the soil.



Plant clover!

Clover is more resistant to droughts than grass. It also fertilizes the soil. It has deep green colour and can flourish beautifully. Instead of having a typical lawn, plant clover!

Components of a casual garden: equipment to secure comfort and safety



Elevated beds

In order to avoid bending while weeding, install elevated beds.



Safe paths

Paths should have even and not slippery surfaces, so that also persons with restricted mobility could enjoy the garden.



Garden furniture

Roofed sitting places make possible to enjoy the garden while rain or intense sunshine.

Components of a casual garden: fauna – because we are not alone



Insects homes

Insects, particularly bees, are very important in the ecosystem. But also mosquitos play a vital role. That's why do not use any pesticides. Instead, provide homes for insects. If you want to avoid mosquito bites plant herbs like lavender.



Birds

A garden without birds singing is not a garden. Take care of them in the wintertime by providing food.





Wintering animals

Think also about wintering animals like hedgehogs. Leave a pile of leaves for the winter, perhaps someone will want to overwinter there.

Quiz

Click the **Quiz** button to edit this object

 **BUILT** | **MODULE 5** | **CHAPTER 4** My casual garden

There is no need for planning when making a garden.

- True
- False

Chapter summary

1

You have learnt about the steps of garden creation.

2

You have learnt about components of the casual garden.

Chapter completed!

Congratulations! You have successfully completed this chapter!

Summary of acquired skills

1

You know that the cautious planning of a garden is very important.

2

You know what components should be included in the casual garden.

3

You know how to take care of other garden inhabitants.



What is next?

Now you can either repeat this chapter or follow our study recommendation by clicking on one of the buttons below:

[Restart](#)[Next](#)

Module summary

1

You have learnt about environmental treatment from its origin until current times.

2

You have learnt that climate change is unstoppable and that we need to adapt to it.

3

You have learnt that global warming is very dangerous, particularly to older adults and that we need to make our cities greener and more resilient to climate change.

4

You have learnt about green solutions increasing social connectedness in our neighbourhoods.

5

You have learnt that our gardens should be full of biodiversity and that we should take care of water and soil.

Module completed!

Congratulations! You have successfully completed this module!

Summary of acquired skills

1

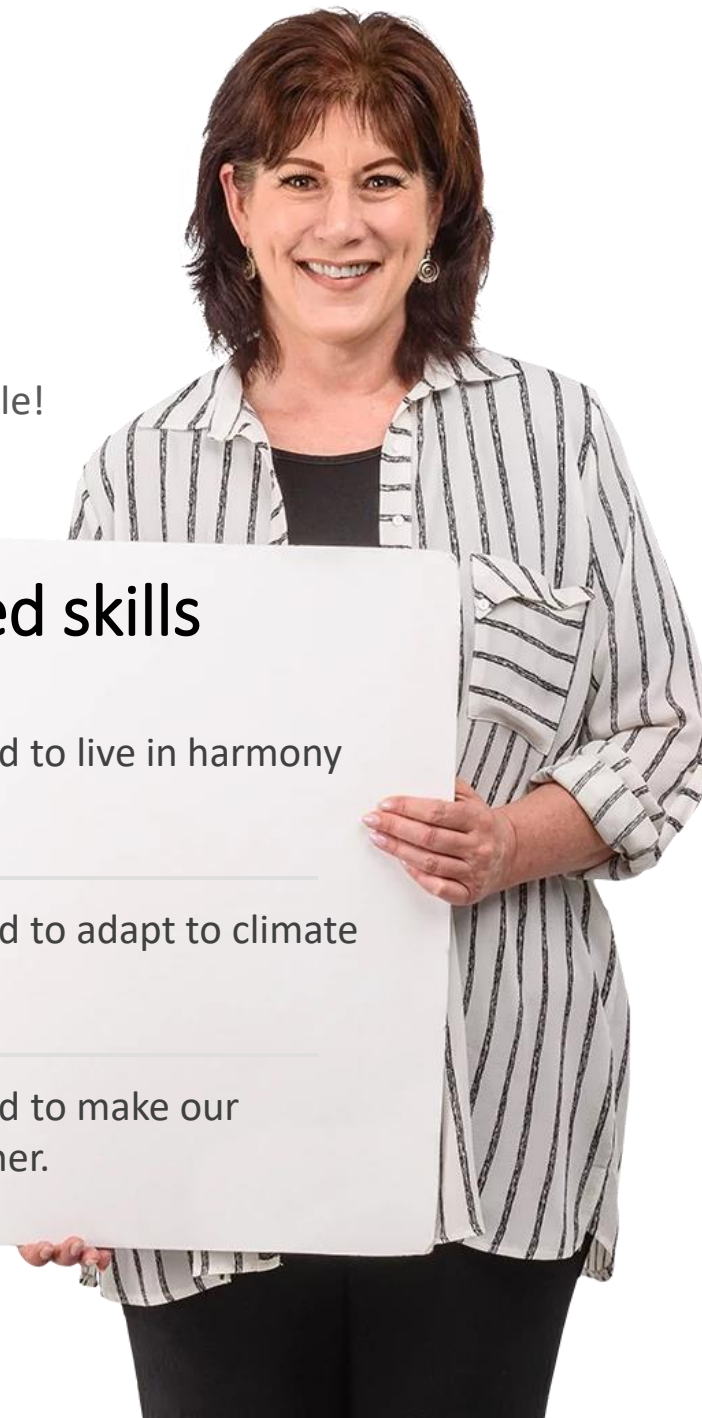
You know that we need to live in harmony with nature.

2

You know that we need to adapt to climate change.

3

You know that we need to make our neighbourhoods greener.



What is next?

Now you can either repeat this module or follow our study recommendation by clicking on one of the buttons below:

[Restart](#)[Next](#)