



# Reforest to save the planet!

**Target group:** Students from grade 8 up to grade 12 and adults

**Timeframe:** At least two consecutive school hours (approx. 90 min) should be scheduled for the project.

**Learning outcome & Acquisition of skills:**

The learners/participants should...

- expand their knowledge of forests and their ecosystems and learn about the functioning of the forest ecosystem.
- become aware of the relevance of forests on this earth, on the one hand for the environment, but also directly for the life of various species on earth.
- learn about the different types of forests on earth, their characteristics and how they are influenced by the respective climate.
- recognize what events and actions are destroying forests around the world (e.g. deforestation) and thus threatening the survival of the planet and their living creatures.
- learn about country-specific characteristics of forests in Namibia and Germany.
- realize that they too can contribute to protecting trees and forests.
- be encouraged to become advocates of protecting the environment.
- be able to implement and practice what they have learned in the project.

**Method:**

- A poster will serve as an introduction, it is an overview to the topic of deforestation, and should remind the learners of what they learned in various subjects so far about it. The learners should activate prior knowledge and discuss the

topic. Afterwards they summarize what they discussed for the whole group.

- A domino ("Greenscape Quest - Deforestation Detectives") teaches students about the importance of forests to the planet in a playful way. Since the game can also be played at longer intervals in a wide range of variants, it also helps to refresh knowledge later.
- In order to be able to put what they have learned into practice as a first step, it is possible for the students to plant a tree together, depending on the environment, and to care for it and observe its growth

**Global Goals:** This learning module should contribute to the implementation of the following Sustainable Development Goals (SDGs):



**4.7** By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

**13.3** Build knowledge and capacity to meet climate change

**15** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



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## Preparation:

The teacher needs the domino game, the poster and the tree that they are going to plant. If available, an atlas can be provided for the learners to use as an orientation tool. The module will be implemented at primary schools and secondary schools. The module will be at workshops. Preparation will be required before the module is implemented.

## Instruction for Poster Presentation:



The teacher introduces the project to the learners and shows the poster and demonstrate the poster from block to block. The learners are required to discuss the topic deforestation from their prior knowledge. One student is asked to summarize the discussion afterwards.

## Instruction for Domino:



In our forest domino, each card contains an answer and a question, with the answer on a different card than the question. Each question must be followed by the correct answer on a new card.

On the back of each card is a number that can be used to check the order during or after the game, depending on the version of the game.

## Version 1 (Challenge) (approx. 45-60 minutes)

As many teams can play against each other as there are sets of cards. The teams can also play one after another. A stopwatch is needed to record the time. If the learners are not that familiar with the topic, it is also possible to split the decks in half (Cards 1-27 and 28-54) and start to play with the half deck.

All cards are placed face up on the table. Each team plays one round. Each team must put the cards in the correct order as soon as possible. It is not allowed to flip the cards over and use the numbers on the back to help. The time until they believe the setting is correct will be stopped.

After a team has finished, the compilation of question-and-answer cards is checked using the numbers on the back of the cards. For each wrong answer, 30 seconds are added to the time played. Considering the wrong answers, the team with the least time on the watch wins.





### Version 2 (Professional) (approx. 45-60 minutes)

Before the game, all cards are shuffled, and each player receives eight cards. At the beginning of the game, one card is drawn from the deck and placed in the centre.

The youngest player starts trying to find either the question or the answer to that card and lay her/his card in turn. If she/he cannot lay a card on her/his turn, she/he must draw a card and lay it if it matches.

After placing a card, the numbers on the back are used to check whether the answer is correct. If the answer is correct, the next player tries to find one of the next matching cards. If the answer is wrong, the player takes the card back and it is the next player's turn to find one of the next matching cards. The domino cards must always be placed next to the cards already on the table. It is not allowed to start a new row. The first player to place all his cards wins. The other players continue playing until all cards are on the table.

### Version 3 (Team) (approx.45 minutes)

The game is played as in version 1, but teams of 2-3 players play against other teams.

### Planting a tree:

Looking on environment status if it allows a tree can be planted for example near the school or other premises that are open to school projects.



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**Education for Sustainable Development**  
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We would also like to thank Luisa Mai for allowing us to use her photos. The other images are from pexels.com (see below) and may be used in a non-commercial context.

## References

<sup>a</sup> <https://press.un.org/en/1995/19951205.fao3628.html>

<sup>b</sup> <https://www.fao.org/state-of-forests/en/>

## Additional material – English

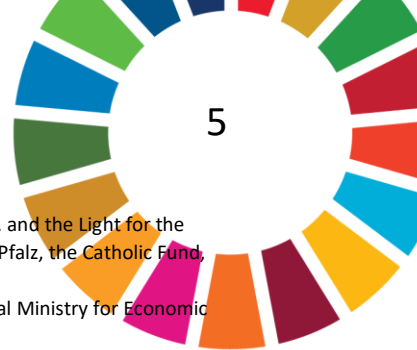
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- United Nation Rome: The State of the World Forest 2018: Forest Pathways to Sustainable Development
- United Nations: Life on Land. Why It matters.

## Additional material – German

- Schutzgemeinschaft Deutscher Wald (SDW). Expedition Carbon: Multitalent Wald. Aufheizen - Aber nicht unser Klima
- Schutzgemeinschaft Deutscher Wald (SDW). Expedition Carbon: Multitalent Wald. Astreiner Klimaschutz: Wald- & Forstwirtschaft
- Schutzgemeinschaft Deutscher Wald (SDW): Faktencheck: Baum und Wald
- Schutzgemeinschaft Deutscher Wald (SDW): Mit den Wäldern um die Welt. Bildungseinheit zu nachhaltiger Waldnutzung und Zertifizierung
- Schutzgemeinschaft Deutscher Wald (SDW): Wald & Klima. Eine fächerübergreifende Unterrichtseinheit für die Mittelstufe
- Schutzgemeinschaft Deutscher Wald (SDW). Wald & Klima. Spiele, Experimente und Aktivitäten
- Schutzgemeinschaft Deutscher Wald (SDW). Wald & Klima. Warum Naturerfahrung so wichtig ist. Was der Wald mit dem Klima zu tun hat. Bildung für nachhaltige Entwicklung (BNE)
- Schutzgemeinschaft Deutscher Wald (SDW) & Fundação Amazonas Sustentável (FAS): Expedition Wald. Bildungseinheit zu nachhaltiger Waldbewirtschaftung in Brasilien & Deutschland

## Images

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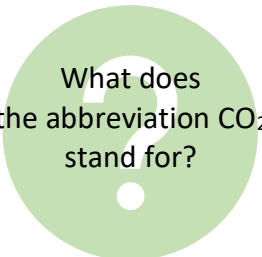


# GREENSCAPE QUEST



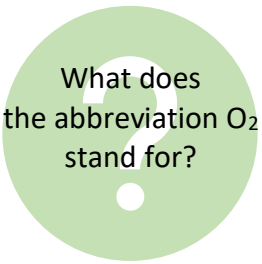
## DEFORESTATION DETECTIVES

# START



What does  
the abbreviation CO<sub>2</sub>  
stand for?


Carbon dioxide




What does  
the abbreviation O<sub>2</sub>  
stand for?




Oxygen



How could you  
describe a forest?




A forest is  
an area of land  
dominated by trees.



What living things  
can be found  
in a forest?

Animals, plants,  
fungi, bacteria,  
and microscopic soil  
organisms



What  
non-living things  
can be found  
in a forest?



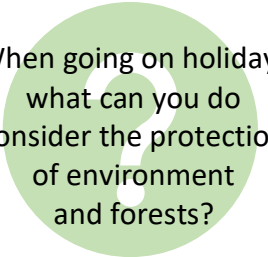
Water, air,  
sunlight,  
soil, rocks,  
nutrients

What percentage (%)  
of the animal breeds worldwide  
were already  
at risk of extinction  
in 1995 according to the UN?<sup>a</sup>




What can you do  
to protect  
the environment  
and forests  
in everyday life?

Recycling, eating a locally based diet that is sustainably sourced, consuming only what is needed, limiting energy usage through efficient heating and cooling systems




When going on holidays  
what can you do  
consider the protection  
of environment  
and forests?

Be respectful toward wildlife and only take part in ecotourism opportunities that are responsibly and ethically run to prevent wildlife disturbance. Check if the local communities are involved in the development and management of protected areas.



What is  
soil erosion?


The process,  
when fertile (arable) soil  
is washed away.



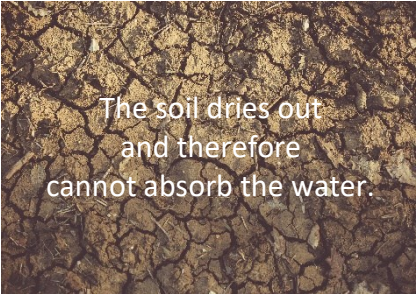
How can forests  
be a protection  
against floods  
and soil erosion?




Well-rooted trees and loose forest soil can absorb water like a sponge. The roots hold the soil in place so that it is not easily washed away.



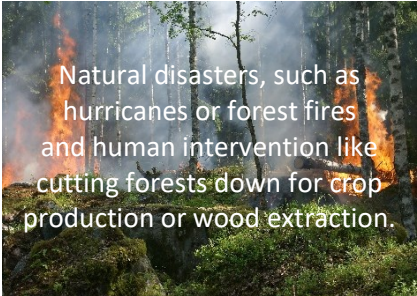
Why are large areas of cut down or destroyed forests lead to easier flooding?



The soil dries out  
and therefore  
cannot absorb the water.



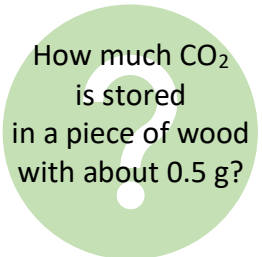
What are  
two causes  
of the destruction  
of forests?



Natural disasters, such as hurricanes or forest fires and human intervention like cutting forests down for crop production or wood extraction.

When can heating or cooking with wood be considered sustainable?

If wood is not produced in monocultures and is not transported long distances especially for this purpose. If more wood is growing than being taken away.



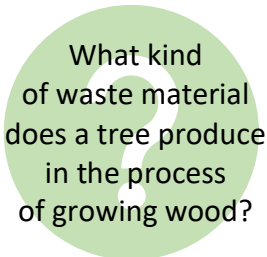
How much CO<sub>2</sub> is stored in a piece of wood with about 0.5 g?



As much as is stored  
in a blown balloon  
with 25cm diameter  
and 35 cm length.

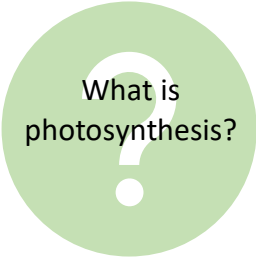
What building material  
does a tree need  
to produce  
one kilogram of wood?

Two kilograms of CO<sub>2</sub> absorbed through its leaves and slightly more than one kilogram of water with important minerals through its roots from the soil.

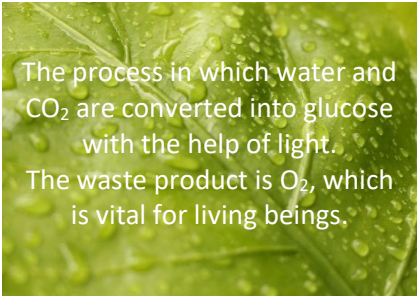


What kind of waste material does a tree produce in the process of growing wood?


$\frac{1}{2}$  a kilogram of water and 1  
 $\frac{1}{2}$  kilograms of  $O_2$  into the air  
through its leaves.



What is  
photosynthesis?



The process in which water and  $\text{CO}_2$  are converted into glucose with the help of light.  
The waste product is  $\text{O}_2$ , which is vital for living beings.

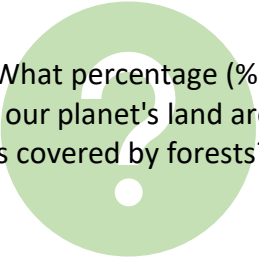


How can trees help against air pollution?



A photograph of green tree leaves, slightly out of focus, with a soft bokeh effect in the background. The text is overlaid in white, sans-serif font.

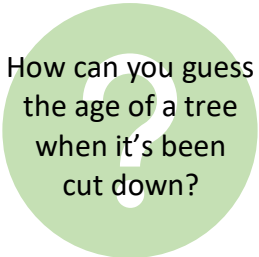
The Leaves of the tree  
absorb CO<sub>2</sub> from the air.

A large, light green circle containing a white question mark. The text is overlaid in black, sans-serif font.

What percentage (%)  
of our planet's land area  
is covered by forests?

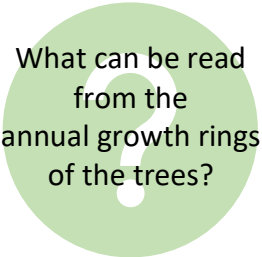
An aerial photograph of a dense green forest with several dark, irregularly shaped ponds or swamps scattered throughout. A large, semi-transparent white question mark is centered over the forest. The text "Around 31 %<sup>b</sup>" is overlaid in white on the left side of the image.

Around 31 %<sup>b</sup>

A solid light green circle with a large white question mark in the center. The text "How can you guess the age of a tree when it's been cut down?" is written in black inside the circle.

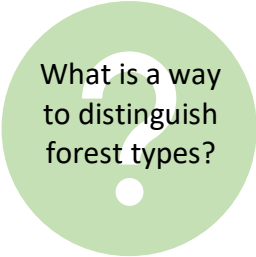
How can you guess  
the age of a tree  
when it's been  
cut down?

You can count  
the annual growth rings  
at the base of the stem.



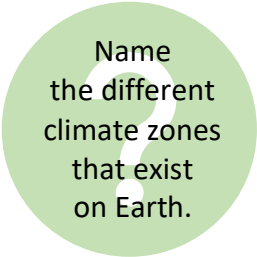
What can be read  
from the  
annual growth rings  
of the trees?

Age, growing conditions,  
the location where it grew,  
exposition to winds



What is a way  
to distinguish  
forest types?

According to vegetation zones.  
Each vegetation zone has  
plant formation characteristics  
of the climatic conditions.



Name  
the different  
climate zones  
that exist  
on Earth.


Tropical zone

Dry zone

Temperate zone

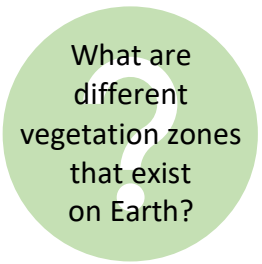
Continental zone

Polar zone



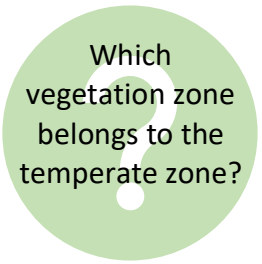
What is  
the best way  
to survive  
for plants?

They must adapt to their environment, e. g. if they grow in dry and hot areas, they have adapted to survive as long as possible without water.



What are  
different  
vegetation zones  
that exist  
on Earth?


Tundra, boreal coniferous forest, deciduous and mixed forests, steppe, hardwoods, deserts, savannas, rainforest, ice sheet



Which  
vegetation zone  
belongs to the  
temperate zone?




The boreal coniferous forest,  
deciduous and mixed forests  
and the steppe



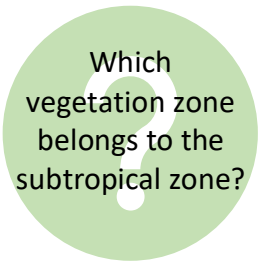
In what regions  
boreal forests  
can be found?

In regions around the poles that are cold and windy and present low temperatures.



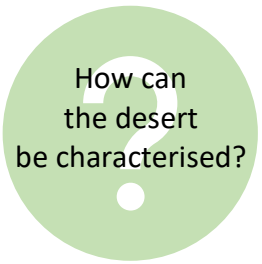
What grows  
in the steppe?

Due to the long dry periods,  
there are only grasses,  
but no trees.




Which  
vegetation zone  
belongs to the  
subtropical zone?

Hardwoods,  
deserts  
and savannas




How can  
the desert  
be characterised?



It is almost  
devoid of vegetation  
due to its  
extreme climate.


How can  
the vegetation  
of the savannah  
be characterised?



There is a herb layer  
on the ground  
and some free-standing  
trees.

What is  
the climate  
in tropical rainforests  
like?


Being located near the  
equator  
the climate presents high  
temperatures  
and abundant rainfall.



How can  
the rainforest  
be described?

There are huge trees and a great diversity of species.

There is also a distinct herb and shrub layer on the forest floor.



What do deciduous trees do when it's getting cooler in autumn?






They lose their leaves, so that they do not freeze to death.


What caused the suffering of the forests in the history of Germany?

Industrialisation  
at the beginning  
of the 19th century  
and the two world wars



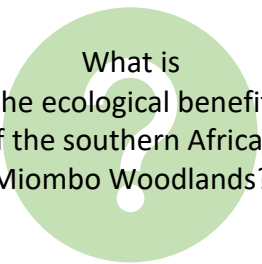
What is  
the purpose of  
community forest projects  
in Namibia?

Self-governing entities  
manage plant resources  
to protect their resources  
through sustainable utilisation  
and to improve livelihoods.




Why were  
community forests  
introduced  
in Namibia?

Forest reserves were in severe danger, because the population growth required timber for building traditional houses and Zambezi Teak and Kiaat were commercially exploited.



What is  
the ecological benefit  
of the southern Africa's  
Miombo Woodlands?

Woodlands and bushy savannahs are ecologically important for carbon storage, their capacity to retain soil and prevent erosion, and for hosting a wealth of biodiversity.



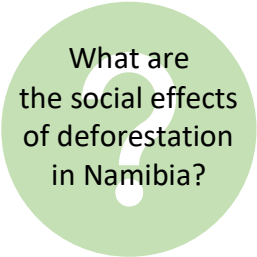
What are products from Namibian forests?

Medicine,  
cosmetic products,  
firewood,  
food, livestock,  
and hardwoods



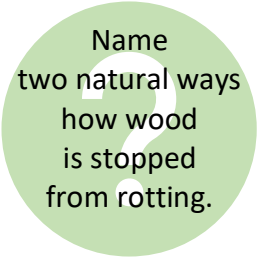
What kind of food  
can forests provide  
in Namibia?

Marula,  
large sourplums,  
mopane worms,  
and livestock



What are  
the social effects  
of deforestation  
in Namibia?

Poverty,  
environmental degradation,  
and soil erosion.



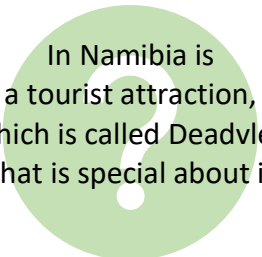
Name  
two natural ways  
how wood  
is stopped  
from rotting.



Petrification or  
a very dry environment.

What is  
the Petrified Forest?


Those are large tree trunks in north-western Namibia, which have petrified. This means they "turned to stone" over a timeframe of millions of years.



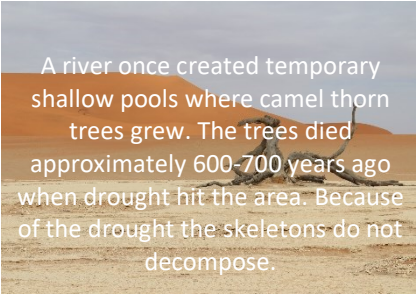
In Namibia is a tourist attraction, which is called Deadvlei. What is special about it?




It is a clay pan between sand dunes, where black skeletons of camel thorn trees are standing in between huge dunes.



What is  
the history  
of Deadvlei?

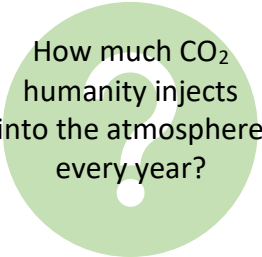


A river once created temporary shallow pools where camel thorn trees grew. The trees died approximately 600-700 years ago when drought hit the area. Because of the drought the skeletons do not decompose.




What are  
the biggest drivers  
of deforestation?

Industrial agriculture,  
climate change, mining,  
expansion and infrastructure,  
beef production.



How much CO<sub>2</sub>  
humanity injects  
into the atmosphere  
every year?

Almost 42 billion  
tonnes of CO<sub>2</sub>




Why tackling  
deforestation  
is so vital for solving  
climate change?

About 16% of the total CO<sub>2</sub> ejection arises from how we use land.

Most of the land-use emissions are caused by deforestation, particularly in the tropics.

Forests also keep the climate cooler in warm areas and produce O<sub>2</sub> by using CO<sub>2</sub>.



How can  
climate change  
be slowed down?


The global community needs to reduce the 42 billion tons of emissions to “carbon (or climate) neutrality”, a situation where any remaining emissions are balanced by uptake elsewhere.



How is deforestation affecting the environment?



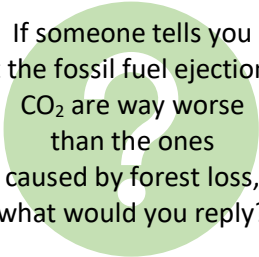
The loss of trees and other vegetation can cause temperature change, desertification, eating away, fewer crops, flooding, increased greenhouse gases within the atmosphere, biodiversity loss and problems for indigenous people.




How does  
deforestation  
cause  
global warming?

A decreasing number of trees is leading to accumulation of CO<sub>2</sub> in the atmosphere.

CO<sub>2</sub> in the atmosphere traps heat rays reflected by the earth which results in global warming.



If someone tells you that the fossil fuel ejections of CO<sub>2</sub> are way worse than the ones caused by forest loss, what would you reply?

A photograph showing a large bonfire of logs in the foreground, with a forested hill in the background. The scene is hazy, suggesting smoke from the fire. The text is overlaid on the image.

A ton of CO<sub>2</sub> has the same impact on the climate whether it comes from fossil fuels or forest loss, so halting deforestation is a necessary part of tackling climate change.

A green circle with a white question mark inside it.

How to mitigate deforestation?

Plant a tree, go paperless at home or in the office, buy certified wood products, raise awareness in your circle and in your community.

**FINAL**

Elizabeth Kashango  
Kaenanua „Johnny“ Kahijeta  
Teresa Noichl  
Theopolina Jeremia

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**ENGAGEMENT  
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Service für Entwicklungsinitiativen



Deutsch-Nambische  
Gesellschaft e.V.



Sparkasse  
Trier