



Workbook for participants #3

Interactive worksheets for distance learning



Urban Green Spaces



Full name Group/class

E-Mail address

Phone number Date



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Dear teachers and parents,

The following **workbook for participants** is part of the learning pack “Urban Green Spaces”. It is aimed at **students and participants** in projects working through this learning pack in online classes.

Instructions on using the learning pack should be issued by a **teacher**. Teachers can find further information on this as well as other learning packs at [›dw.com/learning-environment](https://www.dw.com/learning-environment)

Most worksheets require a program compatible with PDF files, such as [›Adobe PDF-Reader](#) or similar. These are free-of-charge and enable participants to fill out forms. You will need a stable internet connection to watch the films.

i Help

Dear student,
Dear participant,

This **workbook** relates to the issue of “Urban Green Spaces”.

You can fill out the worksheets on the computer or laptop and save them. There are some helpful tips below.

How do I fill out the worksheets?

1. Go to the worksheet you wish to use.
2. Read the task thoroughly. Add your answers to the text field on the worksheet. Keep your answers as short as possible. You can only write in the text field.
3. Once you have filled out all the text fields, rename the PDF document and save it. If no file name has been agreed upon, it should include your last name (the file name should not be too long and should not contain any special characters).
4. You can now send your teacher your work in the saved PDF file, for example, as an attachment.

Before you begin, write your name and contact information on the **▶ title page**.

How do I find films and articles?

Watching films

On some worksheets, you will be asked to watch a **film**.

By clicking on a film title, you will be taken to the web page where you can watch the film. If that doesn't work, you can copy the link in brackets into the search box of your browser.

Reading articles

Other worksheets relate to articles you will need to read in order to complete certain tasks. Each article is included with the corresponding worksheet.

By clicking on the title of an article, you will be taken directly to the article without having to scroll.

Tip

At the top of each page, you will find a navigation menu.

By clicking ↶, you will return to the page you last looked at.

The ? will take you to this help page.

Click → [table of contents](#) to go back to that page.

You can use the arrows ← and → at the bottom right of the page to move between pages.

Something isn't working?

If there is anything you don't understand or if you are having technical problems (such as with the internet or the PDF file), please ask an adult for help!



Worksheet 2

Film questionnaire “Green cities, better climate”

Watch the > film “Green cities, better climate” (dw.com/p/36IPW).

Answer the following **questions**:

1. How many people will be living in urban areas by 2050?

.....

2. Why are so many people drawn to live in urban areas?

.....
.....

3. Why do we need green spaces in cities? What examples appear in the film?

A
B
C
D
E

4. Can you name the disadvantages of urbanization mentioned in the film?

.....
.....

5. Do you know any green areas near where you live? Do you use them, and if so, how?

.....
.....



Worksheet 3

Film questionnaire “Germany’s wildlife hotspot: Berlin”

Watch the > film “Germany’s wildlife hotspot: Berlin” (dw.com/p/33f4x).

Answer the following **questions**:

1. Why are wild animals drawn to towns and cities?

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.....
.....

2. What are the advantages and disadvantages of an increasing number of animals settling in towns and cities?

+
+

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-

3. What do you think of this development?

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.....
.....

4. Which wild animals live in your city?

.....
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.....



Worksheet 6

Film questionnaire “Urban gardening in Berlin”

Watch the > film “Urban gardening in Berlin” (dw.com/p/387Ra).

Answer the following **questions**:

- 1. What are the advantages of residents getting together to clear abandoned land to make a garden or grow food?

.....

.....

.....

- 2. What is your opinion of such activities?

.....

.....

.....

- 3. Could such activities be applied to your town or city?

.....

.....

.....



Worksheet 7

Film questionnaire “Mexico moves to fight smog”

Watch the > film “Mexico moves to fight smog” (dw.com/p/1CdCt).

Answer the following **questions**:

1. What is the main reason for smog in Mexico City?

.....
.....

2. Which strategies are being adopted by the government in Mexico City to improve air quality?

.....
.....

3. What are the results of these measures?

.....
.....

4. How does Mexico City benefit from rooftop gardens?

.....
.....

5. Why are succulents planted in the rooftop gardens?

.....
.....

6. Why is it so important that only indigenous plant species are planted on the rooftops?

.....
.....

7. What other advantages do rooftop gardens have for residents and wildlife in Mexico City?

.....
.....

8. What is your opinion of the rooftop gardens, and do you think they could be created in your town or city?

.....
.....



Worksheet 8

Article questionnaire

“Nature under siege in one of Europe’s biggest cities”

Read the [▶ article “Nature under siege in one of Europe’s biggest cities”](#) .

Once you have finished reading, answer the following **questions**:

1. What does the mayor of Moscow, Sergei Sobyenin, mean when he says he wants to “return Moscow’s parks, squares and streets to Muscovites?”

.....
.....
.....

2. Why will the planned and already completed “restoration” of the park lead to a significant loss of biodiversity?

.....
.....

3. Which concrete examples of biodiversity loss are listed in the article?

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.....

4. What is the mayor’s vision of green space, and a “real” European city? Do you share his vision?

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5. Are there similar visions for green spaces where you live?

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.....

6. Do you think the demands on natural spaces for species protection can be united with the needs of residents?

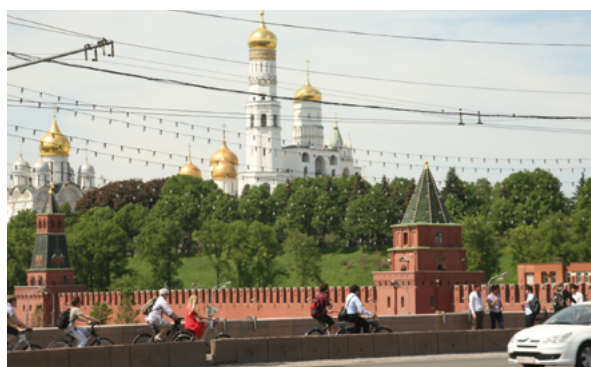
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i

Article 1

Nature under siege in one of Europe's biggest cities

Moscow authorities have pledged to “renovate” this city of 12 million, and give it a “European” look. But biologists warn that Moscow’s natural habitats are disappearing at an alarming speed, with biodiversity at stake.



Green oasis in Moscow

A seemingly endless sea of drab, concrete apartment blocks; fuming factory pipes; congested traffic arteries with the thundering noise of cars; and a population of 12 million – hardly impressions for a city of natural riches. Yet Moscow boasts remarkable and perhaps unexpected ecological diversity.

Seen from the sky, the Russian capital reveals substantial green spaces between buildings, as well as a smattering of smaller and larger parks – often remnants of forests eaten into by 20th century expansion – which accommodate rare animal and plant species.

But this diversity is now under threat. Though it might sound like a contradiction, Mayor Sergei Sobyenin’s pledge to “return Moscow’s parks, squares and streets to Muscovites” could be the death knell for the city’s natural abundance.

A major overhaul of many green spaces is now underway, the ultimate idea being to give them a more “civilized” look and make them more attractive for recreation.

And because Muscovites love their parks, which offer an escape from the noise and fumes of the big city, many are happy with the planned renovation.

But biologists have been asking why these parks need to be “returned,” not least because city measures often prove disastrous for biodiversity. The topsoil of colorful meadows – boasting an array of sometimes rare plant species – is often completely stripped out in favor of sterile lawns where insect life struggles to thrive.

Pollinators hit hard

One of the best examples of this is the Tsaritsyno Park in the south of Moscow, which has been rigorously “renovated.”

“It has a direct effect on bumblebees, butterflies, insects that are important for pollination - in some places, they have disappeared over the course of one season,” biologist Ksenia Avilova told DW.

She added that a lack of food means many species once common to the Krylatskoye Hills, such as yellow wagtail birds, have become rare or have even disappeared altogether. Thrush nightingales have also clearly suffered from the mass removal of undergrowth.

“Even if some scattered plots with the necessary plants remain, they are often situated far apart, and insects or birds cannot cover such large distances in their search for food,” Avilova continued.



Bees and butterflies rely on real nature to survive

Narcissistic gardens

Scientists feel their warnings amount to a cry in the desert. “The dogs bark and the caravan goes by, Mayor Sobyenin once said about our criticism,” recalled Boris Samoilov, editor of Moscow’s Red Data Book, which lists endangered animal and plant species in the Russian capital.

i Article 1

A key problem is the difference in perception between experts and those who implement the renovation programs, he says.

“They have their own ideas of what nature should be like. For them, the main thing is to spend the money that has been allocated, and then to show everybody how much work has been done,” says Samoilov.

Authorities replace natural grasslands with artificial lawns and tile natural pathways, urbanizing the area, according to the environmentalist. “You end up with an ‘ideal’ park which everyone admires, including themselves [in it].”

How do you define ‘green’?

Biologists also warn that removing whatever remains of natural habitats in Moscow will seriously affect the microclimate of the city, and have dire consequences on the health of millions of Muscovites.

The city authorities do not share this view. They claim the net surface of “green” areas in Moscow is actually increasing, and see the number of new trees planted as a key indicator that things are only getting better.

According to Mayor Sobyenin, more than 4 million shrubs and trees have been planted in the city in recent years.

“Moscow is one of the greenest metropolises in the world. Nevertheless, its green areas need constant attention and renewal,” he said at a city government meeting last December.

Moving backward



Radical park “restoration measures”

The way the city of Moscow is dealing with its existing natural habitats runs counter to the current trend in various European cities, where if possible, natural areas are expanded rather than reduced.

Paradoxically, however, Moscow authorities claim they want to turn the Russian capital into a “real” European city.

“The Moscow mayor does not understand that in Europe, the attitude toward natural areas changed a long time ago,” said biologist Galina Morozova, who once headed the city’s department of natural resources management.

“If such ‘renovation’ as is now taking place in Moscow would be tried in a European city, and at such high cost, it would be met with severe criticism and seen as a demonstration of the backwardness of the city’s leadership.”

25.07.2017 | Geert Groot Koerkamp (text and images) | dw.com/p/2h5kW



Worksheet 9

Article questionnaire

“To keep cities cool, we need to green them right”

Read the [▶ article “To keep cities cool, we need to green them right”](#) .

Once you have finished reading, answer the following **questions**:

1. Why is climate change causing the average temperature in cities to rise higher than that in rural regions?

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2. What negative impacts can specific trees have?

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.....

3. What are the impacts of isoprene emissions from trees?

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4. What alternatives are necessary and what should be taken into account when using trees to “green” towns and cities?

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5. Why is it important to educate town and city residents about urban green spaces?

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6. Is planting trees enough to adapt towns and cities to the impacts of climate change? Which other measures could be useful?

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.....

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Article 2

To keep cities cool, we need to green them right

With temperatures rising due to climate change, making our cities greener might seem to be an obvious solution. But without knowing what, where and how to plant, we risk unexpected health impacts and reduced resilience.



Deciduous trees provide shade on hot days

When the summer sun starts baking city sidewalks, people gravitate toward green oases in a quest that hasn't changed much since our ancestors migrated from one watering hole to the next.

We know instinctually that areas shaded by greenery are much cooler than the concrete canyons of the city, and with climate change, urban trees are becoming more important than ever.

Cities are heating up much faster than surrounding countryside because of heat-trapping asphalt and concrete that creates urban heat islands that can't cool off, even at night. By 2050, the heat-stress index for European cities will double compared to adjacent rural areas.

A recent study even indicated that some of the world's cities may become 8 degrees Celsius (14.4 degrees Fahrenheit) warmer by 2100 – a prospect with dire health consequences.

Although greening urban landscapes is one possible solution, it could have a downside. From blocking air currents so cities actually heat up to increasing chemicals harmful to human health, city greening needs to be done correctly in order to prevent negative effects and maximize a city's resilience to climate change.

Choking on isoprene

Trees can emit a volatile chemical that combines with car fumes to form deadly smog. In Berlin, a recent study shows, trees contributed up to 60 percent of the ozone formation during an intense 2006 heat-wave – during what was at the time Germany's hottest year in more than a century.

Some trees produce a lot of isoprene – an organic molecule with natural rubber compounds that vaporizes easily, especially when it's hot. The chemical combines with nitrogen oxides from car and factory fumes to form ozone – one of the most direct threats to human health in cities during heatwaves, particularly to infants and elderly people, explained author Galina Churkina, a researcher with the Institute for Advanced Sustainability Studies in Potsdam.

Taken together with other studies on global warming impacts to cities, the findings suggest efforts to green up cities could be misguided – unless such greening efforts are combined with cuts to emissions from traffic and industry, Churkina said.

“Greening up cities is not really a straightforward measure. If one is not careful enough with the plants, you can get other effects that you do not expect.” Some of Berlin's oldest and most impressive trees are plane trees – which release a lot of isoprene – as do poplars. Birch and linden trees, on the other hand, produce less.



Plants on buildings can play an important role in cooling urban landscapes

Thinking holistically

Urban planners should choose species carefully for a holistic approach to urban resilience, Churkina said. That means city departments must work together, said Seb Maire, the chief resilience officer of Paris.

i

Article 2

Speaking at a NextGen cities symposium at a recent European Geosciences Union assembly in Vienna, Maire said he's focusing on getting engineers, social scientists, traffic experts and climate scientists to cooperate and take a long-term view of urban development.

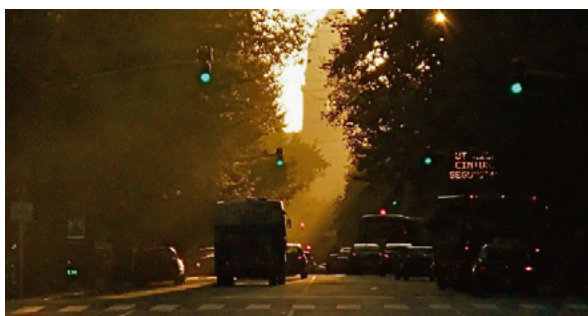
He believes cities have a real opportunity to make improvements with long-lasting benefits for residents. That's because 80 percent of the infrastructure that will exist in 50 to 60 years hasn't been built yet.

Like many cities, Paris is counting on more greenery to guard against the impacts of climate change. "We're spending tens of millions to adapt, to have water everywhere in the city. We're tearing up pavement, encouraging people to plant veggies on their balcony," Maire said.

Plants without pests

But with forecasted warmth also comes the increased risk of insect-transmitted disease, such as dengue fever or malaria. "If we have a mosquito with a deadly disease in 10 years, we won't care about being hot," Maire said.

The city encourages citizens to become balcony gardeners. But Maire says it should also train them in the best ways to avoid mosquitoes - for example by ensuring plant pots aren't hiding pools of water that make a prime location for mosquitoes to breed.



Trees along busy roads can actually trap heat and smog

The configuration of urban greenery is also critical. On narrow streets, tall trees tend to have a negative impact on air quality because they block breezes needed to cool the air, and dissipate noxious fumes.

In these settings, long, low hedges and porous "living walls" covered with greenery are more effective than trees, said Prashant Kumar, an air-quality expert at

the University of Surrey, who has studied the combined effects of traffic, wind patterns and vegetation along four busy commuter routes in London.

Building resilience

Such site-specific data can be used with detailed new urban climate models that show impacts down to the level of individual city blocks, and help develop ways to mitigate them.



Climate modeler Maja Zuvella-Aloise says the right urban planning can make cities liveable as temperatures soar

In central Vienna, urban climate scientists have shown that if all suitable roofs were covered in plants or material that reflects at least 70 percent of incoming solar radiation, the number of days exceeding 30 degrees Celsius (86 degrees Fahrenheit) could be cut by 29 percent.

In 2014, its hottest summer on record, Vienna topped that temperature reading 42 times, with emergency medical calls spiking by 20 percent during the most extreme heat.

Research also shows that it's important to connect city centers to larger greenbelts outside the urban core. In the Austrian capital, blocking the flow of winds from the Vienna Woods to the city with new urban development would intensify the heat buildup.

"There's a lot of potential for mitigation," said Maja Zuvella-Aloise, with Austria's Central Institution for Meteorology and Geodynamics. By adopting the right measures now, quality of life in cities can be maintained - and even improved - in the face of global warming, she concluded.

14.06.2017

Bob Berwyn (text and images)
dw.com/p/2dbl



Worksheet 10

Film questionnaire

“Graffiti artists help turn landfill into eco haven”

Watch the > film “Graffiti artists help turn landfill into eco haven” (dw.com/p/1JVcW).

Answer the following **questions**:

1. How does Sofia López describe the way things used to be in the ravine of Bosque Calderón Tejada, the small settlement on the eastern edge of Bogota?

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.....

2. How have Conservation International, Octavio Rodríguez, Sofia López and many others changed the situation?

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.....

3. Why is the participation of former and potential criminals in the project so important, and what positive “side effects” does the project have for the district besides renaturing?

.....

.....

.....

4. In this context, what role does street artist Danilo Ochoa play?

.....

5. What impacts does the renaturing project have on other conservation areas in the city?

.....

.....

6. What other ideas does Edwin Tapasco Parra have for his future?

.....

.....

.....

7. What are your thoughts on the project and do you have ideas about how it could be implemented in your town or city?

.....

.....



Worksheet 11

Article questionnaire “Going to school with goats in Berlin”

Read the [▶ article “Going to school with goats in Berlin”](#) .

Once you have finished reading, answer the following **questions**:

1. Why did 12-year-old Yara choose to go to the Hagenbeck school in Berlin?

.....
.....

2. What is the school's theme and how is it implemented?

.....
.....
.....

3. How does 12-year-old Kolja define sustainability?

.....
.....
.....

4. How are the students introduced to the idea of mixed crops in farming and how are they different to monocultures in conventional agriculture?

.....
.....
.....

5. How do you feel about this kind of learning?

.....
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.....
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i

Article 3

Going to school with goats in Berlin

The Hagenbeck school in Berlin offers a unique formula for learning. In an effort to teach students the importance of species and ecosystems, every subject has a connection to biodiversity.

It's eight in the morning and a bunch of adolescents are leaning on a gate observing the comical antics of Oreo, Agro and Wilma on the other side. Somehow, the three goats have caught the kids' attention so completely that they momentarily have no interest in the usual teenage trappings, such as cell phones.



Students feed animals on the school grounds

The scene is playing out in front of a school farm, which – besides accommodating the goats – is home to ducks, chickens, pigs and a whole range of other animals. The farm, like the garden next to it, belongs to the Hagenbeck high school in Berlin's north-eastern district of Pankow.

Every day some 400 kids pass through the door of the unspectacular mid-rise prefab that looks much like many other schools in the city. Only it's not. This one has a special draw.

"I chose this place because I'm really interested in animals and gardens," 12-year-old Yara said. She and her fellow students, Lina and Elodie are chopping fruit plucked from the school's own apple tree, to feed the goats.

"You have to take care to feed them one at a time," Elodie explains. "Otherwise one ends up not getting enough and they lock horns."

When asked whether learning in harmony with nature is more fun than sitting in the classroom, she doesn't miss a beat.

"Yes, absolutely."

More than animals

Which is not to say there's no classroom learning at the school. Students at Hagenbeck have lessons in math, German, sport, physics and languages, just like their contemporaries at more mainstream schools across the city. It's just that here, biodiversity is omnipresent.

"Staff teaching all subjects sat down together and discussed how best to integrate biodiversity," deputy head Claudia Krötenheerdt tells DW.

The upshot was a rounded, inclusive and hands-on curriculum in which math lessons include such activities as measuring the garden beds, technology classes see students learn to make frames for bean plants, and in which "Animal Farm" is standard reading.

"As far as I know, we're the only school in Germany that does this," Krötenheerdt says.

The project started in earnest in 2007, when the German government introduced a national strategy to counter the loss of habitat and biodiversity.

When Krötenheerdt and her colleagues put their heads together to come up with a way of getting the school involved, they hit upon the immersive idea of making biological diversity the key theme of the school. That was eight years ago, and they haven't looked back since.

Learning with spades and forks

In the school garden, which adjoins the farm, students have been given the task of cutting back certain plants. When 12-year-old Kolja asks if they're meant to take their secateurs to everything in sight, he gets a blunt response from Elke Mahrenholz, who helps run the garden.

"It wouldn't do you any harm to listen," she tells him. "Only cut the ones that have dried out."

i

Article 3



Anyone attending the Hagenbeck school has to be prepared to get their hands dirty

Reprimanded, he fiddles shyly with his secateurs, but later reveals just how much he does listen, by talking with confidence about photosynthesis and the other things he has learnt at school, such as “sustainability, reusing things you no longer need, upcycling old things to make something new.”

The raised beds in the school garden, made from repurposed vaulting horses once used in sports class, are an example of just that.

“You could add a bit more horse manure here,” Mahrenholz tells the students who have removed the dried up plants and are now planting new ones.

In the winter, when there’s less practical work to do in the garden, she teaches them about the ground in which they grow their crops, about using natural fertilizers to improve the quality of soil, and about the biodiversity within it.

Three sisters

Behind the raised beds, a few students are tending the so-called three sisters.

“Every year, we plant a mixture of crops, this year our focus is on the three sisters,” explains 13-year-old Eric. “That means corn, pumpkin and beans.”

“The corn is so tall that it towers above the smaller sisters and provides them with some shade,” Charlotte adds. “The middle sister, the beans, grow up the corn plants and give them stability.”

Pointing at a pumpkin in the bed, Tabea refers to it as the “little sister, whose large leaves keep the soil moist and prevent weed growth.” And then, with a shy smile, she harvests it.

“By planting things the way we do, the children learn about crop mixtures in contrast to the monocultures of conventional farming,” Mahrenholz explains. “It helps them develop an understanding for the fact that our agriculture has to move away from monocultures towards more mixed crops.”

And the students even get to taste the fruits of their labor when they get together to cook the vegetables and herbs they harvest from their garden.

Creative thinking required

Between classes, the kids come to the school yard to hang out. But it’s no ordinary yard. One part of it has been given over to tall reeds that give the impression of being somewhere else. Only when the wind blows them apart, do the school building and the other part of the yard come into view.

For now, this part is still plain old concrete, but there are plans to change that. Just as soon as there’s enough money in the pot.

But keeping the award-winning school moving forward is not all about financing.

“It takes a lot of initiative,” the deputy head explains. “We need a lot of creative thinking.”

On that, parents, teachers and other staff members will continue to deliver, because they all want to ensure that the three goats and the three sisters remain on the curriculum of Berlin’s Hagenbeck school.

04.09.2018 | Mabel Gundlach | [dw.com/p/34FnC](https://www.dw.com/p/34FnC)



Worksheet 12

Project ideas and project plan: Green urban spaces

How can you create more urban green space? Adapt the **planning documents** below, either alone or with others from your class or group.

Area School or schoolyard Street Abandoned land Other

What is our **idea**? What is our **goal**?

.....
.....
.....
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.....

What **materials** do we need? Where can we get support?

.....
.....
.....
.....

How many **people** do we need to make it happen? Who do we definitely need to get involved?

.....
.....
.....

First steps:

1.
2.
3.

Time frame: Where and when shall we start? When do we want to achieve our goal by?

.....
.....
.....
.....

Date **Group name**

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Global Ideas




The multimedia environment magazine

Around the world, imaginative people and innovative projects are working to protect our climate and biodiversity. Global Ideas tells their stories on TV and online.

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Global Ideas is more than just television. Think interactive specials such as a visit with Africa's wild animals or explainers that answer complex questions like "does global warming really exist?" The magazine also has an educational element in the form of carefully crafted "learning packs" on key environmental topics. Available free of charge in German, English and Spanish, these learning materials include videos, articles, worksheets and teacher handouts, as well as other educational materials such as posters, picture cards and practical experiments.

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