

ANIMALIA

An exhibition to understand and to act

Over the last few years, worrisome messages are being heard about how environmental conditions are deteriorating for life on Earth. Almost every week we are told about some new environmental threat. A simple comparison between the state of the planet in 1960, in 1980, in 2000 and today illustrates the growing speed at which the situation is deteriorating.


Preserving biodiversity and fighting climate disruption are therefore the major challenges faced by our contemporary world. In this context, trains, thanks to their low CO₂ emissions, are beneficial when it comes to sustainable mobility and more than ever they have a bright future ahead of them.

Through the Animalia exhibition, Train World invites you on a poetic and scientific trip that is, amongst other themes, devoted to the preservation of our environment, especially from the prism of biodiversity and the climate.

Pierre-Yves Renkin, the renowned Belgian animal sculptor, was invited as guest artist to show a series of works representing animals at our museum. These animal sculptures dialogue at Train World with our railway collections.

Alongside this approach centred on poetic emotion, themes like preserving biodiversity, climate change and the benefits of trains as a sustainable mode of transport, are expanded upon in the various museum areas. One aspect of this exhibition is also devoted to the efforts undertaken by SNCB and Infrabel in reducing the impact of their activities on our environment and the climate.

Unique in space, unique in its capacity to host life, doesn't our planet deserve all of our imagination, all of our courage and our generosity to preserve it and to preserve ourselves?



Located on the Zambezi river, Victoria Falls stand on the border between Zambia and Zimbabwe. Surrounded by superb animal reservations, the river flows into a canyon some 1,700 wide and with a height that can reach 108 metres. These falls offer a remarkable spectacle that can be admired from a sightseeing steam train.

ANIMALIA: An exhibition to understand and to act

To design this exhibition that is at once poetic and scientific, Train World called on four specialists of the animal kingdom, of climate change and rail transportation. These signatures of note all bear witness to a shared desire to protect our environment.



Jean-Pascal van Ypersele

With a PhD in physics, Jean-Pascal van Ypersele is a Belgian climatologist and climatology and environmental science professor at UCLouvain (Earth and Life Institute). Former Vice President of the IPCC (Intergovernmental Panel on Climate Change), he is officially a candidate for the presidency.

Jean-Pascal van Ypersele feels that it is essential, and possible, to sharply reduce emissions caused by fossil fuels and deforestation. His work as a researcher is concentrated around the study of climate disruptions from a multidisciplinary perspective. He regularly advises politicians or economists. Founder of the Walloon platform for IPCC, Jean-Pascal van Ypersele feels that it is essential to share, as widely as possible, knowledge relating to climate change, its risks as well as the solutions for reducing its seriousness.



Caroline Nieberding

Doctor in biological science, Caroline Nieberding is a professor in evolution, biogeography and molecular ecology at UCLouvain (Earth and Life Institute), where she leads the Biodiversity, Ecology and Evolution team.

She is also the scientific advisor to the #TogetherForBiodiversity movement.

Comprising around a hundred institutions and citizen's associations, this movement is the largest national grouping active in the field of biodiversity.

Caroline Nieberding feels that one of the only ways possible to stop the biodiversity crisis is by severely reducing land usage devoted to non essential human activities like producing industrially farmed meat.

In 2019, Jean-Pascal van Ypersele and Caroline Nieberding founded WeChangeForLife.org, an awareness action and website intended to highlight the common points that threaten the climate and biodiversity and the combined solutions proposed by Belgian experts.



Jeroen Alting von Geusau

Head of the Sustainable Development & Corporate Social Responsibility department at SNCB.

For over 14 years now, Jeroen Alting von Geusau has worked in the railway sector in Belgium and the Netherlands and he has extensive experience in international trade. His current assignment, with his team, comprises defining, coordinating and developing the environmental and energy policy for SNCB.

Trains constitute a sustainable alternative for moving around both within Belgium and beyond our borders. This sustainable mode of transportation benefits from a minimal carbon footprint. This is a major benefit when it comes to meeting the environmental challenges we are facing.



Pascale Heylen

Heads the Sustainability department at Infrabel.

Passionate about sustainable growth and the railway world, Pascale Heylen has been working at Infrabel, in favour of sustainable growth for over ten years now. As Sustainability Manager, with her team, she aims to strengthen the railway sector as the backbone of sustainable mobility.

Infrabel acts to limit the impact of its activities on the environment and climate as much as possible and is adapting the Belgian railway network to face the effects of climate change. The environmental value is part of Infrabel's DNA as they have implemented a number of projects to protect and boost biodiversity throughout their infrastructures. Infrabel is also committing to an environmentally friendly circular economy by reducing the use of raw materials, extending service lives and reusing materials.

Infrabel and the railway companies, including SNCB, are working together on tomorrow's mobility solutions, discussing with their partners, as part of the United Nations Sustainable Development Goals, and with you!

*One of the tales in The Thousand and One Nights
recounts that the earth and the animals
trembled on the day when God created man.*

*This admirable poetic vision takes on special significance
for us, who know, far better than the medieval Arabian storyteller,
to what extent the earth and the animals
had reason to tremble.*

Marguerite Yourcenar

Who knows whether the spirit of animals goes downward



Illustration from a Persian version of the Tales of the Thousand and One Nights, created by Sani ol Molk, 1853 | Golestan Palace Library - Teheran



Golden eagle

Aquila chrysaetos

Conservation status :

Least concern.

Major causes of decline :

6,000 to 10,000 breeding pairs were identified in 2019. Populations are rapidly falling in Europe. The golden eagle is still present in the Apennines, the Alps and the Carpathians. The destruction of their habitat is down to urban development and forest fires, to poisoning (a bioaccumulation of toxins and pollutants in the food chain) and to collisions with man made objects (overhead power lines, wind turbines).

Conservation efforts :

Education and awareness; policy in targeted areas.



African bush elephant

Loxodonta africana

Conservation status :

Endangered.

Major causes of decline :

Hunted for the ivory of its tusks until the 1990s, illegal elephant hunting continues in some parts of Africa. The transformation of the savannah into farm land and grazing pastures is reducing the elephant's habitat in a way that is unsustainable and that conflicts with human populations increase.

Conservation efforts :

The elephant's habitat is protected and illegal hunting tracked by rangers in some countries. These measures are effective and it would be desirable to deploy them more widely across Africa.



Pierre-Yves Renkin in his workshop in Burgundy

Pierre-Yves Renkin or a magician of the living

To create the Animalia exhibition, Train World joined with world renowned Belgian animal sculptor Pierre-Yves Renkin. Before we discover his animal creations, that dialogue with our railway collections, welcome to the unusual world of the magician of living things.

In the room Pays de Waes, located on the first floor of Schaerbeek Station, Pierre-Yves Renkin for the first time agreed to show to the public a very small part of his private collection, comprising rare objects, unique documents and archives which are so many keys to an immersion in his world and in his work as a naturalist.

These rare and precious pieces help the artist in his work and allow him to give some thought to his profession and nature that is all around him, something he loves profoundly and ardently defends.



Pierre-Yves Renkin's tools



Pierre-Yves Renkin in his workshop in Burgundy



Collection of reproductions of fungi in Pierre-Yves Renkin's workshop



Collection of mouldings and sculptures of rhinoceros in Pierre-Yves Renkin's workshop



Photograph © Marie-Françoise Plissart

Pierre-Yves Renkin or a magician of the living

Starting as a teenager, Pierre-Yves Renkin developed a passion for animal representations and became interested in taxidermy, a technique often considered strange. Taken on at 19 by the Royal Belgian Institute of Natural Sciences in Brussels, he learnt the profession and took part in building up major collections at the institution. Yet the museum world very quickly became too small for this inventive spirit and his boundless imagination. So he took over the workshops of two of the most famous taxidermists in Brussels, those of de Turck and van Tieghem.

A new stage followed in 1988, when the most famous advertising agencies called on his talents by entrusting him with unusual and original campaigns. He created hard hitting images starring a toucan or a giraffe entering a car.

His extraordinary mastery and vivid imagination make a marvellous combination. Now widely recognised for his expertise as a naturalist and his technical skills, he went on to undertake various scientific and artistic activities. In 2002, he became the head of the naturalist part of the Al Wabra zoo in Qatar.

Yet he never turned his back on his first love, animal sculpture, taking part in a number of international competitions, winning prestigious prizes from them. Major institutions and individuals alike entrusted him with rebuilding lost species, like the Mauritian dodo exhibited at the Natural History Museum in Paris. One of these mythical birds was actually specially made for the Animalia exhibition.

These reconstitutions are emblematic of his expertise and the techniques used after long scientific research allowing him to bring a lost world back to life, like that of the great auk, another extinct species, three of which have been on show since June 2022 in Marseilles as part of the reconstitution of the prehistoric Cosquer cave.

Although a regular in galleries and exhibitions, Pierre-Yves Renkin's renown remained confined to the initiated, who have now decided to share their passion for this artist and his outstanding personality, with the public who visit Train World.



▶ *From a very young age, I've been very curious about the natural world around me.*

So, my first sculpture, it all began with a dead bird in a pool. It was so beautiful. How could you let such a beautiful creature destroy itself? So I modelled that sparrow and made my first lead sparrow. I was 14.

So that was my hobby and I got to a point, when I'd graduated from art school, at the Natural Science Museum, I was in charge of preparing all collected material. I regularly did surveys to see what the population was at such-and-such a place. But I found myself getting stale and wanting to just sculpt.

It all began with a stuffed dodo. There are no stuffed dodos anywhere. All we have is a mummified head and a foot. That's all there is. But the scientists needed one. So I made it.

There were international competitions. I won first prize. And that really opened up a world for me: extinct species.

And each time you enter a new world, you pull a string and many things come.

When I see the impact it has on people, everyone, when you explain the bird's history, where it lived, and what happened.

I soon realised this was far more interesting. You need to get inside the animal via drawings and paintings of the time, understand, see how it works.

The animals' environment is an indicator of the way we live. Its effect on animals is a sign that we're poisoning ourselves. We should never forget this planet is an island, and we're not able to solve our own self-destruction problem.

I hope we can change our outlook. If we could learn to see things better, we'd discover another world.

I really hope something like that will happen.

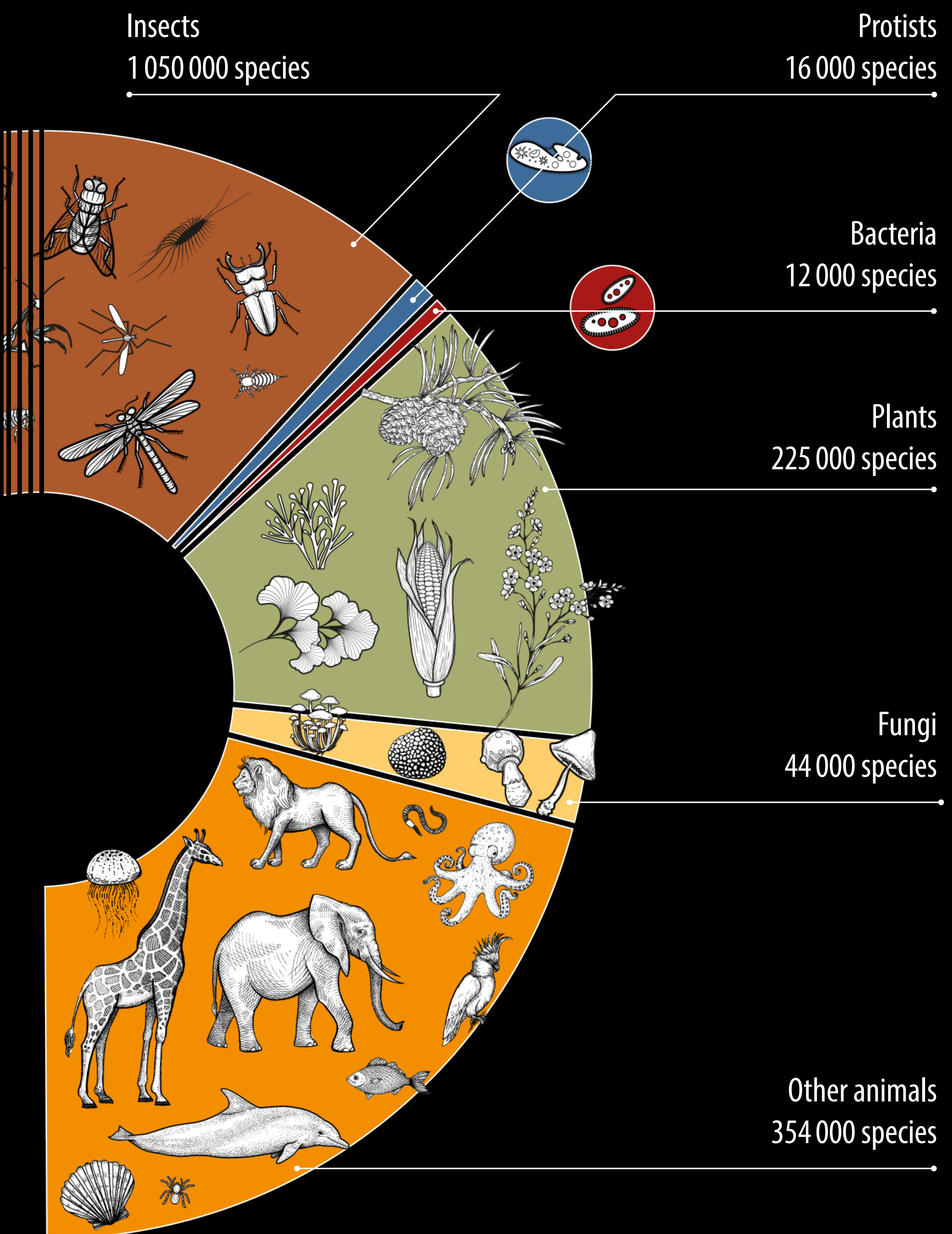
WHAT IS BIODIVERSITY?

Biodiversity refers to all of the living beings on our planet as well as the ecosystems where they evolve over their time on earth, at sea and in fresh water. In practice, biodiversity specialists study the genetic variety of species and their interactions among themselves and with their environments, e.g. through pollination.

Although biodiversity goes back as long as life on Earth, this concept only appeared at the beginning of the twentieth century. This word, a contraction of the English term biological diversity, was used for the first time in 1916. Yet, it only became official in... 1986 during the National Forum on BioDiversity, held in Washington DC. In 1992, the Convention on biological diversity signed during the Earth Summit held in Rio de Janeiro definitively acknowledged the importance of conserving biodiversity for all mankind.

Distribution of biodiversity by life form

As seen in this diagram, biodiversity on Earth is primarily animal. Within this very wide and diversified range of lifeforms, insects hold first place.





Red-and-green macaw

Ara chloropterus

Conservation status :

Least concern.

Major causes of decline :

The species, comprising 50,000 to 500,000 individuals lives in Northern South America. During the 1960s, the macaw suffered from hunting (for meat) and the exotic bird trade. Its distribution area continues to shrink and fragment. The species also suffers from global warming and pollution.

Conservation efforts :

Reintroduction programs are ongoing in natural reservations.



Blue-and-yellow macaw

Ara ararauna

Conservation status :

Least concern.

Major causes of decline :

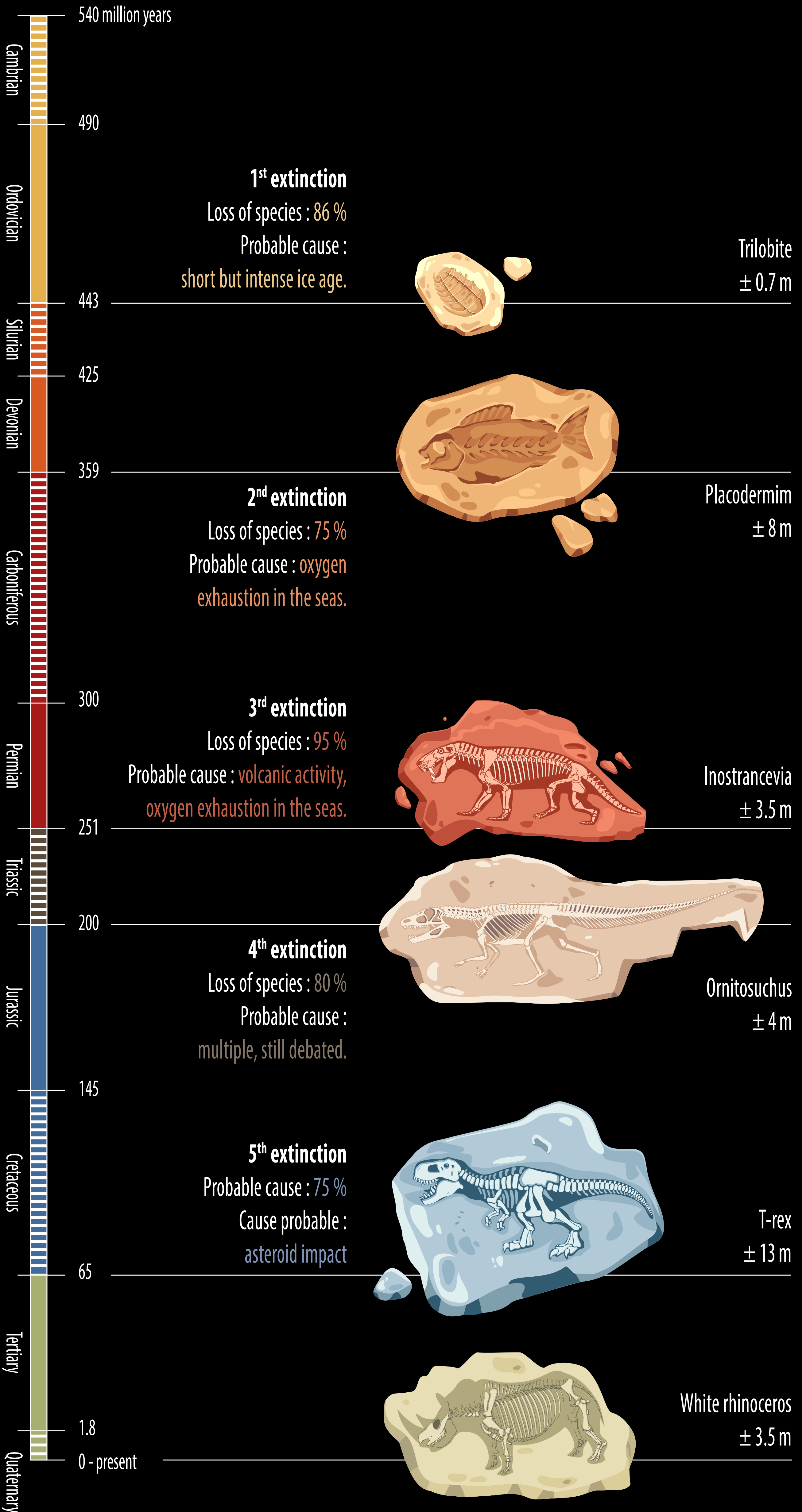
The populations appear to be falling rapidly. The species is nearing extinction in Paraguay, but survives in other South American countries like Colombia, Venezuela, Peru and Brazil. The main threat that it is facing is from international trade: over 50,000 wild individuals have been captured and sold since 1981, meaning that ten times more individuals died from this trade.

Conservation efforts :

Sales of this species are regulated by international conventions.

WHAT WERE THE MAIN MASS EXTINCTIONS ON EARTH?

The massive disappearance of animal and plant species that is on the horizon is not the first one to occur on Earth: five previous extinctions have already led to the disappearance of millions of living creatures. Yet the one threatening us now is different: it is the direct result of human activity and it is happening way faster than the previous ones.



A LITTLE GALLERY OF EXTINCT SPECIES



The dodo • *Raphus cucullatus*

The Mauritius «Dronte», better known as the dodo, is a bird that lived on Mauritius. The last dodo was seen in 1662, less than a century after it was first observed. Its extinction was caused by the arrival of European sailors who hunted it. It is now often used as the symbol of an extinct species, whose disappearance can be directly blamed on human activity.



The golden toad of Costa Rica • *Incilius periglenes*

Discovered in 1967, this Central American amphibian, measured some 0.5 cm and lived only in Costa Rica. With its phosphorescent yellow orange colour, it stood out from most toads. Its extinction, observed in 1989, makes it the first known species whose extinction was probably caused by climate change, atmospheric pollution and by fungus infections.



The Labrador duck • *Camptorhynchus labradorius*

This sea duck that became extinct towards 1880, used to nest on the east coast of the United States and Canada. The arrival of the first settlers probably hastened its end. This duck, hunted for its meat and its eggs, also became extinct due to the disappearance of its food fished by human populations.



The great auk • *Pinguinus impennis*

This flightless bird lived on the Atlantic Ocean rim. It became extinct in the mid-19th century. The first settlers who explored America soon learnt that this bird was easy prey. Once scientists realised that this species was threatened, the race to collect specimens accelerated its demise. The last known great auk was killed in Iceland in 1852.





Giraffe

Giraffa camelopardalis

Conservation status :

Vulnerable.

Major causes of decline :

With 70,000 individuals recorded in 2015, their number is continually falling. Deforestation, where forests are replaced by farm land and by towns and cities is making the giraffe's natural habitat disappear. Wars together with illegal hunting, mining and global warming accentuate the risks of extinction.

Conservation efforts :

There is no concerted action although different countries like Kenya and Uganda have taken action, including developing tourism centred around these big animals. The species benefits from the protection of part of its habitat.

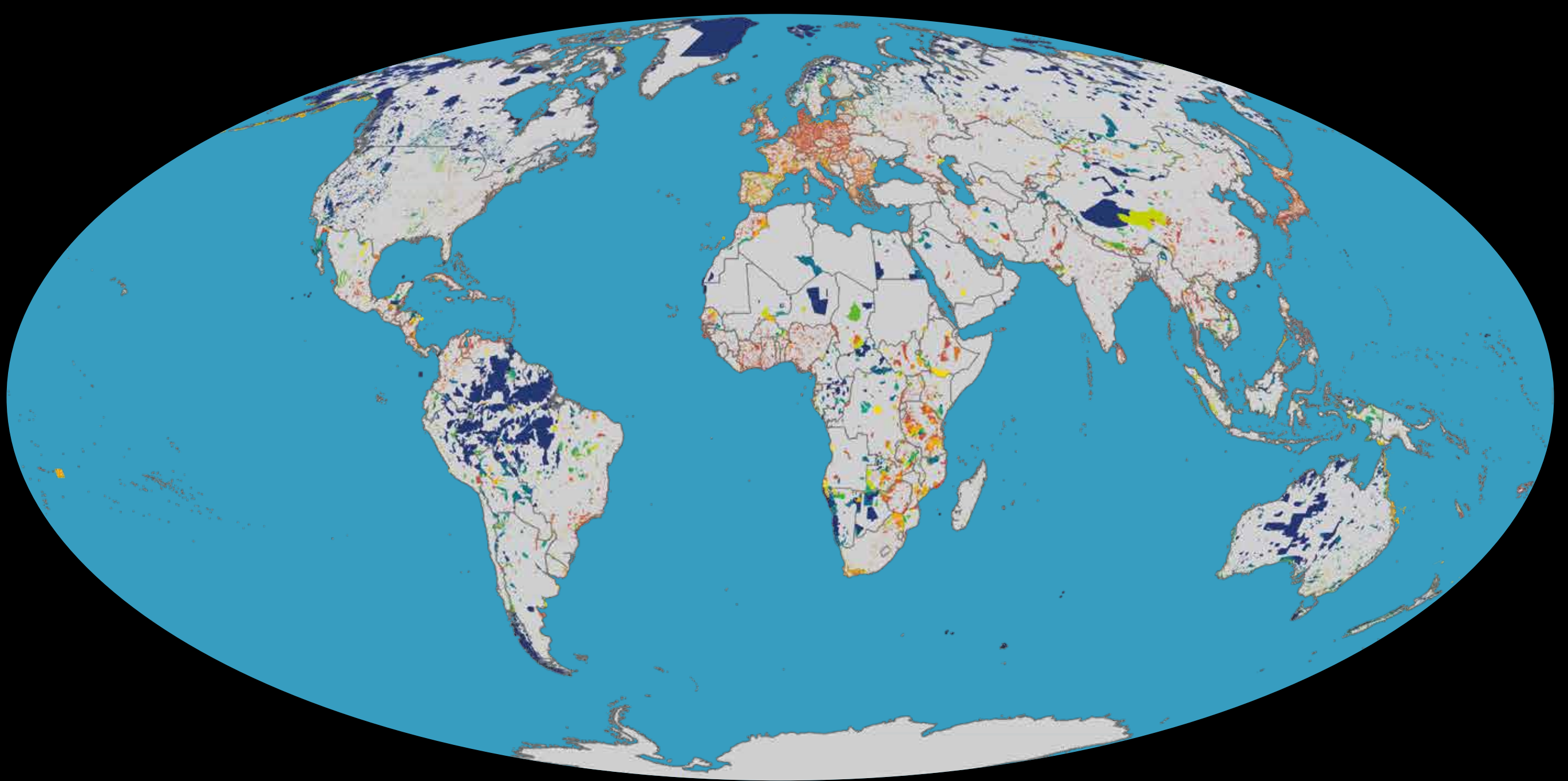
WHAT IS THE SIXTH MASS EXTINCTION?

The sixth mass extinction describes the irreversible loss of biodiversity due to human activities. Both vertebrates and invertebrates are affected. The disappearance of natural habitats along with climate disruption constitute two of the major causes of this sixth mass extinction. As shown by this map, the most threatened areas can be found on the five continents, especially in Africa, Europe and in Central America.

Last December, COP15 in Montreal recommended protecting 30% of the land and oceans of our planet by 2030. However, in current protected areas, which account for only 15% of the world's landmass, human activity remains very intense.

This map shows the situation in these protected areas. As you can see, even the protected areas of the Amazon rainforest, our planet's 'lung' (blue area in South America), are threatened with irreversible destruction.

The situation in Europe is giving even greater cause for concern.



AREAS UNDER INTENSE HUMAN PRESSURE

In currently protected areas on Earth, which only represent about 15% of the territories, human activities remain very intense. This map shows the situation in these places protected. Even the protected areas of the Amazon rainforest are threatened with irreversible destruction. The situation is still most worrying in Europe.

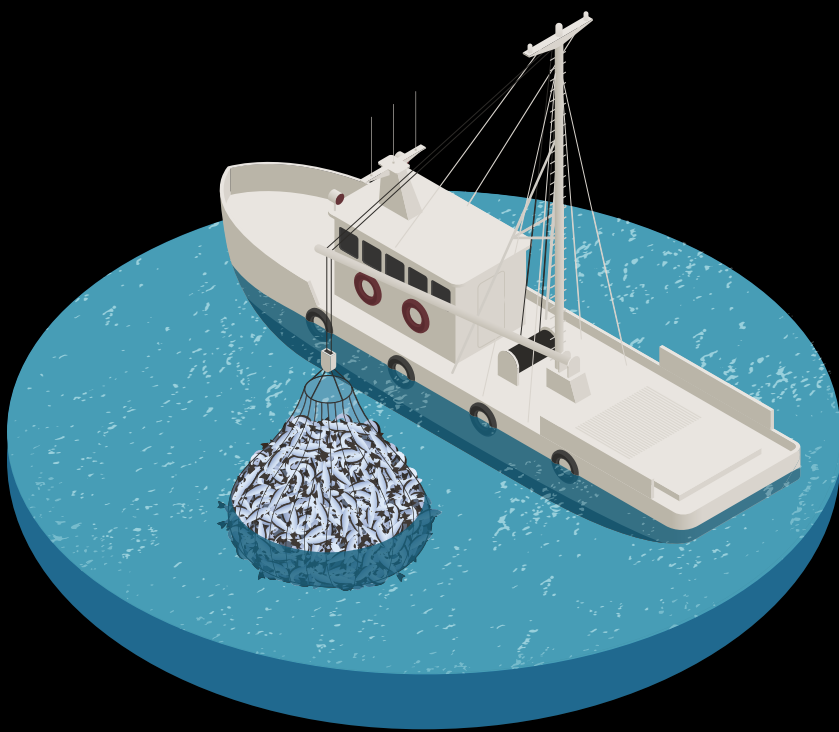
Source: Jones et al, Science, 2018

WHAT ARE THE FIVE MAJOR CAUSES OF BIODIVERSITY EXTINCTION?



Changes in use of land and sea

Destroying and fragmenting natural habitats for intensive agriculture and factory farming, urban development and roads.



Over-exploitation of wild species

Overfishing, deforestation, poaching...



Climate disruption,

which is added to the other causes and intensifies them. Some species are then forced to migrate or adapt, which not all can do.



Water, soil and air pollution

but also light and noise pollution.



Propagation of invasive exotic species

WHAT ARE THE CONSEQUENCES OF BIODIVERSITY EXTINCTION?

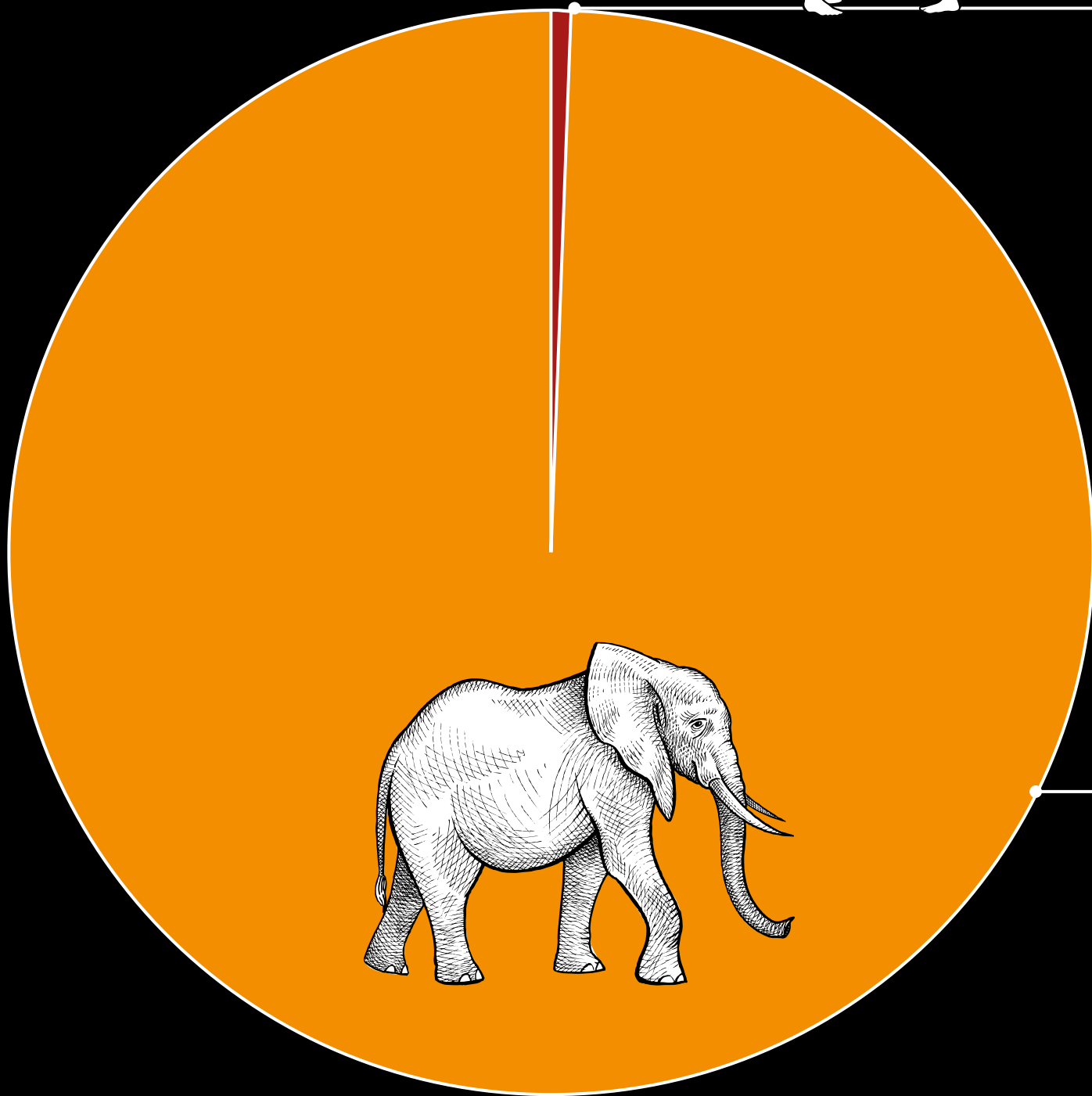
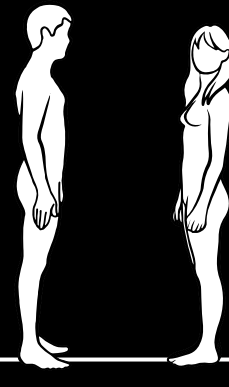
The rate of species extinction around the world is already at least ten, maybe hundreds of times greater than the average rate for the last ten million years, and it is speeding up. Out of some ten million animal and plant species, 50% of which are insects, approximately one million are threatened with extinction within the next thirty years. Since 1970, the world's populations of vertebrates is declining rapidly, falling by 40% for terrestrial species, 84% for fresh water species and 35% for marine species.

At present, 9% of the 5.9 million terrestrial species thought to exist around the world - or over 500,000 species - have a natural habitat that is too small for them to survive over the long term. If nothing changes, these organisms are bound to become extinct.

As shown in this diagram, on a 10,000 year scale, the contrast is stark. Today many more animals are produced to feed humans than there are wild animals left, and these are ever more threatened with extinction.

BIOMASS OF THE EARTH'S MAMMALS WEIGHT IN THOUSANDS OF TONS OF CARBON, KtC

10 000 years ago



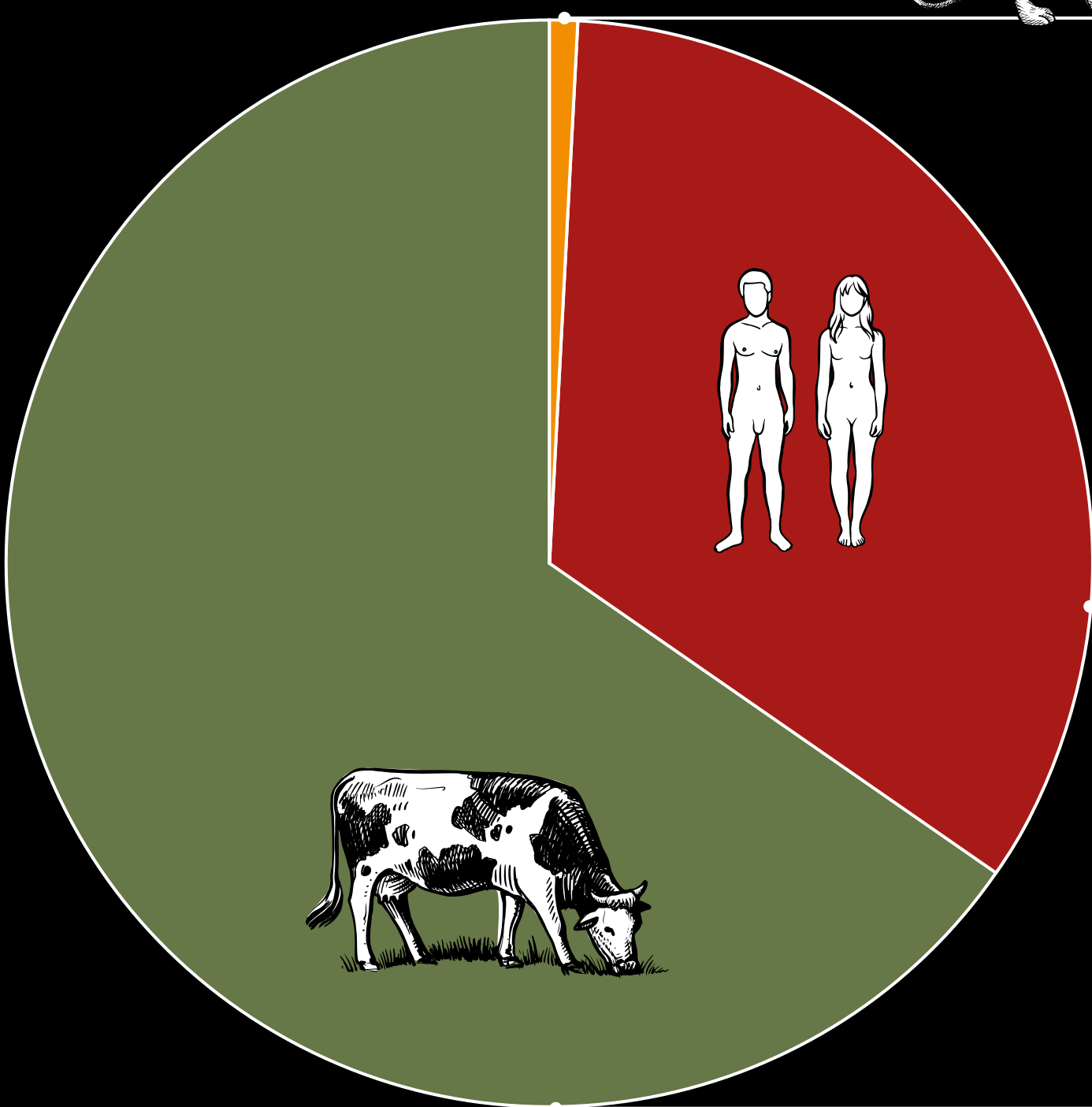
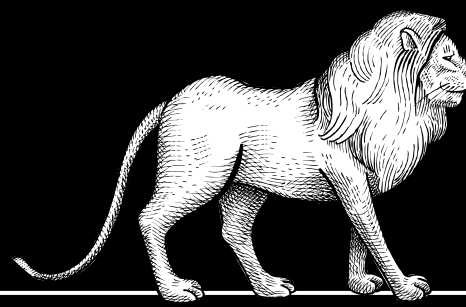
5 million humans
40 ktC

0.3%

Wild mammals
on earth
15 000 ktC

99,7 %

Today



Wild mammals
on earth
3 000 ktC

2%

8 billion humans
60 000 ktC

37%

Farmed mammals
100 000 ktC

61%



Eastern gorilla

Gorilla beringei

Conservation status :

Endangered.

Major causes of decline :

There are only 600 sexually mature adults left, located in the East of the Democratic Republic of Congo. This species that is very close genetically and in evolution to humans may disappear as it is hunted for its meat. The gorilla's forest habitat is being destroyed, replaced by land destined for farming and grazing, as well as for mining activities, all illegal.

This species also suffers from Ebola fever.

Conservation efforts :

The entire population and its habitat are protected. International actions have been put into place since 2015.

However, in addition to the above mentioned immediate threats, the future of this species is very uncertain given the very limited number of individuals, increasing the risks linked to genetic consanguinity.

A MORE ECO-FRIENDLY NETWORK

To protect the fauna and flora along its 6,500 km of tracks, Infrabel is committing to a number of projects.

In collaboration with the regional authorities and NGOs that specialise in preserving nature, Infrabel plays a part in preserving the sensitive areas that its rail network runs through and where protected animals and plants live.

As an example, some ten animal species living along the tracks are preserved, like the smooth snake, the garden dormouse and the white-throated dipper for example.

Infrabel also takes part in managing ecological areas like Natura 2000 areas, protected areas and water catchment areas.

The railway network manager produces an ecological inventory along the length of its lines and especially between Leuven and Liège.

Collaborative efforts are also developed for projects like sheep grazing, managing the vegetation along the verges or developing beehives.

Wherever possible, Infrabel reduces the use of herbicides and supports biodiversity at work by sowing flowered grassland, by installing insect hotels, by including green roofs on buildings and by planting orchards, etc.



Smooth snake



Viper



Grass snake



Common wall lizard



Sand lizard



Slow worm



Hazel dormouse



Garden dormouse



Northern crested newt



White-throated dipper



Common swift



Swallow



GREEN RAILWAY SLEEPERS

Infrabel installs the first green railway sleepers in Europe thanks to sulphur concrete

The advantage of sulphur compared with cement is three fold: its production produces up to 40% less CO₂ emissions and the newly created material is completely recyclable. Further, the sulphur that is usually considered as waste from the petroleum industry can be reused.

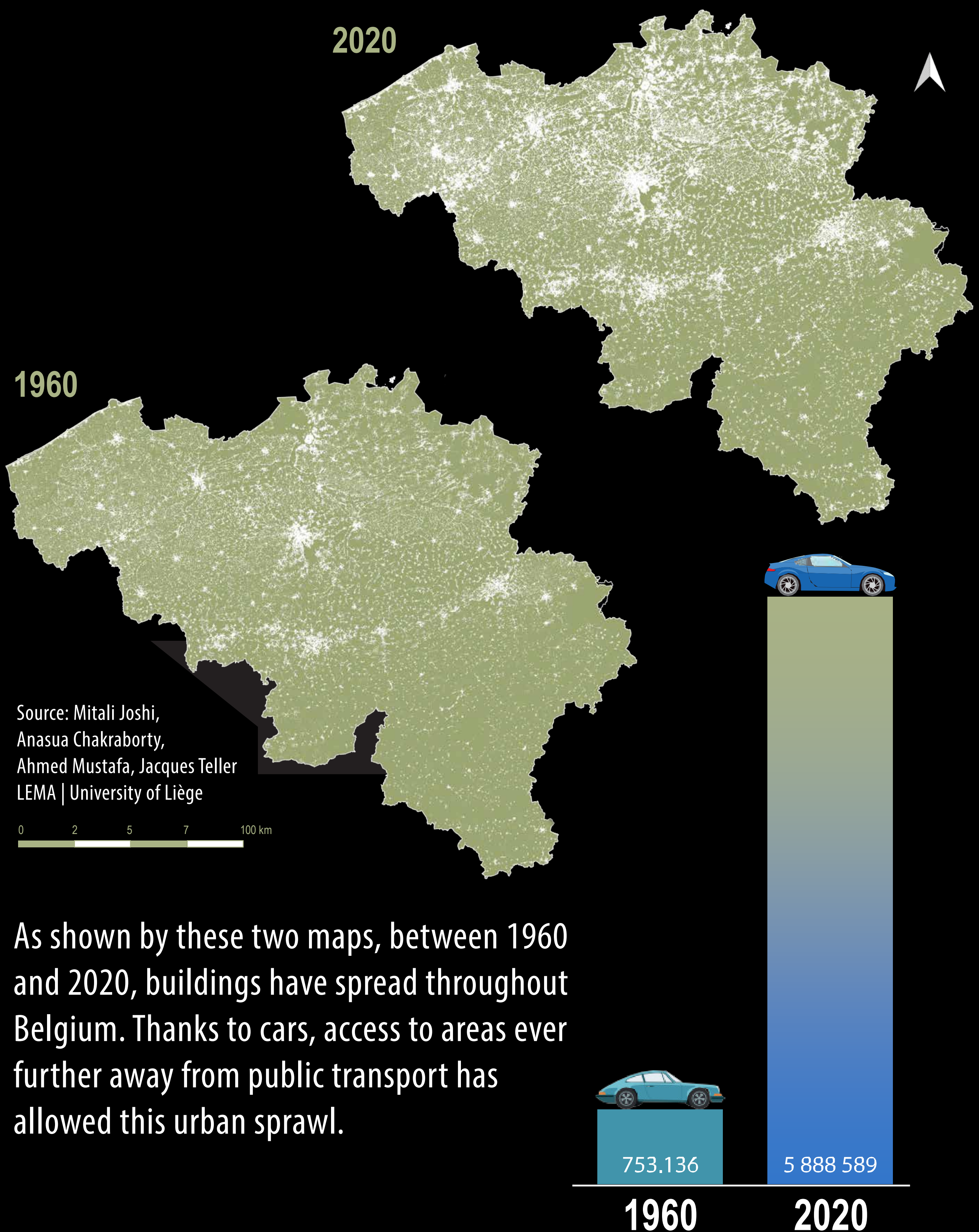
Infrabel has ordered 200,000 sleepers, thereby becoming the first railway infrastructure manager in Europe make their sleepers more environmentally friendly.

OUR NATION: A LAND OF CONCRETE

In Belgium, the disappearance and fragmentation of natural habitats are largely due to the development of industrial agriculture and urbanisation. As can be seen on these maps, construction proliferated all over Belgium between 1960 and 2020, with one third of new builds going up during the past ten years.

Cars, especially company cars, have made it easy to access areas increasingly remote from public transport, and were what enabled such urban development. The number of privately owned cars in Belgium has soared from 750,000 in 1960 to 5.95 million in 2022.

Belgium's mobility policy needs to be overhauled, so as to prevent the continuation of this rampant urban development and propose town and country planning that encourages the use of high-quality public transport rather than the travel by private car, especially company cars, favoured by the authorities.

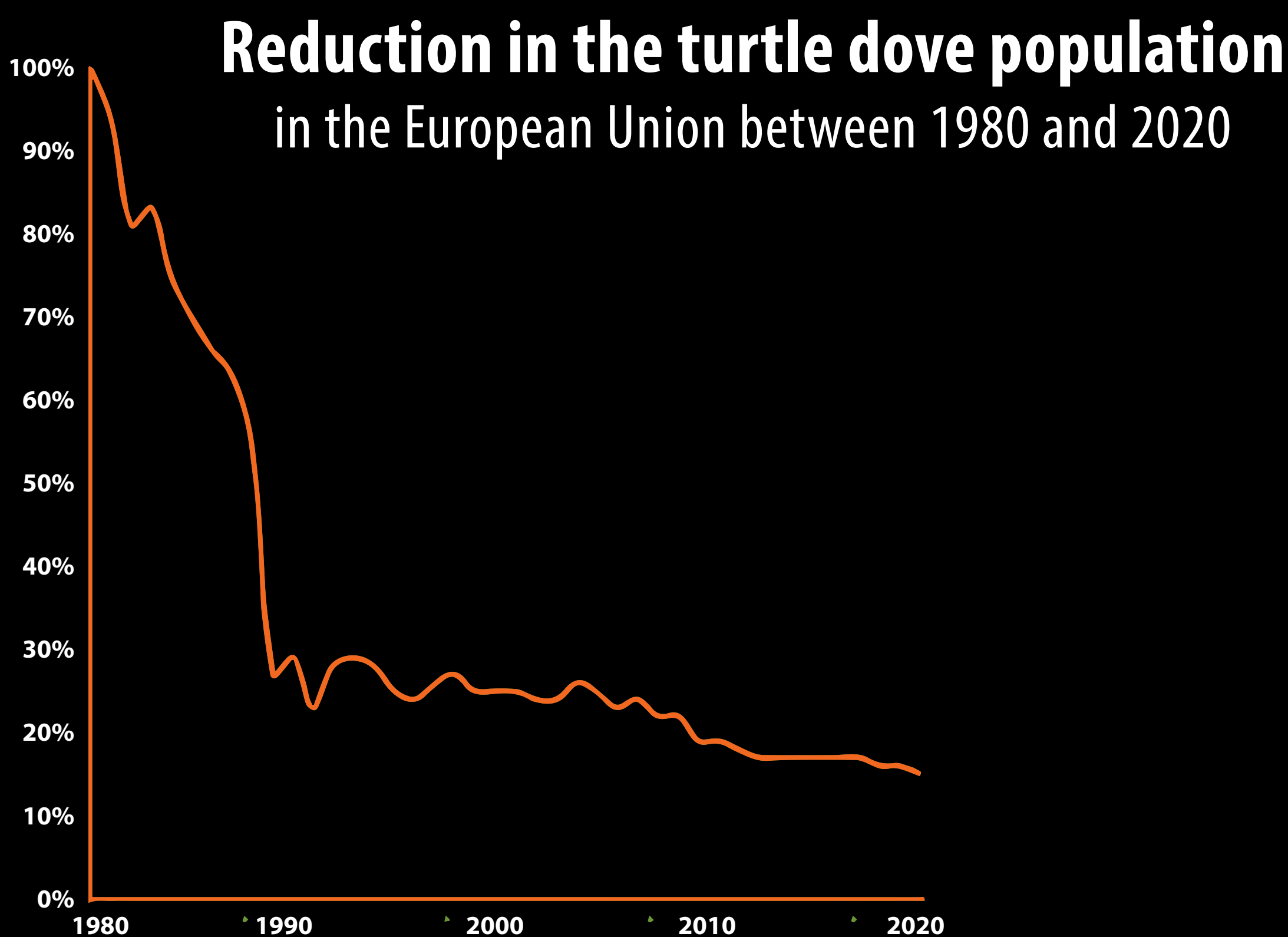


As shown by these two maps, between 1960 and 2020, buildings have spread throughout Belgium. Thanks to cars, access to areas ever further away from public transport has allowed this urban sprawl.

WHAT HAPPENED TO THE TURTLE DOVES?

How do we know whether a species is endangered? By counting the number of individuals in a specific geographical area over several decades. Such counts are performed in the wild by biologists, and some have been ongoing for sixty years. On the basis of this information, the International Union for Conservation of Nature establishes the status of each species: the extent to which it is threatened at this point in time and whether it is at risk of becoming so in the near future.

For instance, the data on turtle doves have shown that their numbers have declined very sharply in Europe. An action plan has therefore been adopted in the European Union to halt this decline. In general, birds and butterflies are the best studied, as they serve as 'bioindicators' of the degradation of the ecosystems in which they live: if bird and butterfly populations decline, this means that their ecosystem as a whole is also under threat.



Bronnen – Sources: BirdLife - European Bird Census Council - RSPB – CSO

Habitat of the turtle dove in Europe



The count data on turtle doves have shown that their numbers have declined very quickly in Europe. In general, daytime birds and butterflies are the best studied: if bird and butterfly populations decline, this means that their ecosystem as a whole is also under threat.



Eurasian eagle-owl

Bubo bubo

Conservation status :

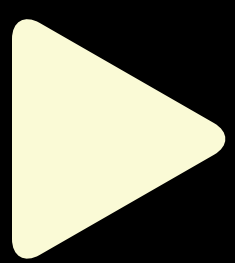
Least concern.

Major causes of decline :

A common bird of prey in Europe where its name is occasionally abbreviated to just the eagle-owl, the Eurasian eagle-owl suffers from its contacts with humans. Skiing, mountain climbing, etc. all cause the nest to be abandoned during the mating season. Mercury contamination, accidents caused by barbed wire, reduced numbers of rabbits - the Eurasian eagle-owl's primary prey - as well as egg theft by collectors all affect the survival of this species.

Conservation efforts :

The species is protected almost everywhere it lives. Massive reintroduction programs have been rolled out since the 1970s. Setting up educational programs to reduce contacts with humans has also been envisaged.



With one million species recorded, insects form the largest share of animal species. They actually represent half of all the species on earth.

Insects were around long before us and they can be found everywhere. We tend to consider them insignificant, or even pests, for they are really small and often invisible. Yet, they perform countless services and without them, we would not be here today! Now, the problem is that in the last 30 years, their numbers have fallen by 50 to 80% around the world, especially in Europe. So why is their disappearance so frightening?

Insects play a part in all kinds of essential human activities. For example, 84% of the plants grown in Europe need to be pollinated. Yet, over one third of bees are seeing their population levels fall. The decline of bee colonies and those of other pollinating insects has serious consequences for our food security. So if we don't act in the coming years, the situation will become unmanageable.

Insects are also a source of food for countless species. When they disappear, all of these animals no longer have anything to eat, inevitably causing their decline. Unfortunately, in Europe, this means that over 600 million birds have disappeared these past 40 years! This is how our forests and fields become ever quieter in the spring. There are practically no more birds left to sing. Insects also play a vital role in the cycle of life. When an animal dies, everything is broken down and recycled by a variety of organisms, including many insect species.

This is also true of plants. The insects convert the dead wood into fertiliser so that new plants may grow! In addition to the many products they make, like honey, wax and silk, insects also form a reservoir of new substances of therapeutic interest and of technical innovations. They inspire biomimetics engineers to make major innovations such as new ultra resistant, non-stick, hydrophobic materials.

So then why are the insects disappearing? The main issue is the destruction of their natural habitat by factory farming. 50% of farm land supports cattle to feed us. By moving to a diet that is at least partly vegetarian, a continent the size of the USA would be released for the natural habitat of insects and other species, while still feeding everyone on earth enough. Factory farming also exterminates many insects, since it makes massive use of insecticides, herbicides, and fertilisers that destroy the plants that feed these insects. We are therefore in a death spiral.

Whereas we actually need insects to function properly. Factory farming as we have practised it for the past 40 years is the main cause of the extermination of insects in Europe. To sum up, we are killing what feeds us. So it's essential that we pay as much attention to the importance of insects as we do to all other species in the animal kingdom.

OVER 40% OF OCEANS ARE THREATENED

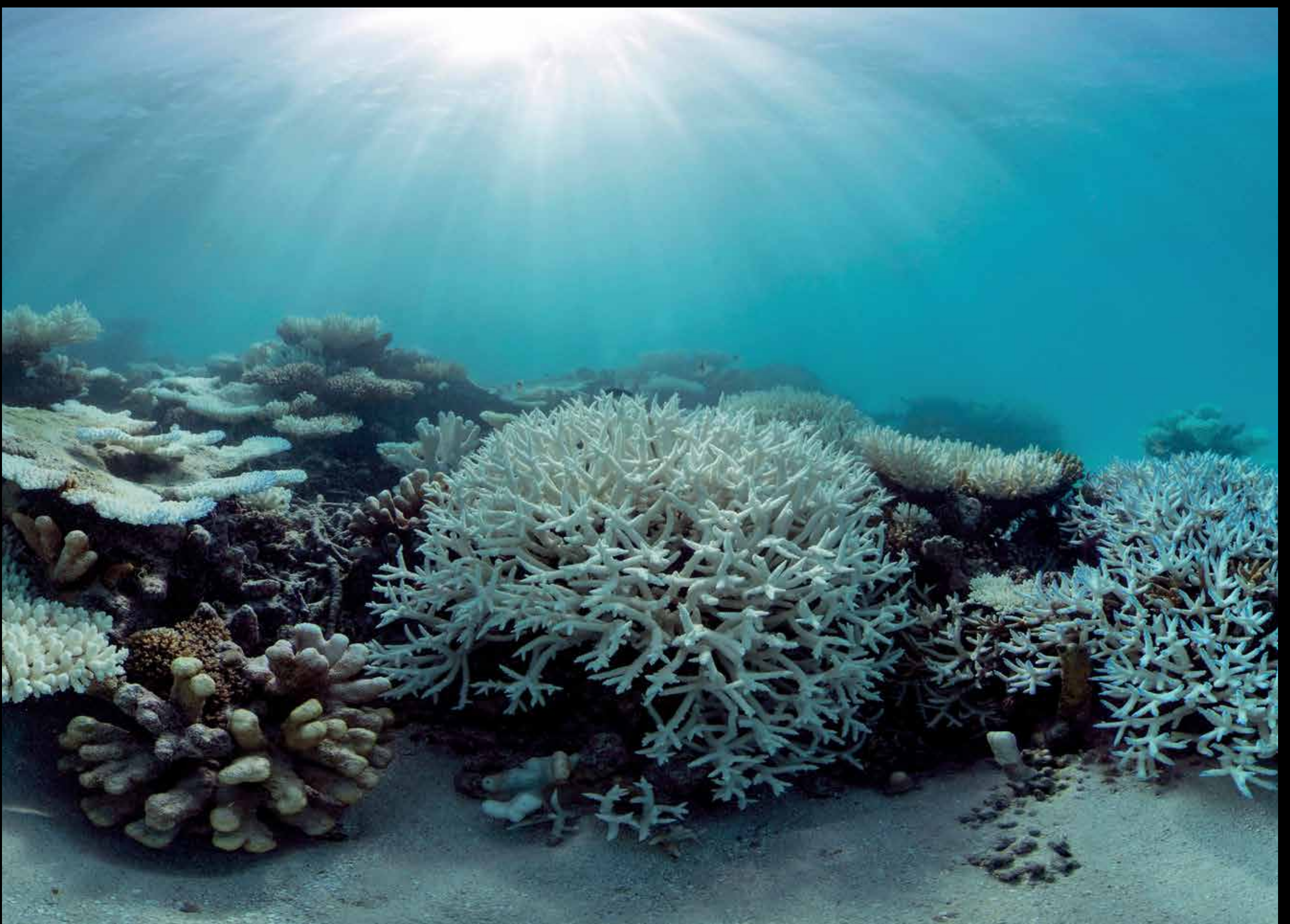
Fishing represents the most important threat to marine biodiversity.

Already, 33% of fish stocks are overfished and 55% of the ocean's surface is subjected to industrial scale fishing.

Ocean pollution and the destruction of the coastline also constitute a serious danger. Coastal waters contain the highest levels of metals and organic pollutants from industrial and agricultural releases.

The CO₂ emissions responsible for global warming further cause ocean acidification, directly threatening tropical coral reefs and every shellfish species, like molluscs. Even if the global warming worldwide is limited to 1.5°C, 70 to 90% of coral reefs will disappear, rising to over 99% if this worldwide warming reaches 2°C. Climate disruption may also cause a reduction in the total weight of fish by 3 to 25% by 2100, not counting any overfishing.

Lastly, plastic pollution has been compounded since 1980. It now threatens at least 86% of sea turtles, 44% of sea birds and 43% of marine mammals. The plastics ingested by fish also affects humans through the food chain.



The CO₂ emissions responsible for global warming also trigger ocean acidification, directly threatening coral reefs.

Even if the global warming worldwide is limited to 1.5°C, 70 to 90% of coral reefs will disappear and even over 99% if this warming reaches 2°C.



Manta ray

Mobula birostris

Conservation status :

Endangered.

Major causes of decline :

The main threat is factory fishing that kills or wounds these animals. The manta ray mates in shallow water lagoons. This is a natural habitat that is largely damaged, threatening population replacement.

Conservation efforts :

The species is protected in a dozen countries. However, fishery related inspections are very limited.



Common bottlenose dolphin

Tursiops truncatus

Conservation status :

Least concern.

Major causes of decline :

There are still around 600,000 individuals of this species. The bottlenose dolphin, found in temperate and tropical waters around the world is the victim of the factory fishing nets that it gets caught up in. It suffers from contamination through sea pollution, by ingesting micro plastics or fish poisoned by toxins. Tour boats also affect its survival.

Conservation efforts :

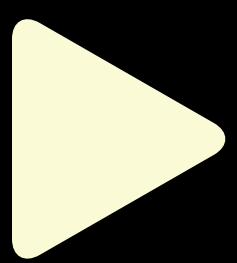
Since 1966, this species is protected from recreational fishing by the international conventions adopted in some Eastern European states and Russia.

THE MER DE GLACE (SEA OF ICE) IS DISAPPEARING BIT BY BIT

Visible above Chamonix, on the northern face of the Mont-Blanc mountain, the Sea of Ice is France's largest glacier. It now covers a surface area of some 30 square kilometres and is 11 kilometres in length. Its maximum thickness is 350 metres (the Tacul glacier).

Since the second half of the twentieth century, the Sea of Ice is receding at an ever faster rate. In 1870, the glacier's edge could still be seen from Chamonix. Today, you need to take the Montenvers train and climb to an altitude of over 1,900 metres to see it up close. Scientific studies show that the main reason for the edge line receding is the rise in temperatures due to global warming. Due to the action of these unusually high temperatures, the ice is inexorably melting. Since 1860, when the first photographs were taken, the thickness of the ice at Montenvers has been reduced by some 270 metres and it all started to speed up after 1990. The glacier lost 160 metres in thickness at Montenvers between 1990 and 2022 and is down to a thickness of just 30 metres at this location. This is not counting the fact that every year, it shrinks on average by some thirty metres in length (-25 metres in 2022, -12 metres in 2021, -58 metres in 2020!).





You know that the surface temperature on our planet is rising, much as on my tie.

Climate scientists agree that this is caused by the insulating layer that we are building up each day with emissions of CO₂ and other gases that trap the heat close to the earth's surface.

Each time we burn another kilo of carbon, contained in gas, oil, coal or wood, we release nearly four kilos of CO₂ into the atmosphere. Now this carbon can be hidden away in energy or in the products that we consume.

CO₂ lets solar radiation enter the climate system, but makes it very difficult for the invisible heat emitted to escape into space from the earth's surface. It works just like heat insulation.

Altogether, each year, human activities release some forty billion tons of CO₂ into the atmosphere. Luckily for us, forests, vegetation, the earth and the ocean together absorb almost half of our emissions. The other half accumulates in the atmosphere.

Due to this thickening layer of heat insulation, the global average temperature has already risen by more than 1.1 degrees Celsius since the 19th century. This is speeding up the climate system, multiplying or reinforcing extreme events like heatwaves, violent storms or drought and forest fires.

Our disordered climate is starting to affect wildlife, ecosystems, agriculture, human health and infrastructures.

The good news is that the reports from the IPCC, the United Nations panel of experts, are full of solutions for removing carbon from our economies and lifestyles.

And we know what works. The least polluting and also the cheapest form of energy is the one we don't need. Sobriety is the key. For example, we can avoid flying whenever possible. In the same way, energy efficiency in buildings and transportation is essential. Anyone can choose a green energy supplier.

Cycle paths and public transport, especially trains, will play a major part in reducing our climate and environmental footprint.

Eating less meat and more plant produce is good for the planet. If we're lucky enough to have some savings, then it's also very important to invest them in a truly sustainable way.

The future is in our hands.

WHAT IS THE CARBON FOOTPRINT?

The carbon footprint is the amount of greenhouse gases linked to the consumption of goods and services by a person or a group of people. This link may be a direct one, e.g. by using heating oil or gas to heat a home, or an indirect one, through the purchase of something produced with energy from fossil fuels.

As only about half the CO₂ released by human activities is recycled by plants, the land and the oceans, the other half accumulates in the atmosphere at the rate of some twenty billion tons every year. It will only be possible to stop global warming once the amount of CO₂ in the atmosphere stops rising. To achieve this, human CO₂ emissions need to fall to a level low enough that they no longer exceed the Earth's natural absorption capacity.

This is what is called carbon neutrality. To not exceed 1.5°C of warming, this worldwide carbon neutrality needs to be reached no later than by 2050 and emissions of other greenhouse gasses need to be severely reduced as well.

This is the more ambitious goal set by the Paris Agreement. Assessing our carbon footprint is important so that we are able to reduce our role in climate change.

10.19 tons per person of greenhouse gases

(an average expressed as the equivalent amount of CO₂) Belgium – 2019

Transport

2,27



Energy sector, including electricity

1,83



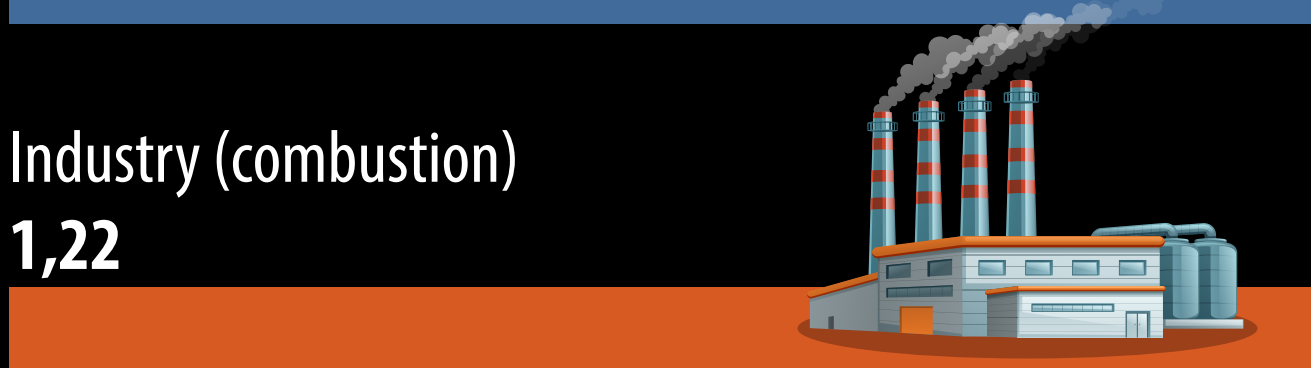
Industry (processes)

1,77



Industry (combustion)

1,22



Residential heating

1,37



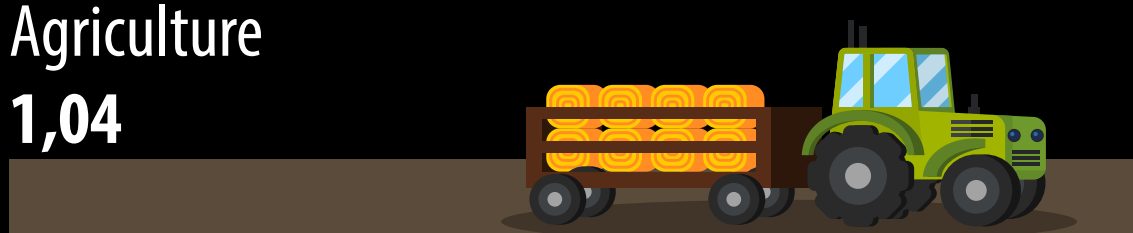
Business heating

0,50



Agriculture

1,04



Waste

0,12



Other

0,7



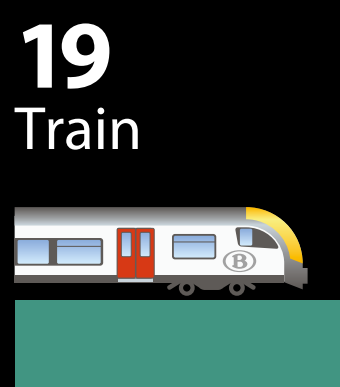
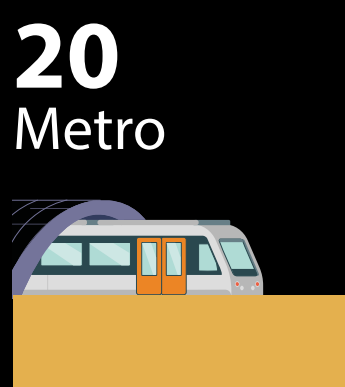
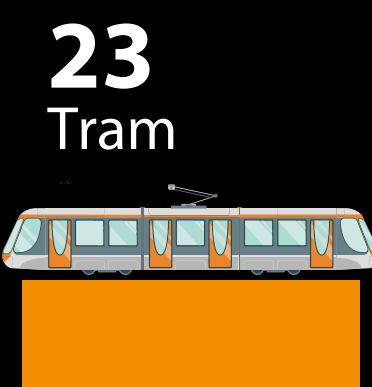
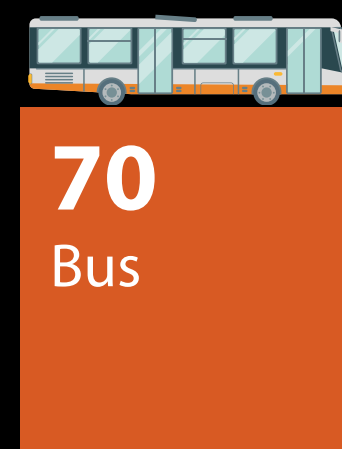
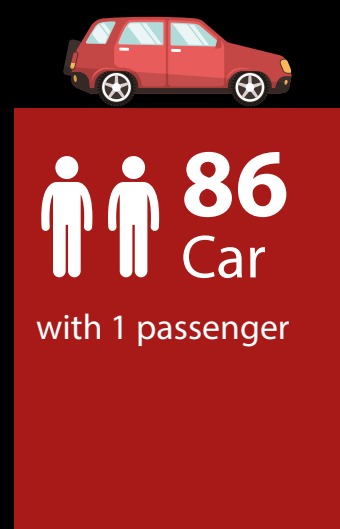
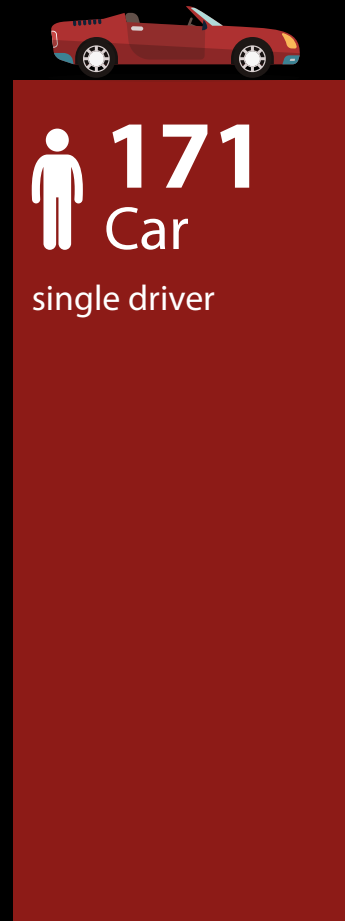
These figures only reflect emissions in Belgium itself. The total carbon footprint would be increased by nearly 50% if we were to make allowance for the emissions of the products that we import.

Source: www.climat.be



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Source: www.climat.be



Source: facteursdemissionco2.be

WHAT IS CLIMATE DISRUPTION?

Climate disruption is a long term change in temperature, in rainfall, in snowfall, in wind patterns. The Earth's climate is the result of a balance between the amount of energy received from the Sun and the amount of energy released into space. Any change in this fragile balance may lead to changes that threaten biodiversity. Since the beginning of the industrial revolution, we have burnt more and more fossil fuel (coal, oil, gas) and wood. Since the 1950s, human activity has therefore become the primary cause of climate change.

This combustion produces carbon dioxide - CO_2 -, a greenhouse gas that is the primary cause of climate disruption. This gas lets the sun's rays pass, but makes it difficult for the heat released by the Earth to escape.

CO_2 stays in the atmosphere for a very long time. Its proportion in the earth's atmosphere has increased by 50% since the industrial revolution. Other greenhouse gasses, like methane, reinforce its effects.

These two animated presentations show, first the increase by year in the amount of CO_2 in the atmosphere since 1850 and, secondly, the rise in the Earth's average temperature over the same period.

If nothing changes, the climate could well heat up to levels unprecedented in human history, making the Earth less liveable. Heat waves, droughts, violent rainfall, intense cyclones all become more frequent. Between the early twentieth century and the present day, the sea level has already risen by 20 cm.

If this warming is not controlled, serious environmental, social and economic consequences will ensue.



The giant tortoise of the Seychelles

Aldabrachelys gigantea

Conservation status :

Vulnerable.

Major causes of decline :

Only one population, comprising some 100,000 individuals, subsists on Aldabra atoll (in the Seychelles). The high degree of endemism makes the population highly vulnerable. This giant tortoise is threatened by human development along the coasts of this atoll.

Conservation efforts :

The giant tortoise is one of the oldest protected species (since the 19th century). Assisted reproduction programs and return to the wild for individuals born in captivity, all with mixed results.



Yellow-eyed pigeon

Columba eversmanni

Conservation status :

Vulnerable.

Major causes of decline :

10,000 to 20,000 individuals of this species are living in Asia. Intense hunting in China, the destruction of its forest habitat in Kazakhstan and the transformation of land into rice and wheat growing areas (in India), are all causing this species' natural habitat to disappear.

Conservation efforts :

Some fifteen habitat areas are protected in China and a sanctuary has been created in India, in Punjab.

TRAINS AND MOBILITY:

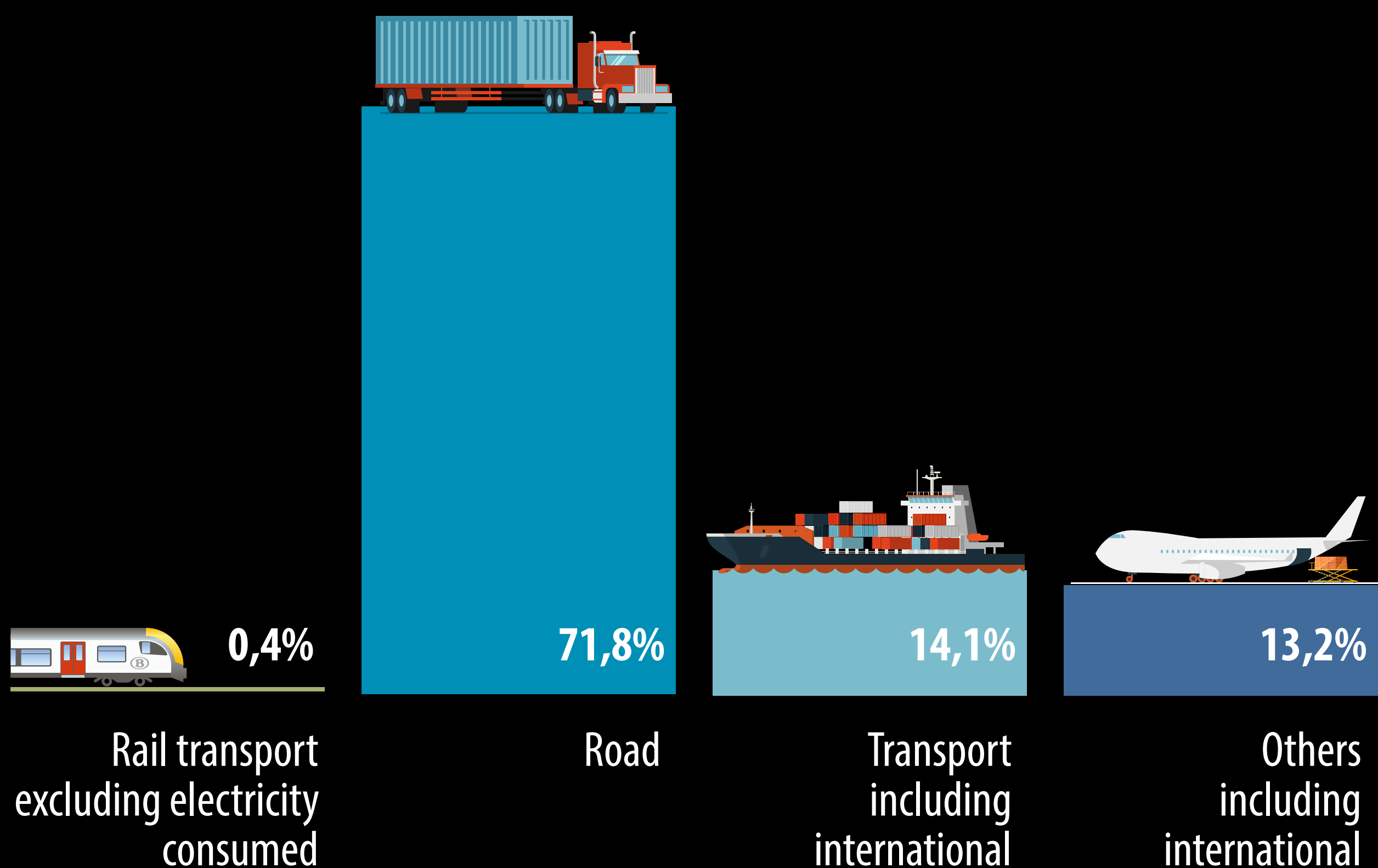
a choice made for the environment and climate

Fast and safe mobility

There isn't a car that can equal the speed and comfort of Intercity services that reach speeds of 200 kph on high speed lines and that run at 120 and 160 kph on some mainlines. As for high speed trains, they run safely at 300 kph.

Railways are sustainable

Greenhouse gas emissions from transportation | EU-27 – 2018



Bron - Source: Statistical Pocketbook - 2020

Uses less energy

Steel wheels on steel rails generate less rolling resistance than tyres on the road. Hence trains are more energy efficient than cars or planes.



TRAIN AND MOBILITY: A CHOICE MADE FOR THE ENVIRONMENT AND CLIMATE

Pollute less locally

The train is environmentally friendly. 90% of the rail network is electrified *. Electric traction generates very little local air pollution.

* In Belgium, the electricity used for the train comes largely from nuclear energy. However Infrabel, with other partners, is involved in the production of green energy (wind turbines, solar panels).

Carry more in less space

The capacity of a railway line in a peak situation corresponds to that of a motorway with two times three traffic lanes. This type of expressway is easily 35 m wide, while the average dimension of a railway line is only 15 m, i.e. 2.3 times less.

Source: The advantages of the rail mode – SNCF, 2019

No traffic jams and parking problems

Another advantage of the train: it does not create queues and parking problems in city centers.

Intermodal mobility

In our interconnected world, we choose our modes of transport, where, when and how it suits us. With its partners, SNCB offers, starting at its stations, a wide range of modes of transport and sustainable travel.



WHAT CAN WE DO AGAINST CLIMATE DISRUPTION?

Everyone can act! Insulating buildings, using cars and planes only moderately, preferring remote working, low impact mobility (bikes and walking) and using public transport all allow us to use less fossil fuels (coal, oil and gas) thereby reducing CO₂ emissions.

We should also reduce our consumption of meat, especially red meat, in favour of vegetables, preferably local ones in season, where possible. Everyone should pay more attention to the carbon footprint of the products consumed, and to savings, that should preferably be directed towards durable goods.

Political decision-makers have the immense responsibility of making these actions easier, making them cheaper by taking the structural measures needed to make these individual actions more affordable, to leverage them and to reinforce them.

Economic players too must face their responsibilities : doing business in an environment under threat makes no sense. Keeping the planet liveable should be part of a company's mission and the «polluter pays» principle should become the norm. The authorities need to act accordingly and ensure that this policy does not widen the gap between rich and poor. Many economists have shown that a part of the revenues from taxing pollution could be used to lower taxes on low incomes.



Nile crocodile

Crocodylus niloticus

Conservation status :

Least concern.

Major causes of decline :

Some 60,000 individuals remain in Africa, primarily in those areas where the species is protected. The number of Nile crocodiles is small but stable, which explains why the threat of extinction is currently minor compared with other species.

This species is especially threatened by hunting to protect farms and to use its skin transformed into luxury products.

Conservation efforts :

Since hunting was partially banned, thanks to international conventions in the 1960s, the survival of this species remains conditional on protecting its natural environment, that humans tend to colonise, so that they can set up their farms.

NMBS/SNCB, GREEN AHEAD OF ITS TIME

Now that many other forms of transportation, including cars, have recently started presenting themselves as green, environmentally compliant ways to travel, NMBS/SNCB has for decades now highlighted the indisputable advantages of trains when it comes to sustainable mobility. Here are some posters published by NMBS/SNCB since the 1970s, to highlight trains as energy economical and more respectful of our environment than other modes of transport.

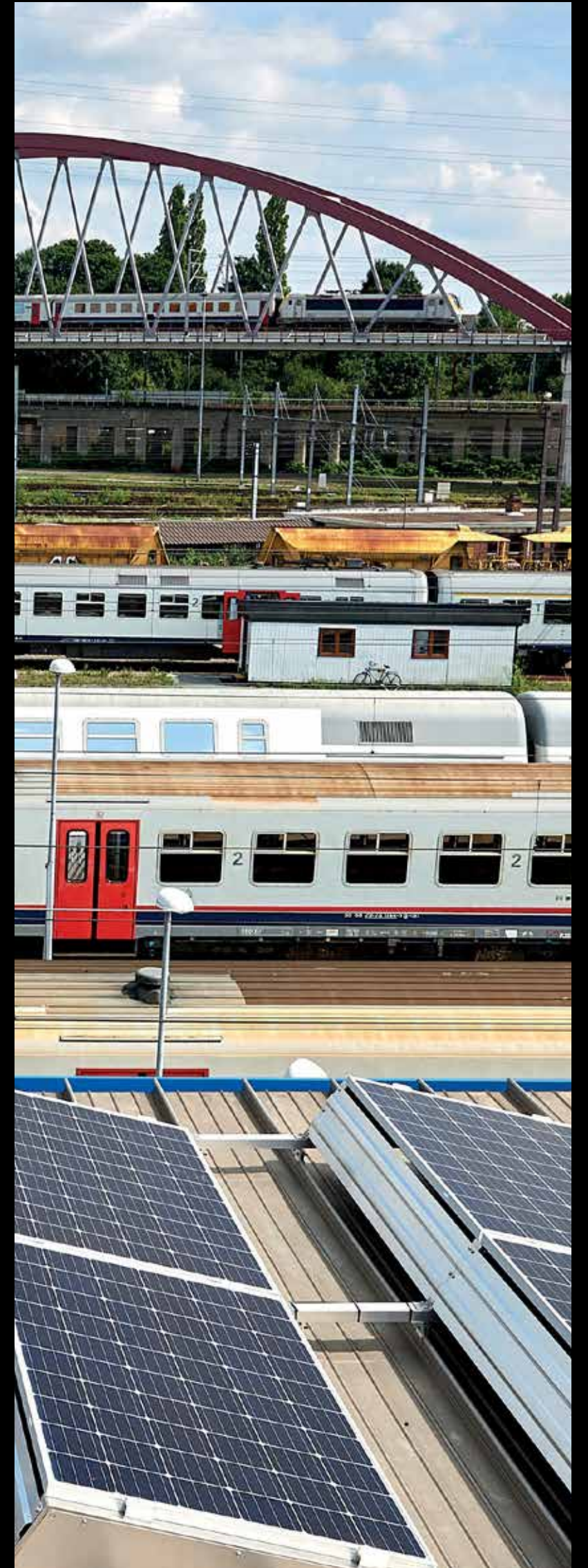
Carrying sustainably, working sustainably

Our way of life puts plenty of pressure on the environment and the climate through fossil fuel consumption and the enormous rise in travel.

There is however one sustainable form of mobility: the train! Trains use energy efficiently, emit few greenhouse gases. Compared to the number of passengers carried or the volume of goods moved, a railway line also takes up less space than a road. These benefits make trains the ideal environmentally friendly form of transportation for more sustainable mobility. This is why SNCB, Infrabel, Thalys, Lineas and the other railway operators fully encourage rail transport. But SNCB and Infrabel's ambitions don't stop there. They have set out exacting targets so that every day, the way they work fits into a dynamic trend that shows respect for the environment & the climate.

In practice, the aim is to further reduce the use of raw materials and consumables, to encourage the circular economy, to restrict noise and vibration disturbance, to protect the fauna and the flora and to continue efforts to clean up the ground.

SNCB and Infrabel are not only breathing fresh air into our mobility but the entire railway sector is also contributing to a more sustainable society.





Nothing is lost, nothing created, everything is transformed. What is upcycling?

Upcycling means to recycle upwards. The idea behind this concept is to increase the life cycle of objects. We live in a society of 'over-consumers'. We discard some things just to replace them with identical ones, and planned obsolescence is part of our daily lives. With upcycling, materials or products slated for destruction are recovered for re-use, and therefore a second life.

This can mean repairing objects, rehabilitating them or transforming them.

In 2020, NMBS/SNCB began to develop a policy intended to limit its production of waste, in particular by encouraging the re-use and recycling of some waste products. In this way, it intends to contribute to the circular economy.

Railway activities generate a significant amount of waste. For instance, NMBS/SNCB generates around 20,000 metric tons of waste a year. 40 to 50% of which is re-used in some way. Some of these waste materials may constitute a resource for partners specialised in upcycling. For this reason, NMBS/SNCB has undertaken to identify such companies or NGOs.

Further to talks, prototypes of upcycled products have been produced, for instance by nonprofit organisation ASBL Recyclart and Trait Déco and environmentally responsible interior-decorating company. After supplying feedback, NMBS/SNCB has decided to have a number of upcycled items manufactured, which are on display for the first time at Train World.

OBJECTS

Bookends

These bookends are made from rail brake pads taken from NMBS/SNCB rolling stock and a piece of 2- mm repurposed sheet steel.

Lantern lamp

This lamp is made from an old NMBS/SNCB lantern fitted with a LED strip and opaline light-diffusing perspex. The base is made from repurposed steel. A new electric cable and switch have been added. Powder-coated finish in matte black.

Headlight lamp

This lamp is made from a repurposed headlight from an NMBS/SNCB train with an E14 clear mini-globe bulb. The base is made of repurposed steel profiles. The lamp's hand adjustable swivel system uses repurposed springs. A new electric cable and switch have been added. Powder-coated finish in matte black.

Pantograph bench

The design of this bench incorporates pantograph strips from NMBS/SNCB rolling stock and repurposed 20 mm steel. The pantograph strips are bolted using safety nuts. The frame as a whole is varnished and powder-coated in matte black. The seat is made from repurposed solid glulam oak with a glazed finish.

Side table

The top of the Side table is an old NMBS/SNCB 42 cm diameter station clock with a matte black powder-coated finish on repurposed steel tubes and panels. Safety glass and seal.



These unusual items were made by the teams at Recyclart Fabrik. The Recyclart Fabrik workshops are professional rehabilitation workshops located in Molenbeek, which offer work experience to people who have been cut off from the labour market. Each year, the Recyclart Fabrik supports and trains some 20 Brussels residents in carpentry, metal construction, infrastructure management or waste management. As well as making items to order for customers of all kinds, the workforce take part in the design and manufacture of upcycled items of all kinds such as the ones you see now.



SOLAR PANELS ON THE ROOF OF TRAIN WORLD

Train World requires a great deal of energy. In 2021, it consumed around 730,000 kWh of electricity, i.e. the equivalent of some 146 metric tons of CO₂ emissions.

In 2017, NMBS/SNCB had 865 solar panels installed on the roof of the modern building of Train World.

The area of this facility is 1,436 sq. metres and it produces an average of 230,000 kWh of green electricity per year. The museum's solar panels cover about one-quarter of its electricity requirements, which saves around 40 metric tons of CO₂ emissions annually. Train World's solar-power generation is equivalent to the annual consumption of 60 four-person households. The panels also cut the operating costs of the museum, which houses NMBS/SNCB's most magnificent trains.

Like the solar panels installed in 2017 on the roof of the Schaerbeek train-maintenance workshop, the Train World panels are the result of a collaboration between the railway company and Engie. NMBS/SNCB made the roofs of these buildings available to private investor and power company Engie for ten years. Besides supplying the investment, Engie guarantees power generation and performs maintenance on the facility. In return, Engie is awarded green certificates.

For its part, NMBS/SNCB purchases the green electricity generated on the roof of its museum at advantageous prices, and will become the owner of the solar panels at the end of ten years. The panels will then continue to generate green power for at least 15 years.



Leopard

Panthera pardus

Conservation status :

Vulnerable.

Major causes of decline :

Once upon a time leopards were widespread in Africa and Asia. However its shrinking natural habitat - forests and savannah - has eroded its chances of long term survival.

Hunted by human populations, the leopard is also threatened by the illegal trade in its superb skin and its bones, supposedly endowed with medicinal virtues.

Conservation efforts :

Leopards can still be shot if they threaten livestock. This situation becomes a more frequent one as its habitat shrinks. Leopard skin trophies are still permitted in eleven African countries.



White cockatoo

Cacatua alba

Conservation status :

Endangered.

Major causes of decline :

Species only found in Indonesia. The white cockatoo is under enormous threat due to trade in this bird sold as a pet. The number of specimens taken from the wild is twenty times higher than the permitted quota, due, amongst other reasons the exploding demand via social media. Additionally, its natural habitat is seriously threatened by intense deforestation caused by agriculture, mining and timber exports.

Conservation efforts :

The Indonesian government has mapped out protection areas and set up hunting quotas, but these measures are rarely complied with.

Reintroducing the species could be a solution in the future.



* Ecologically yours



* I consume less, I pollute less

SNCB, green ahead of its time

Many means of transport, including cars, have recently begun to present themselves as green and environmentally friendly. For decades, SNCB has been promoting the undeniable advantages of trains in terms of sustainable mobility.

Here are some posters published by SNCB since the 1970s, to highlight trains as more energy economical and more environmentally friendly than other modes of transport.

Green railway sleepers

Infrabel installs the first green railway sleepers in Europe thanks to sulphur concrete. The advantage of sulphur compared with cement is three fold: its production produces up to 40% less CO₂ emissions and the newly created material is completely recyclable. Further, the sulphur that is usually considered as waste from the petroleum industry can be reused. Infrabel has ordered 200,000 sleepers, thereby becoming the first railway infrastructure manager in Europe to make their sleepers more environmentally friendly. These sulphur concrete sleepers were developed by a company called De Bonte. This Belgian family company has a solid track record making concrete products. Thanks to this world's first, the De Bonte Group is investing in a future with greener and more environmentally friendly mobility.

Cushions signed by Infrabel

The cushions in this area are created from clothes discarded by Infrabel staff members. This is a great example of upcycling, born of a partnership between the adapted workshop called l'Ouvroir in Brussels. Upcycling means to recycle upwards. Our goal: to make our business even more sustainable by encouraging the circular economy. For our work clothes, and also for other materials like ballast, rails, etc. Let's preserve our resources to build tomorrow's sustainable mobility.

There is no planet B, but there is a plan

As a socially responsible company, NMBS/SNCB has developed an ambitious corporate social responsibility (CSR) plan for the next ten years. It is built around ten pillars: energy, autonomous accessibility, water, waste, diversity and inclusion, procurement, cleaning land, mobility (of staff), building for tomorrow and concessions. This film briefly presents to you what each of the pillars entails and our goals for each one of them.

Infrabel's environmental strategy

With its environmental strategy, Infrabel aims to make the railway sector a key part of the sustainable mobility network. In our business, we as a company commit to showing respect for the environment and the climate and to reducing our impact in this area. Infrabel takes into consideration the expectations of its internal and external stakeholders and feels that it is important to raise the awareness of its staff regarding environmental protection and changes in society. By integrating durability into our commercial strategy and everyday processes we also contribute to the United Nations Sustainable Development Goals. This video presents Infrabel's ambitions in favour of the environment and the climate!



Barbary lion

Panthera leo

Conservation status :

Vulnerable.

Major causes of decline :

The species has seen its populations fall by 40% in just a few decades and has disappeared from Europe (the Mediterranean region) and from India where they were present during the last century. Mainly hunted by humans, the loss of wild prey and the fragmenting of its natural habitat accentuate its risk of extinction.

Conservation efforts :

The lion's habitat, now mainly savannah, is preserved in many parts of sub-Saharan Africa. The species is protected by international conventions. Education programs aim to change fear of this species into a source of wealth through tourism.



Chacma baboon

Papio ursinus

Conservation status :

Least concern.

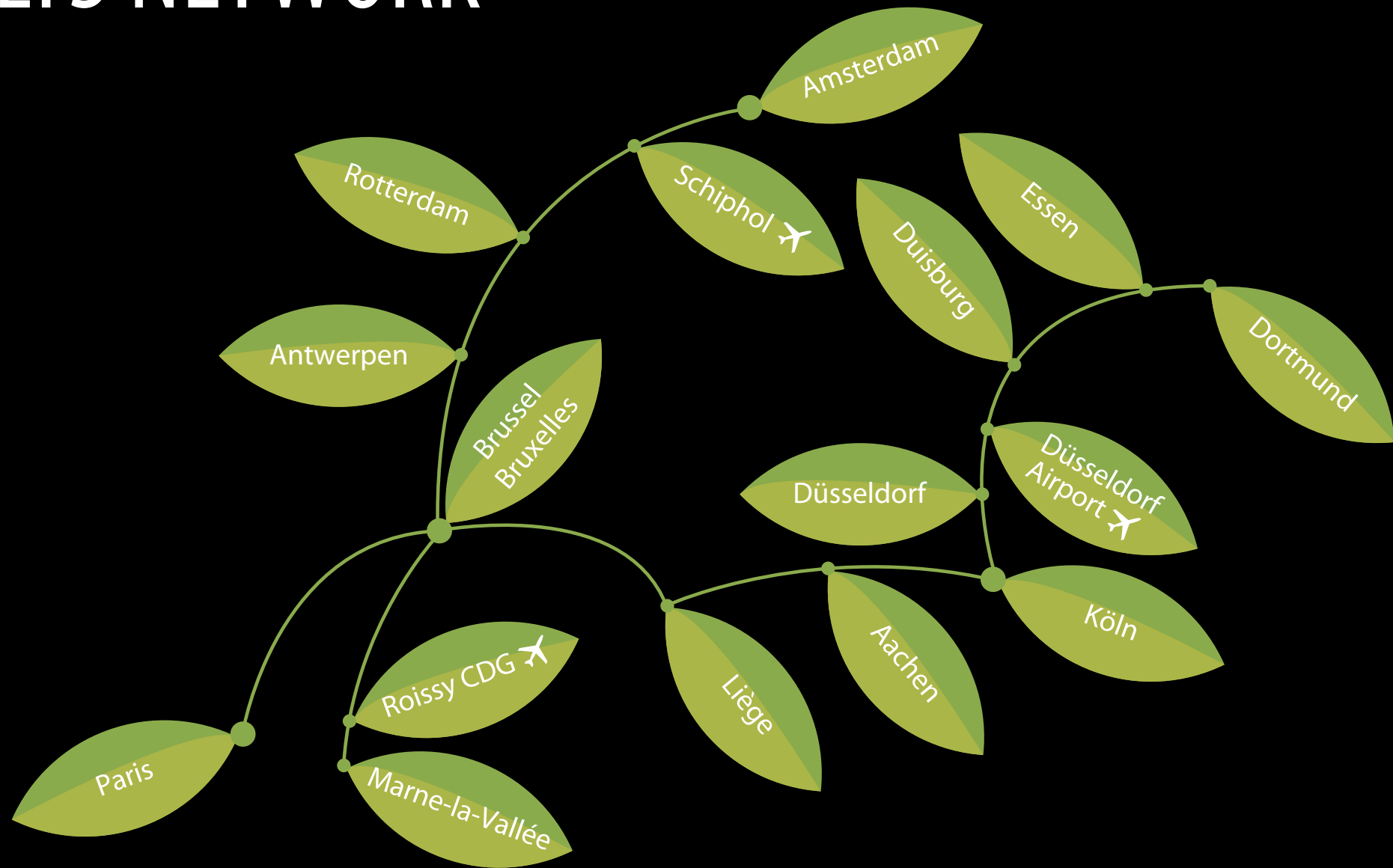
Major causes of decline :

Populations are split up by expanding agriculture as well as by other land use changes.

Conservation efforts :

None.

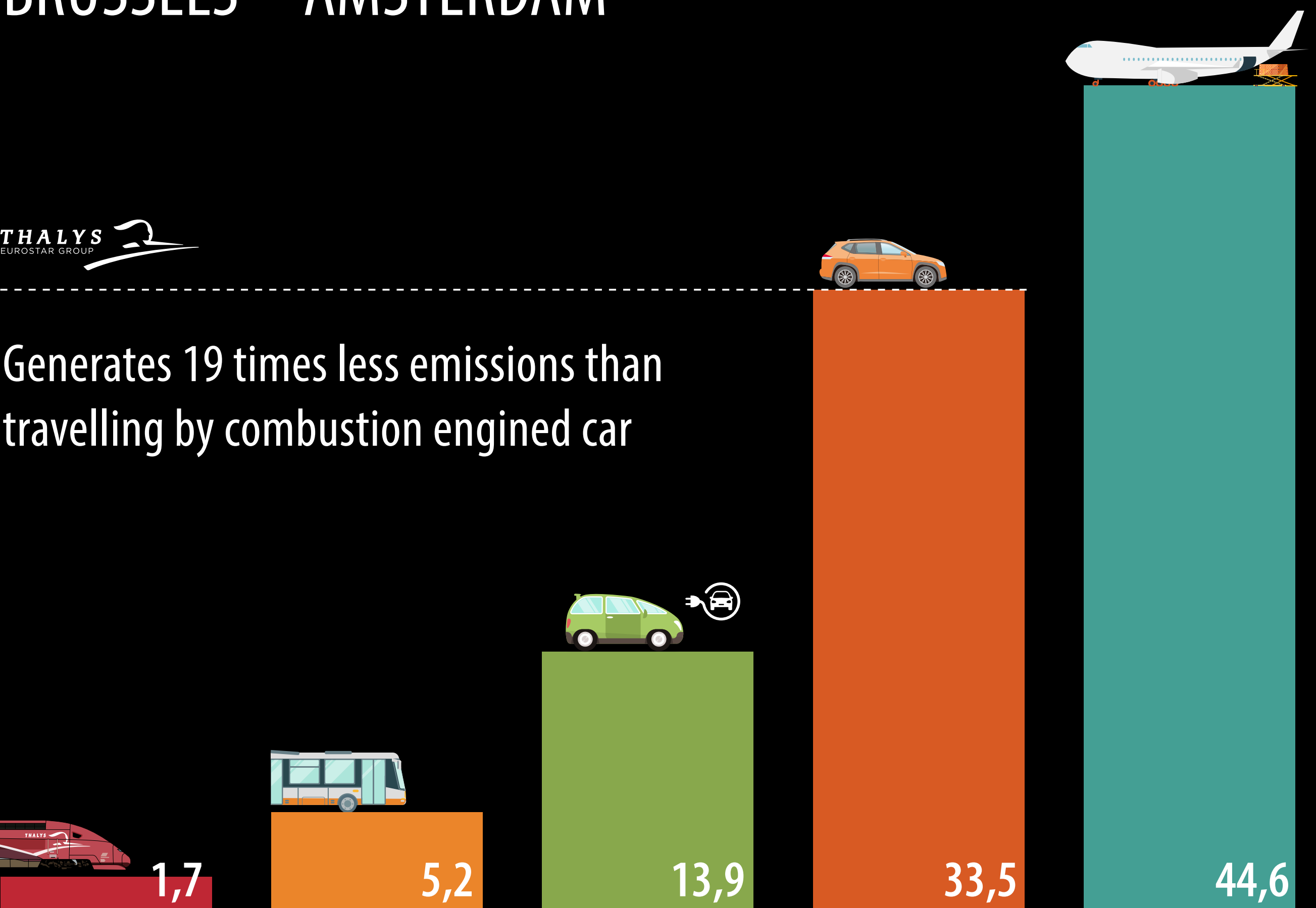
THE THALYS NETWORK



BRUSSELS – AMSTERDAM



Generates 19 times less emissions than travelling by combustion engine car

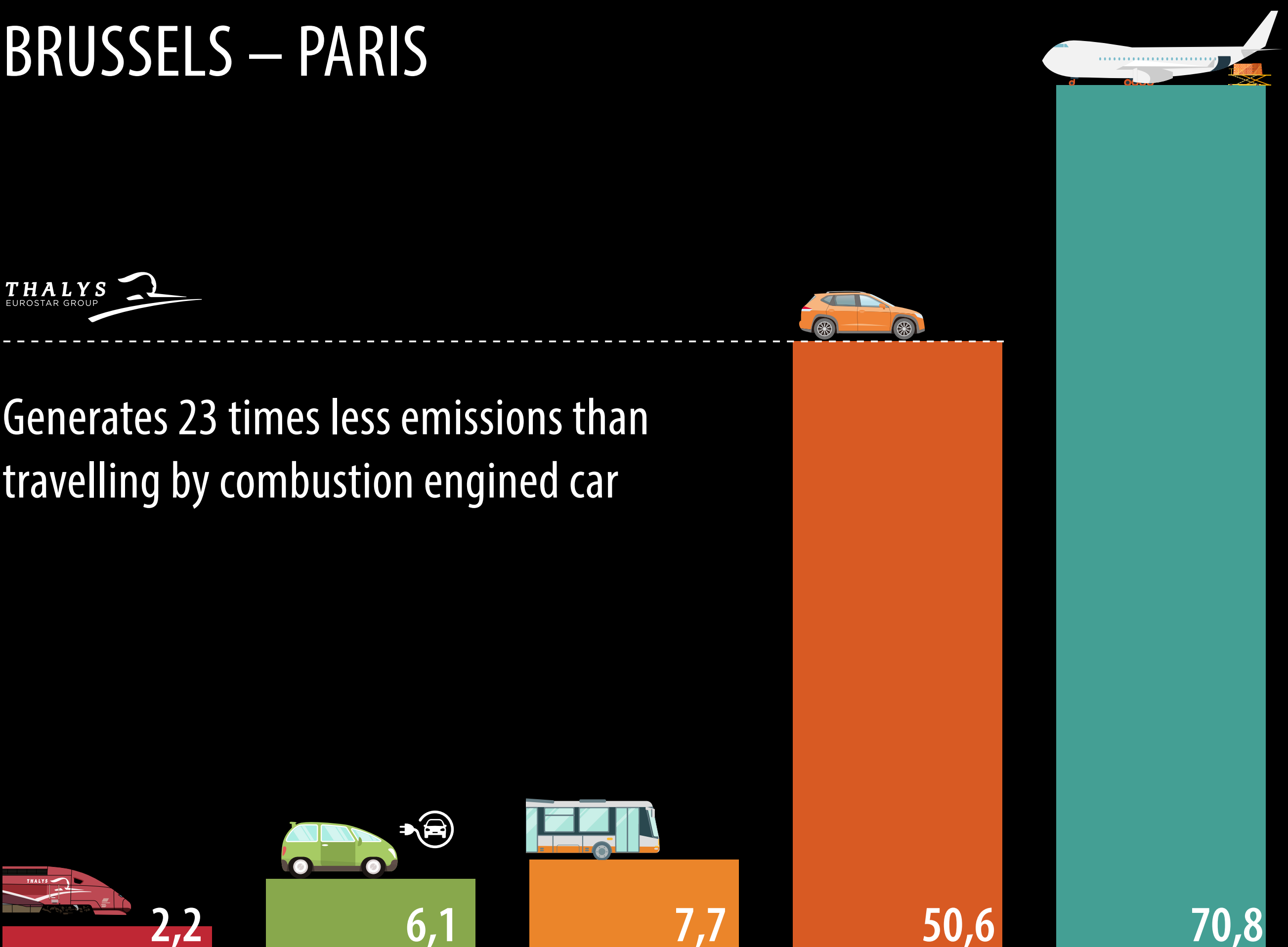


Values stated in kg CO₂e per passenger (e = carbon dioxide equivalent)

BRUSSELS – PARIS



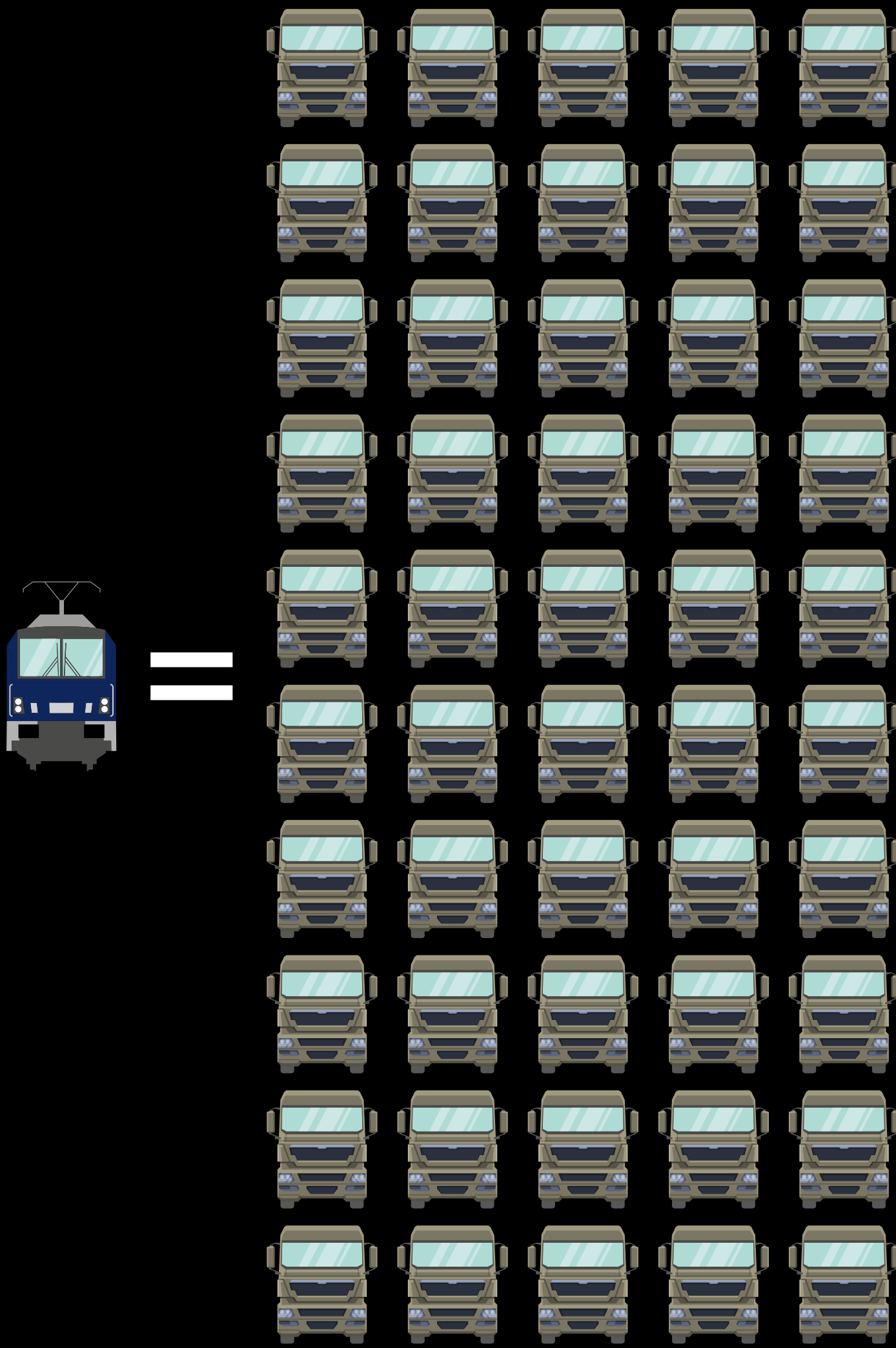
Generates 23 times less emissions than travelling by combustion engine car



Values stated in kg CO₂e per passenger (e = carbon dioxide equivalent)

WHY IS RAIL FREIGHT MORE ENVIRONMENTALLY FRIENDLY AND MORE ENERGY EFFICIENT?

The specific energy consumption per ton-kilometre is six times less for rail freight than for road haulage, primarily thanks to reduced friction levels and less resistance to air.



1 train = **50** trucks taken out of traffic jams



6 times less CO₂



8 times less atmospheric pollution



6 times lower energy consumption

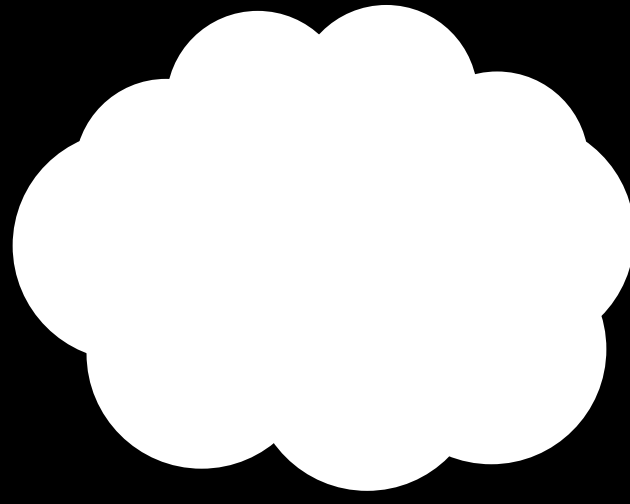
WHAT DO WE SEEK TO ACHIEVE?

In Belgium, we aim to increase the volume of rail freight by 16% by 2030.



90,000

less trucks every year



1.5

million tons less CO₂
every year



2,000

tons less fine particle
emissions every year

NOAH'S TRAIN

**The longest moving work of art to protect the climate.
*Did you see our beautiful Noah's Train container outside?***

In 2018, European Rail Freight operators launched Noah's Train.

A number of local street art artists produced the design of the containers to create the longest mobile art work in support of protecting the climate.

With this train, the aim was to draw attention to the European goal of transferring 30% of freight transport to the railways by 2030.





North Pacific right whale

Eubalaena japonica

Conservation status :

Endangered.

Major causes of decline :

This whale, hunted since the fifteenth century almost totally disappeared during the eighteenth and nineteenth centuries.

Today the species is threatened by illegal hunting and collisions with shipping.

Conservation efforts :

This species has been protected since 1948, but illegal hunting continues, sometimes intensely.