

ECOSYSTEM RESTORATION PLAYBOOK

A PRACTICAL GUIDE TO HEALING THE PLANET

Developed for World Environment Day 2021
To kick off the United Nations Decade on Ecosystem Restoration (2021-2030)



**REIMAGINE
RECREATE
RESTORE**
#GenerationRestoration



**WORLD
ENVIRONMENT
DAY**



UN
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**PAKISTAN
2021**



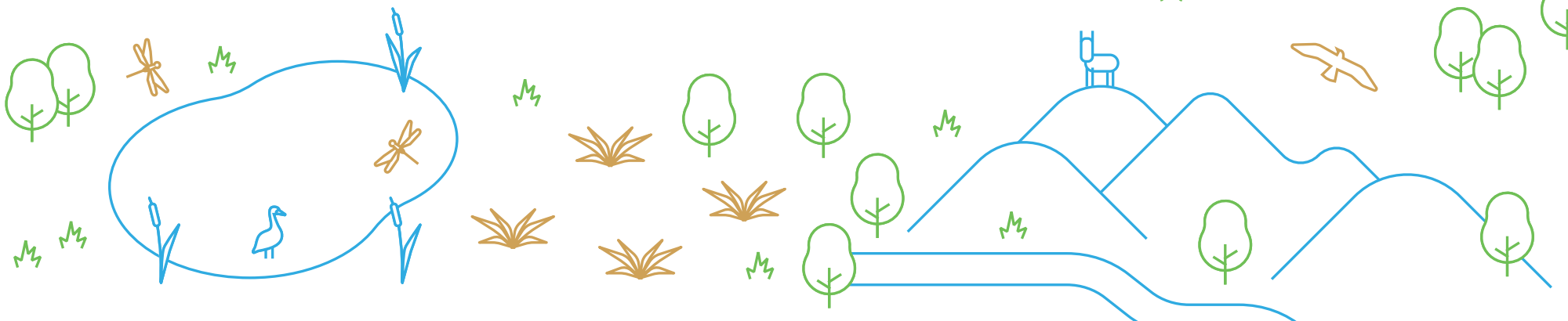
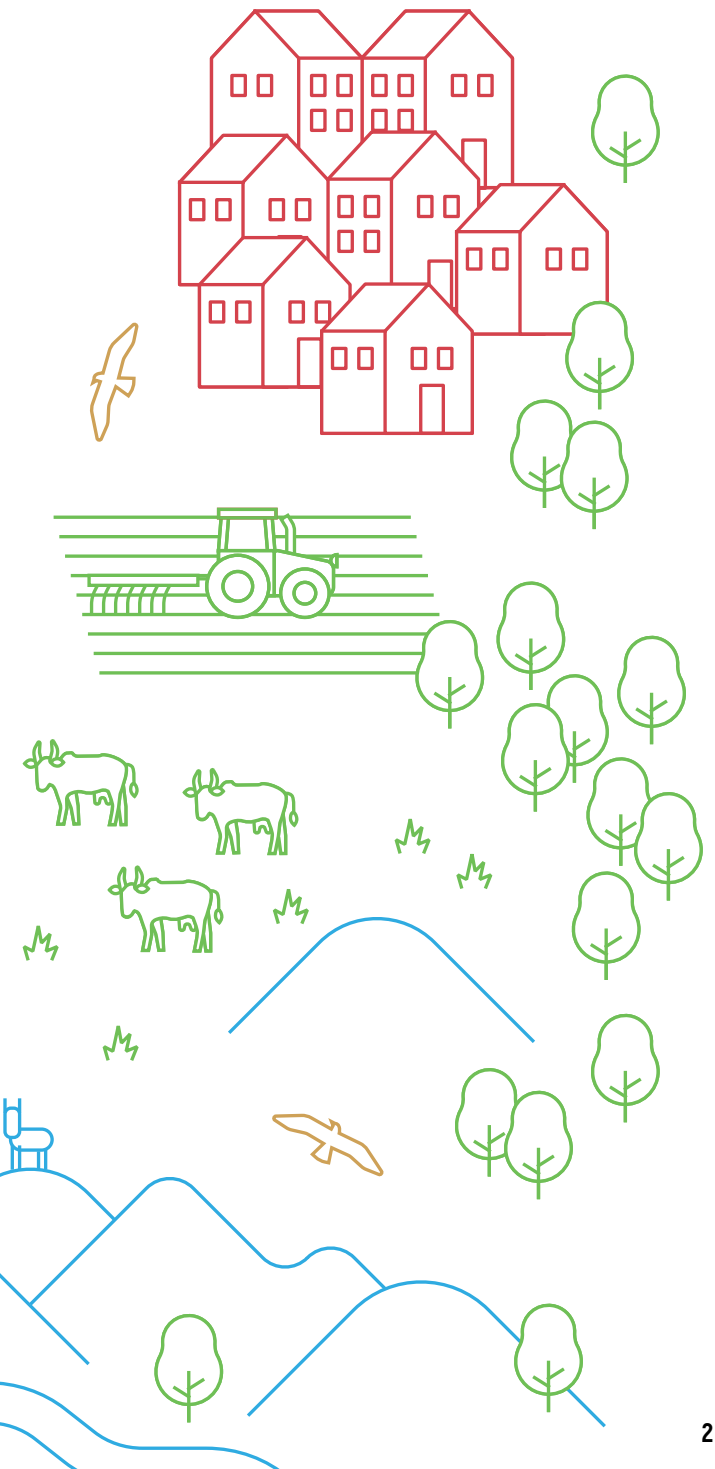
**Food and Agriculture
Organization of the
United Nations**

decadeonrestoration.org



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INTRODUCTION

Earth needs help. The climate emergency, the loss of nature and deadly pollution threaten to destroy our home and eliminate many of the millions of species that share this beautiful planet with us. But this degradation is not inevitable. We have the power and the knowledge to reverse the harm and restore the Earth – if we act now.

That is why the United Nations has declared the Decade on Ecosystem Restoration. Starting on World Environment Day 2021, individuals, groups, governments, businesses and organizations of all kinds can join forces in a global movement to prevent, halt and reverse ecosystem degradation and secure a sustainable future for all.

Ten years might seem a long time. But really, we are in a sprint. By 2030, we must nearly halve greenhouse gas emissions to prevent devastating climate change. Huge progress is needed to meet the Sustainable Development Goals, from eliminating poverty and fighting disease to safeguarding biodiversity. We need to bend the curve on biodiversity loss – a frightening trend that may lead to the extinction of 1 million species.

Healthy ecosystems are vital to meeting those goals. Restoring them is a massive challenge. But more and more people realize that we must change our ways and move urgently to protect and rebuild nature for the sake of future generations and out of love for the world we live in.

If you are ready to join #GenerationRestoration, this guide will show you how. It will help you to identify opportunities for on-the-ground restoration in your area and find partners and support. It will also show you how to relieve the pressure on ecosystems by changing what you do and what you buy, and by encouraging everyone to get serious about sustainability.

Find more about the UN Decade on decadeonrestoration.com and on social media under #GenerationRestoration. This movement has begun!



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JOIN #GENERATIONRESTORATION ON WORLD ENVIRONMENT DAY!

The UN Decade on Ecosystem Restoration is launching on World Environment Day 2021. Held every year on June 5, World Environment Day is the most important date on the calendar for celebrating our environment and ramping up global efforts to protect the planet.

This year, World Environment Day is dedicated to the protection and revival of precious ecosystems all over the world. This is the perfect moment to join #GenerationRestoration and power change for the better!

WHAT YOU CAN DO ON WORLD ENVIRONMENT DAY

This guide is designed to help you get involved in ecosystem restoration. It outlines three pathways to join the movement and improve the well-being of people and nature: taking action; making smart choices; and raising your voice for restoration.

Why not set off along one – or all – of these pathways on World Environment Day? Read through the guide for inspiration about how to get involved in the UN Decade. There are ideas for everyone, from individuals, communities and organizations to businesses and government agencies.

World Environment Day could mark the start of your ambitious multi-year restoration project, the day you kick unsustainable products out of your

life, or the moment you and others begin speaking up for the environment.

For example, you can take action by:

- Announcing an ambitious restoration project or policy initiative, whether at local, regional or national level – tell the world what role you will play in a ten-year push
- Volunteering for an existing restoration effort
- Cleaning up a lake, beach, park or other natural area
- Greening your home, business, school, or a public space with indigenous trees or plants

You can make smart choices by:

- Pledging a donation or other support for restoration or conservation initiatives
- Halting purchases of products and services that are not certified as sustainable
- Starting a new diet or catering policy based on seasonal, sustainable and plant-rich products

You can raise your voice by:

- Putting on or participating in an exhibition of posters, photos or art showing the beauty of local ecosystems
- Holding a discussion about the value of ecosystems and the threats they face
- Staging an online campaign to draw attention to climate change, nature loss and what can be done to reverse these trends
- Writing a letter to your local newspaper

Whatever you do, celebrate the moment and spread the word! Take pictures of your World Environment Day activities and post them on social media with the tag **#GenerationRestoration** and **#WorldEnvironmentDay** to maximize your contribution to the restoration movement. You can use resources from the UN Decade's visual identity on your website, social media or printed on a T-shirt or a sign. Read more about it in our brand guide.

While we want everyone to be able to celebrate World Environment Day and the UN Decade, respect any COVID-19 restrictions in place where you live, and move discussions and events online to keep everyone safe. Here are some considerations to keep in mind while you plan your celebrations:

- Visit the official World Environment Day website to stay up-to-date on the latest developments: worldenvironmentday.global
- Use the hashtag **#GenerationRestoration** to be featured on our Social Media Wall: decadeon-restoration.org/follow-generationrestoration
- Starting mid-April you can register your own World Environment Day event on the official site and read up on what others are planning
- Starting May, you will have access to social media assets, digital interactive tools and much more to help you spread the word around your plans in the leadup to June 5 and beyond

WHY ECOSYSTEMS ARE SO IMPORTANT

Ecosystems are the web of life on Earth. An ecosystem comprises all the living organisms and the interactions among them and with their surroundings in a given place. They exist at all scales, from a grain of soil to the entire planet, and include forests, rivers, wetlands, grasslands, estuaries and coral reefs. Cities and farmlands contain important human-modified ecosystems.

Ecosystems provide us with priceless benefits. They include a stable climate and breathable air; supplies of water, food and materials of all kinds; and protection from disaster and disease. Natural ecosystems are important for our physical and mental health, and for our identity. They are home to precious wildlife. For many, they are a source of wonder and spirituality.

All over the world, ecosystems face massive threats. Forests are being cleared; rivers and lakes polluted; wetlands and peatlands drained; coasts and oceans degraded and overfished; mountain soils eroded; and farmlands and grasslands overexploited.

Unless we change our ways and protect and restore our ecosystems, we will not only destroy the landscapes we love, we will undermine the foundations of our own well-being and bequeath a degraded, inhospitable planet to future generations.



HOW TO JOIN #GENERATIONRESTORATION

Restoring ecosystems means protecting their biodiversity and helping them to deliver benefits for people and nature. It means using ecosystems on land and in the oceans in ways that strengthen their natural resources and processes. Actions for restoration can also mean preventing degradation or reducing its extent.

Here are three great ways to get involved:

ACTIONS

Start your own on-the-ground initiative, join an existing restoration or conservation effort, or help build an alliance to give a bigger boost to nature's comeback.

CHOICES

Change your behaviour and spending to shrink your local and global environmental footprint and divert resources toward companies and activities that bring back nature instead of harming it. Encourage others around you to do the same.

VOICES

Make your voice and ideas count in debates about how to manage your local environment, and about how we can make our societies and economies fairer and more sustainable. Press decision makers to do the right thing.

But before you embark on any of the three pathways:

GET INFORMED!

Acquire a good understanding of the ecosystems that matter to you, what is really causing their decline, and how you can realistically help them to recover. In particular:

1. KNOW YOUR LOCAL ECOSYSTEMS

What kind of ecosystems are they? You can find the main types on the [UN Decade website](#). Which ones do people consider most valuable? What condition are they in, and how has that changed? Remember that relatives and neighbours with long memories may have as many insights as books or reports.

2. KNOW THE DRIVERS OF DEGRADATION

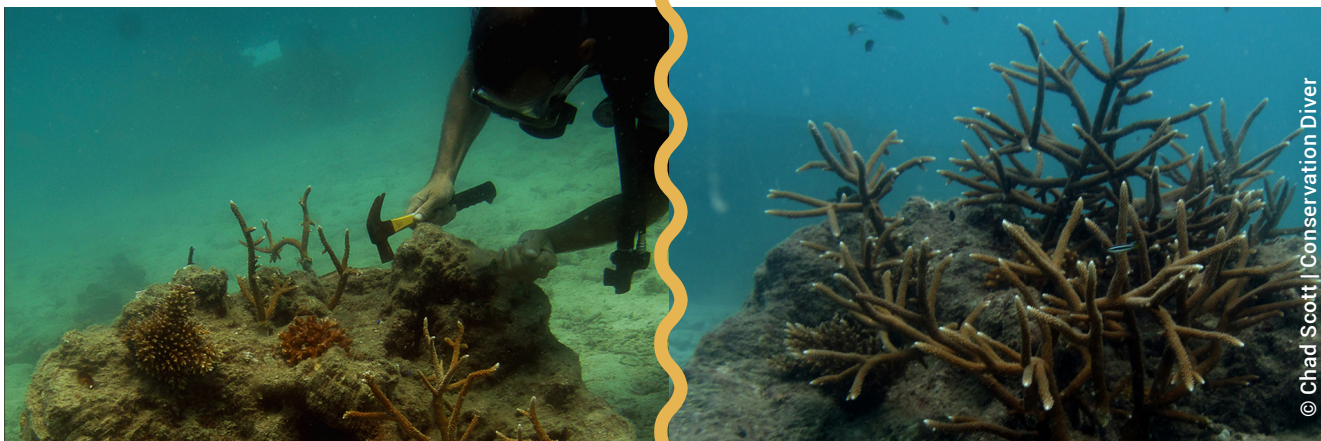
There might be direct causes, such as land conversion for agriculture or industry, or pollution. But underlying factors might be more important. These indirect drivers can include market forces, such as the demand for wildlife products, social factors, such as poverty, governance issues, such as lack of agreement on who can use which resources, and poorly enforced rules. Addressing them might require changes in government policy or business practices.

3. KNOW THE ANSWER

Once you have identified a degraded ecosystem and understood why it is under threat, think about how you can turn things around. What needs to change? How can you make that happen? What resources do you have? Who can help? Be ambitious but also realistic and remember that restoring an ecosystem can take a long time. Even small actions add up and every contribution matters!

Another way to learn about restoration before embarking on your own project is to volunteer with a local environmental organization or through a global portal.

- [Ecosystem Restoration Camps](#) offer the opportunity for local and global supporters to come together and jointly restore an ecosystem – one camp at a time. Camps follow local COVID-19 regulations in their operations.
- Are there restoration efforts near you that you could join?



USE YOUR STRENGTHS

Individuals, groups and organizations can join **#GenerationRestoration** through any or all of the three pathways. But all initiatives need to be grounded in local realities, and some strategies may fit better than others. Here are some of the ways to consider your next steps.

INDIVIDUALS

Your habits and consumer choices are in your hands, so do the right thing, and persuade your friends and colleagues to join in. Take part and speak up in private and public discussions about how to improve the local environment. Join, donate to or volunteer for an organization that is protecting and restoring nature. Learn about local ecosystems and what is ailing them. Restore your own balcony, roadside, yard or garden with planting and composting – it's an ecosystem, too!

FAITH LEADERS AND FAITH GROUPS

Many faiths have [clear teachings](#) about caring for the natural world. Promote them through sermons and discussions. Launch restoration projects that draw on the dedication and skills of different group members. Green any properties and land controlled by the community, including places of worship and remembrance. Be inspired by [what other faith groups](#) are already doing.

BUSINESSES

Apply your business skills and financial resources to a restoration project that benefits your local area or the places you impact through your work. Work with your staff to choose or design the project. Link with other like-minded enterprises to ramp up the scale. Green your procurement, production and distribution policies to reduce the footprint of your products and operations. Restore the ecosystem functions of your own premises.

WORKERS AND TRADE UNIONS

Launch and implement local and national initiatives to restore ecosystems that are important to workers and union members and ask employers for support. Campaign for the protection of workers whose livelihoods and health may be threatened by ecosystem degradation.

TEACHERS

Teach students about ecosystems, sustainability and the risks of environmental decline so they become the ecosystem stewards of the future. Put the concepts into action with restoration projects in the school compound and the local community, for instance to nurture trees, use compost, adopt a local ecosystem and prevent pollution. Use school trips to demonstrate the value of healthy ecosystems. [One Tree Planted's curriculum](#) provides ideas for teaching about restoration, from primary school to university.

YOUTH GROUPS

Stand up for your future by raising your voices so that policy makers hear the call to protect and restore ecosystems. Organize those discussions yourselves and invite environmental experts to speak and the wider public to listen so that awareness of the benefits of restoration can blossom. Match all the words with deeds by volunteering collectively to get your hands dirty in restoration projects, or devise and launch one of your own.

CIVIL SOCIETY ORGANIZATIONS

Poll your members on the priorities for ecosystem protection and restoration in your area. Find out what skills you have in-house. Decide where you can have the greatest impact. Would starting or supporting a project be best? Are you better off presenting thought-through policy options to political leaders for action? Or would organizing an education campaign be the way to go? Join an alliance or build on. Make the link between your work and the health of our ecosystems – directly or indirectly. Trust your expertise and make the connections.

CITIES AND LOCAL AUTHORITIES

As well as undertaking your own restoration actions, you can enable and support private-sector and civil society restoration initiatives, especially those on public land. You can be a strong local voice for restoration and create platforms for others to amplify the message. Public contracting is another powerful tool to promote sustainability. Research has shown that small shifts – [like mowing urban lawns less intensely](#) – increases biodiversity and saves money.

FARMERS AND LIVESTOCK KEEPERS

As custodians of the land, you have a special responsibility and opportunity to nurture and restore our ecosystems. As well as trying some of the restoration approaches for farmlands and grasslands outlined below, you can cooperate with other actors to restore whole landscapes that include many different ecosystems, both natural and modified.

INDIGENOUS PEOPLE

If you live on your ancestral lands, you have a unique responsibility – and often a long track record – in managing your land sustainably. Consider what lessons from indigenous knowledge could be applied more widely to protect and restore ecosystems, and use platforms associated with the UN Decade to spread the word and build alliances for sound environmental stewardship.

WOMEN

The overexploitation and degradation of ecosystems is often linked to inequality, including unfairly restricted access to and control of natural resources by women. Integrate your restoration projects with steps to eliminate the exclusion of and discrimination against women and other disadvantaged groups so that sustainable development benefits everyone equally. #GenerationRestoration and #GenerationEquality go hand in hand: The Girl Scouts have launched [a toolkit for getting young girls involved](#) in tree planting.

GOVERNMENTS

Create the conditions for a successful UN Decade by designing and implementing economic policies and governance structures that improve environmental management and fund on-the-ground restoration. Join the vanguard of global efforts to combat climate change, biodiversity loss and land degradation. Take bold steps and pledge ambitious action to not only stop but reverse the

current destructive trends. Design subsidies, fiscal policy and [COVID-19 recovery packages](#) to boost ecosystem restoration. Use procurement to accelerate the shift to sustainability.

SCIENTISTS

Deepen our understanding of the importance of ecosystems, the threats they face and develop solutions with insights from the social and natural sciences. Lend your expertise to restoration initiatives and monitor their impacts to further refine our responses. Make use of innovations in technology – from remote sensing to artificial intelligence – to help us better monitor the effects of restoration across ecosystems.

RESTORATION ACTION – PRINCIPLES AND GUIDELINES

So, you want to get your hands dirty? First, sharpen your pencil because effective restoration requires careful planning. But have no fear: restoration experts around the world have drawn up principles, standards and toolkits that can help. Here are three principles that can be applied to all projects.

1. GET EVERYONE ON BOARD

Inform and consult everyone who will be affected by the project. Appreciate and learn from different perspectives on nature and its benefits. Tapping others' knowledge and considering their interests can win valuable new supporters for your project and defuse opposition.

2. SET GOALS AND MEASURE PROGRESS

Based on what you have learned about the ecosystem you want to protect or restore, decide what you want to achieve in what period, perhaps with interim targets along the way. Find measurable indicators that show whether you are making progress, or if you need to adjust the project.

3. HELP NATURE HELP ITSELF

We can't always return degraded ecosystems to a pristine state, but we can make them function in a more natural and sustainable way. So, projects should support natural processes, such as nutrient cycling, and prioritize indigenous species of plants and animals – rather than introducing ones that are foreign to the landscape. That can often have harmful effects.



There are several comprehensive sets of principles for ecosystem restoration. Read up on the [Society for Ecological Restoration's international principles and standards](#). The [joint report](#) of the Global Partnership on Forest and Landscape Restoration includes shared principles (p.14) that can be applied in many ecosystems. The United States Environmental Protection Agency's [principles of wetland restoration](#) is also an excellent resource. Have an experienced project manager in your team? If not, check out the [guidelines for developing and managing projects](#) from the Society for Ecological Restoration and [these steps for successful project development](#) from Restore America's Estuaries.

ECOSYSTEM BY ECOSYSTEM – WHAT RESTORATION CAN LOOK LIKE

We are now taking a deep dive into seven ecosystems. But don't be intimidated – there are actions for anyone and everyone to take in relation to each ecosystem. Read up on the ones you care about and find out what you can do.

FORESTS AND TREES **RIVERS AND LAKES** **TOWNS AND CITIES** **OCEANS AND COASTS** **FARMLANDS AND GRASSLANDS** **MOUNTAINS** **PEATLANDS**

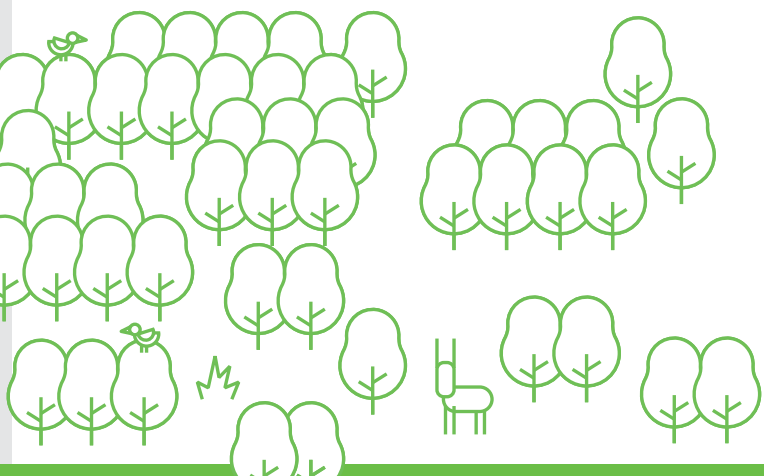


FORESTS AND TREES

Forests and trees provide us with clean air and water, capture vast amounts of climate-heating carbon and are home to most of Earth's biodiversity. They supply food and fodder, fuel and materials, and support the livelihoods of billions of people.

But forest ecosystems face intense pressure from our rising population and hunger for land and resources. Vast areas of tropical forest are being cleared for commodities like palm oil and beef. Remaining forests are degraded by logging, firewood cutting, pollution and invasive pests. Trees outside forests are fast making way for houses, infrastructure and more intensive farming.

Restoring forest ecosystems involves returning trees to formerly forested land, including settlements and agricultural areas, and improving the condition of degraded forests. Here are some ways to stop the bleeding of our forests and regreen the land.



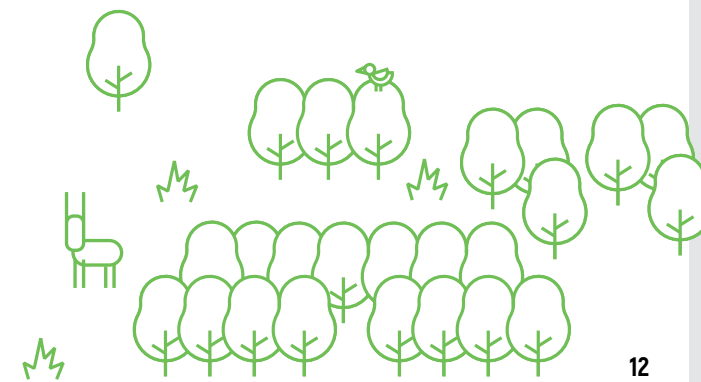
Plant trees: Tree planting is a simple and hugely popular restoration activity. You can add trees to a garden, a public space, a farm, across a landscape or even a whole country. Selective planting can revitalize a forest degraded by overharvesting. But it is not enough to stick seedlings in the ground. Many trees will die if you don't protect or water them. People will help in this task if they are involved in the project – by helping to decide what species are planted and where – and if they expect to benefit. Local fruit trees, for example, come with delicious incentives. Always remember that it is not about simply planting trees but growing them. And it should be the right tree, at the right place and the right time. Planting species that are not adapted to local conditions can lead to problems – for example if “thirsty” species suck out water from dry landscapes. These [twenty innovations for a trillion trees](#) may give you some ideas for getting tree-planting right.

Assist natural regeneration: This low-cost restoration strategy involves creating the conditions for indigenous trees to germinate or re-sprout naturally. This can mean excluding animals that would eat young shoots and removing other vegetation, especially invasive species, that compete with the young trees for light and water. It can also mean reaching community-level agreements to protect forests and trees, and managing them sustainably so that the new trees are not all cut again later. The concept of “[rewilding](#)” is becoming more and more popular in Europe and other places, where there is enough space and opportunity to introduce species that have once been lost. Learn more at the [Rewilding Academy](#).

Forest landscape restoration: Well-resourced projects can secure bigger restoration gains by looking at a whole landscape. The larger scale can make it easier to balance different interests, for instance by supporting sustainable farming in some areas to reduce pressure on forests and let trees re-grow on marginal land, or striking agreements to protect forests that provide clean water supplies to both people and nature. [Forest landscape restoration](#) provides a great opportunity for different decision makers to align – from businesses, to government agencies, to local groups. Together, they can develop a shared vision for their landscape.

Find out more:

There is a [crash course in tree planting](#) on the UN Decade website. Read up on [farmer-managed natural regeneration of trees](#) in West Africa. The FAO's [Forests and Landscapes Restoration Model](#) provides an introduction to good practices for large-scale initiatives. The newly launched [Restor](#) platform enables you to access ecological insights at the site level, to show current and potential tree cover, which species of flora could exist, and how much potential carbon could be stored. A [reforestation hub](#) maps out opportunities for tree-planting – and their opportunities for capturing carbon – across the United States.

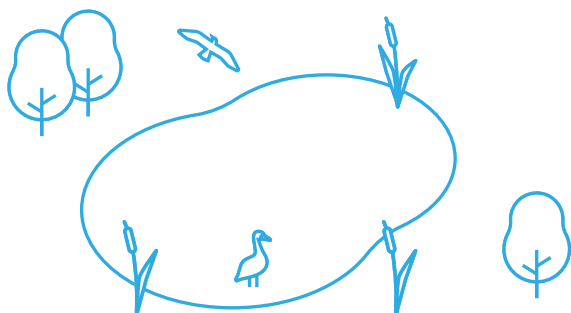


RIVERS AND LAKES

Freshwater ecosystems supply food, water and energy to billions of people, protect us from droughts and floods, and provide unique habitat for many plants and animals, including one-third of all vertebrate species.

These ecosystems are particularly degraded. They face pollution from chemicals, plastics and sewage as well as overfishing and overextraction of water. They attract real estate development and recreation. Canalisation and mining for sand and gravel degrade them further. Wetlands are being drained for agriculture, with some 87 per cent lost globally. One in three freshwater species are threatened with extinction. Just one-third of the world's largest rivers remain free-flowing. The rest are obstructed by dams and other infrastructure, which makes it hard for fish and other wildlife to travel.

Protecting and restoring freshwater ecosystems can mean improving water quality, controlling how these ecosystems and the land next to them are used, and stopping or reversing human modifications to natural processes. Here are some elements that can play a part in a restoration plan.



Clean it up: Gather up all the trash and junk dumped or washed up so that people appreciate the landscape and take better care of it. If it looks like a dump, people will treat it like one!

Regulate access: Create agreed and easy-to-use access points, for instance for animals to drink, boats to land, or people to swim and relax. This will spare fragile vegetation, bird habitat and fish spawning grounds and reduce erosion at the water's edge.

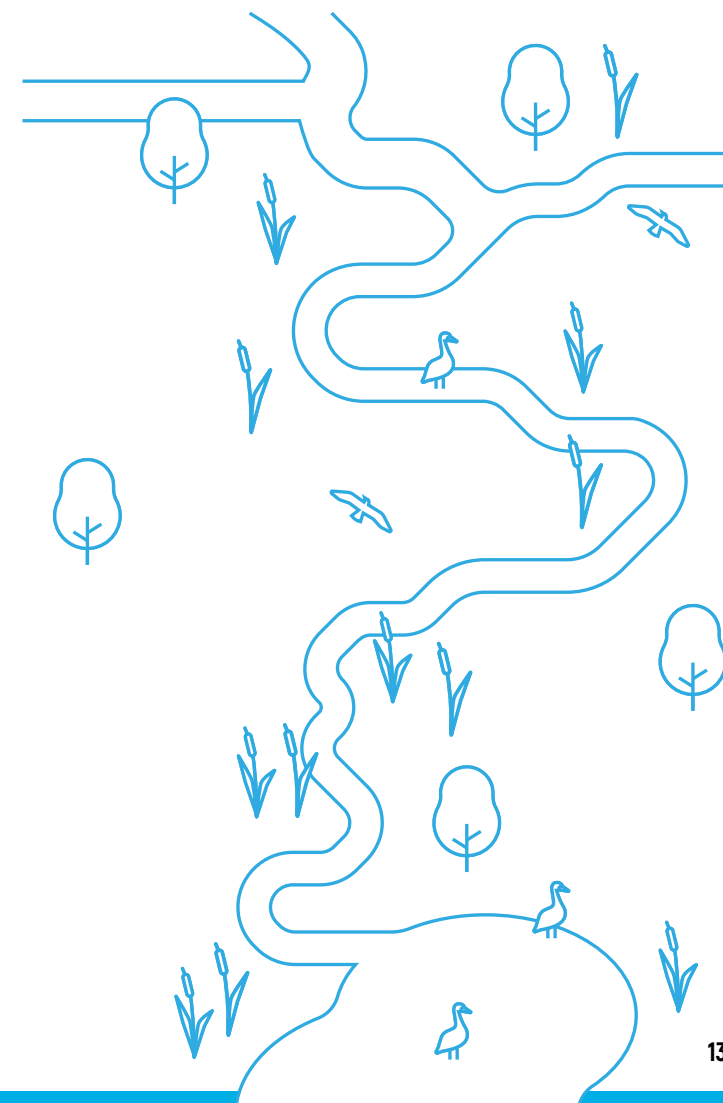
Restore vegetation: Plant indigenous species to restore rich habitats along the banks of rivers and lakes, create wildlife corridors, and create a buffer zone between the water and sources of pollution, such as nearby industries or farms; remove invasive alien species. Did you know that 40% of fish eat insects? In Australia, a movement of anglers and recreational fishers is replanting riverbanks, so that fish can return.

Plan sustainably: Develop fishing and harvesting plans that don't deplete the water, fish or other resources. Reduce and treat sewage, stop chemical pollutants, industrial waste or other effluent entering the water. Strike agreements or pay incentives to reduce the use of agricultural chemicals on adjacent land. The nitrogen used in fertilizers can pose one of the biggest threats to aquatic ecosystems.

Protect and restore nature: On a landscape scale, seek wide agreement on the declaration of important freshwater ecosystems as protected areas. Remove dams or other infrastructure that are no longer needed and restore natural river flow. And campaign to keep residential development, dredging or mining out of sensitive areas.

Find out more:

Take inspiration from the 'Adopt a River' section of this [Rotary Clubs guide](#). Consult this [technical guide](#) from the River Restoration Centre in the United Kingdom or dive into the science of river restoration in this [academic paper](#). Take a tour of [lake restoration efforts](#) in India.



TOWNS AND CITIES

Urban areas occupy less than 1 per cent of the Earth's land surface but house more than half of its people. Despite their steel and concrete, crowds and traffic, cities and towns are still ecosystems whose condition profoundly marks the quality of our lives. Functioning urban ecosystems help clean our air and water, cool urban heat islands, shield us from hazards and provide opportunities for rest and play. They can also host a surprising amount of biodiversity.

Urban ecosystems are often highly degraded. Poor planning seals soils and leaves little space for vegetation. Waste and emissions from industry, traffic and homes pollutes waterways, soils and the air. Unchecked urban sprawl gobbles up more and more wildlife habitat. But authorities, communities and citizens can use restoration to achieve environmental, social and cultural gains at the same time. Here are some rewarding approaches.

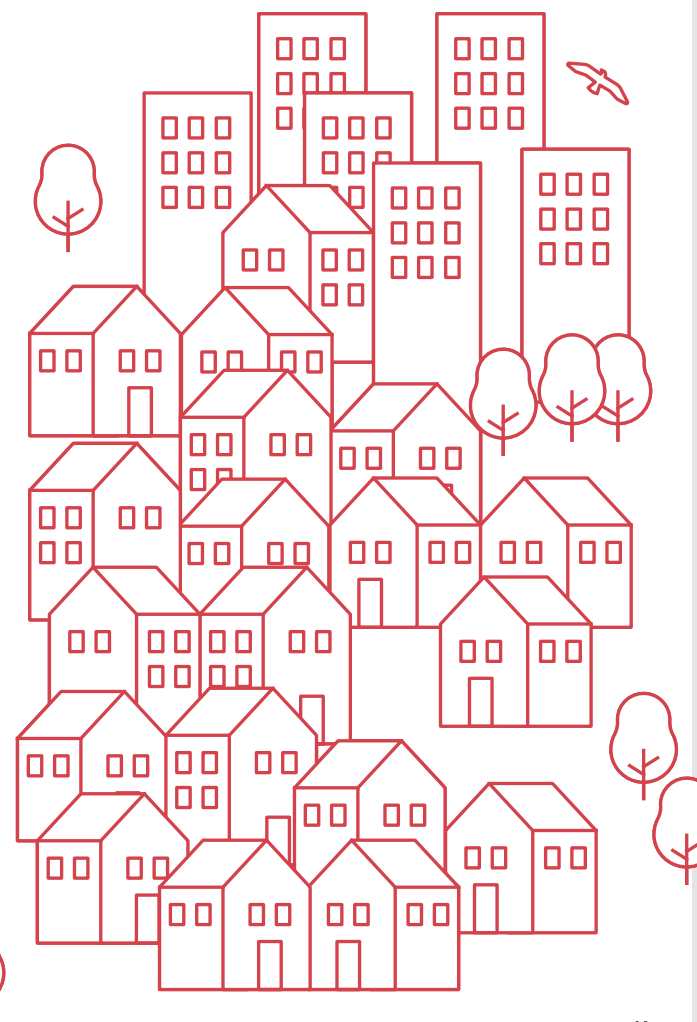
Green public spaces: Design and support initiatives to restore waterways and wetlands, plant indigenous trees, and create urban woodland and other wildlife habitats along roads and railways and in public spaces. Get local businesses to help with funding and expertise. Sometimes, the best efforts come for free: Rewilding public spaces by mowing grass and cutting down plants less attracts insects, birds, butterflies and even mammals to return to the city.

Citizens for sustainability: Campaign for sustainable urban planning, including the restoration of disused or contaminated sites, the inclusion of green spaces in new housing developments, and strong public transport networks. Faced with climate change, more citizens get involved in "adopt-a-tree" initiatives that help ensure trees – especially the young ones with shallow roots – are watered during dry spells. Digital tools, like apps, can support these efforts by tracking and coordinating individual contributions.

One micro-ecosystem at a time: Manage your [own garden, yard](#), business premises or school, however big or small they are, in ways that boost nature, or care for a roadside tree. Plant indigenous species, start [dense urban micro-forests](#) and make compost. Get others to do the same. Added together, a mass movement for micro-restoration can go a long way to enhancing the ecology and liveability of a whole city.

Find out more:

Consult hubs for ideas and initiatives for urban restoration, including the [Urban Nature Atlas](#), the [CitiesWithNature](#) initiative and the [Nature of Cities platform](#). Take inspiration from Mexico's plan for a [massive new park](#) in its capital, or the [green roofs](#) of the Dutch city Utrecht. Take pointers from New York City's guide to [caring for street trees](#). Finally, the [SUGi Project](#) follows the Miyawaki method and shows how everyday people can turn into urban forest makers – from the UK to India, from Cameroon to Lebanon.



OCEANS AND COASTS

Oceans and seas cover more than 70 per cent of the Earth. These ecosystems regulate our climate and generate most of the oxygen we breathe. They underpin key economic sectors, such as tourism and fisheries. And they harbour biodiversity from, whales to plankton, in habitats from sun-lit reefs to polar oceans.

But oceans and coasts face huge threats. Millions of tonnes of our plastic waste are harming creatures, including seabirds, turtles and crabs. Climate change is damaging coral reefs and we are clearing mangroves for fish farms and other activities. Overfishing threatens fish stocks, nutrient pollution is creating dead zones, and we discharge nearly 80 per cent of our wastewater without treatment.

We can restore oceans and coasts by reducing the pressures on them so they can recover, both naturally and with our help. We need to make these ecosystems and communities more resilient in the face of global change. Here are some ways we can help.



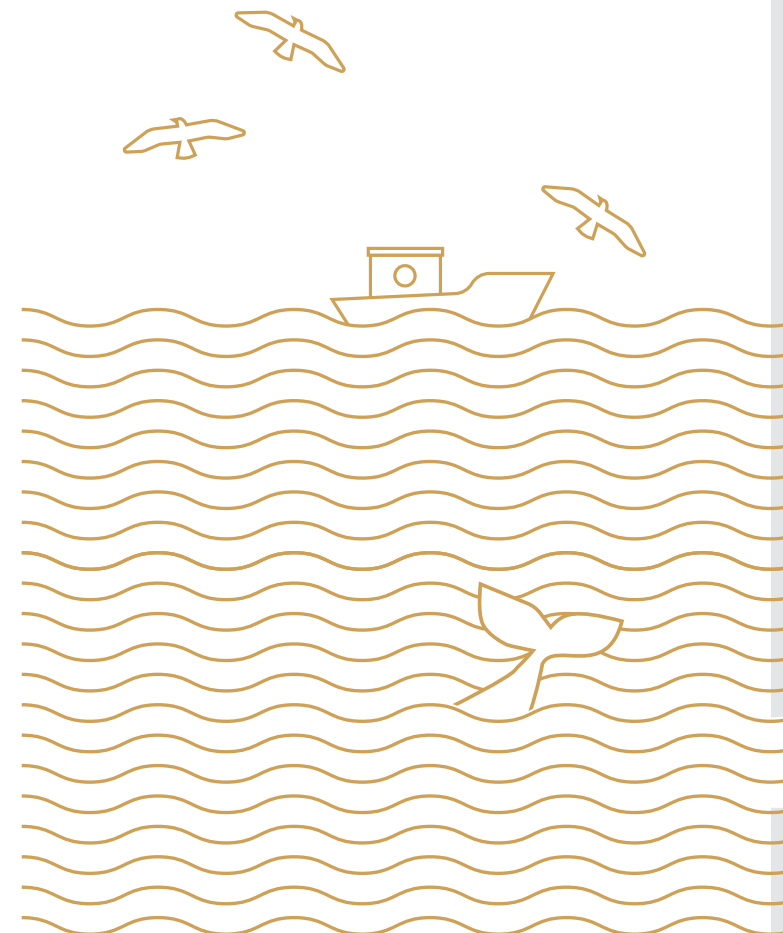
Clean up: Mobilize all ages to gather the masses of household waste and abandoned fishing gear that wash up on our beaches and shores. Recycle plastics and other materials to keep them out of landfill. Stop using avoidable and unnecessary plastic products. Watch out for microbeads and microplastics hidden in products! The more people take part, the more awareness grows of the need to reduce waste and dispose of it properly.

Restore vegetation above and below the water: Protect and restore coastal ecosystems including saltmarshes, mangroves, coral reefs, sea-grass meadows and shellfish beds to boost their diversity and the habitats and benefits they provide. All ecosystems are complex, so get expert advice for your location. Did you know, for example, that [seagrass beds store 18 per cent of oceanic carbon](#), and are 35 times faster than rainforests in doing so? They are also critical feeding grounds for seahorses and manatee, who might otherwise not survive. Get to know your local oceans and coasts, and help bring back what makes them special.

Use the ocean wisely: Bring together communities, authorities and other stakeholders to agree how to make coastal and ocean development and fishing sustainable, for instance by creating protected areas and deciding who can access which resources. If fishing communities come together and [jointly decide on protected areas and fishing zones in their waters, people and nature benefit](#). Use citizen scientists to monitor the impact of degradation and the benefits of restoration.

Find out more:

Help the [CleanSeas campaign](#) to turn the tide on plastic. Consult the International Coral Reef Initiative's [guidelines for restoring reefs](#) and [global restoration database](#). Check out this [seagrass restoration project](#) in the United Kingdom or this [practical guidance on restoring native oyster beds](#). Seek expert advice for your ecosystem and location from the [Society for Ecological Restoration](#).

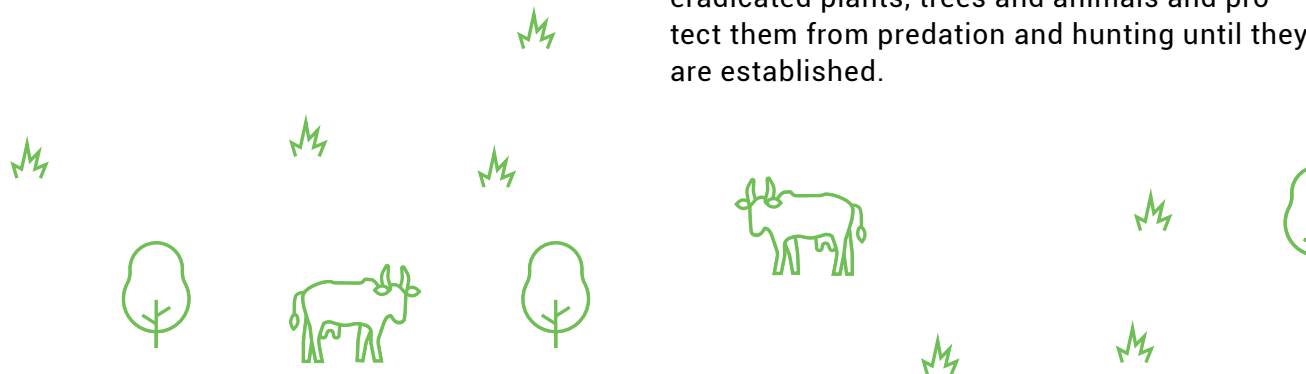


FARMLANDS AND GRASSLANDS

Farmlands and grasslands are perhaps our most vital ecosystems. As well as supplying food, fodder, and fibre, arable fields and grazing land host a bewildering variety of organisms from bats and birds to beetles and worms as well as considerable tree cover. Marked by centuries of human effort and ingenuity, these ecosystems are cultural treasures whose protection makes spiritual as well as economic sense.

Yet the way we are using many of these lands is exhausting their vitality. Intensive ploughing and monocultures, overgrazing and the removal of hedges and trees are degrading precious soil and vegetation. Excess agrochemicals are polluting waterways and harming wildlife, including bees that pollinate crops.

We can restore rural ecosystems by using nature to boost farm productivity and soil health and improve how they manage the land. Here are some of the options for farmers and livestock keepers.



Invest in nature: Reduce tillage and use natural pest control and organic fertilizer on arable land to build the health of your soil and the yields of your crops while reducing erosion and the need for farm chemicals.

Trust in diversity: Grow more trees and a greater variety of crops and integrate them with livestock keeping to further boost soil health, diversify your income and provide better wildlife habitat. Planting flowers along the borders of farmlands can provide valuable “feeding stations” for bees and other pollinators.

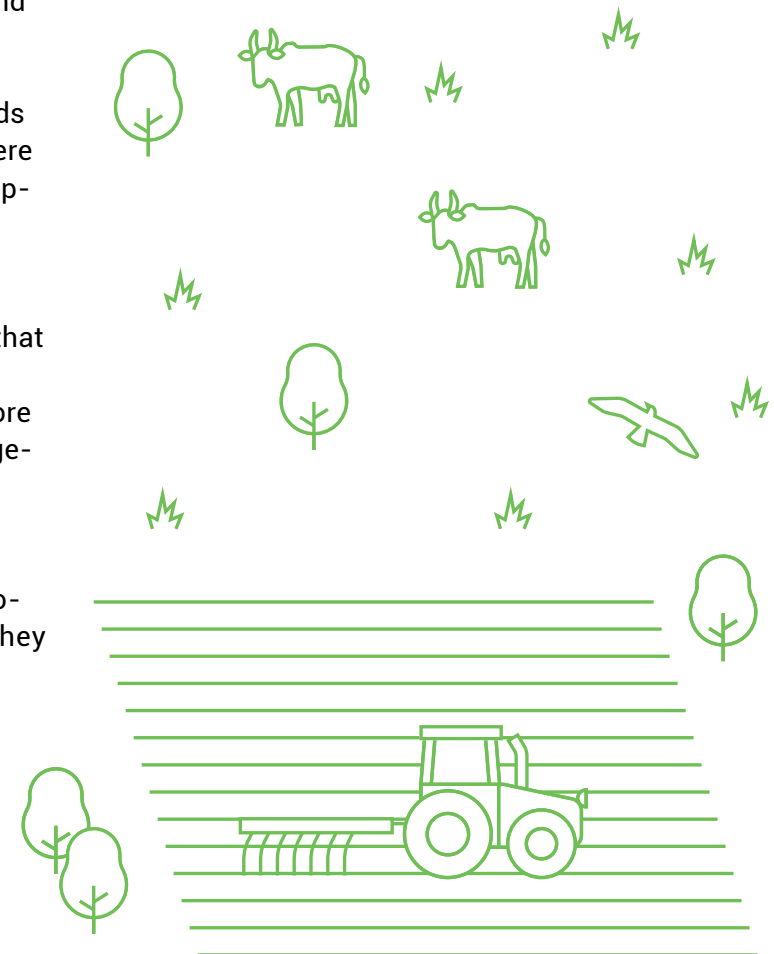
Keep grasslands whole: In extensive grasslands and savannahs, protect areas along rivers where nutrients are high from being converted to cropland. Without them, less productive areas are harder to use sustainably.

Graze sustainably: Agree on grazing regimes that prevent overuse, soil erosion and invasions of grasslands by shrubs and alien species. Restore already degraded areas by clearing woody vegetation and re-seeding native grasses.

Bring back indigenous species: Reintroduce eradicated plants, trees and animals and protect them from predation and hunting until they are established.

Find out more:

The Greener.LAND initiative has created a [visual guide](#) to techniques for restoring land. The World Overview of Conservation Approaches and Technologies has hundreds of methods to protect and restore farmlands, grasslands and other ecosystems in its [Global Database on Sustainable Land Management](#). The PANORAMA platform brings together proven solutions for a range of ecosystems – including [ideas on how to increase biodiversity in agriculture](#).



MOUNTAINS

Mountains harbour most of Earth's biodiversity hotspots and supply fresh water to an estimated half of humanity. They include a multitude of ecosystems providing a home to unique species, such as snow leopards and mountain gorillas, as well as great cultural diversity among people adapted to the challenges of mountain life.

Mountain regions are particularly sensitive to degradation from human pressures and climate change. Steep slopes mean the clearing of forest can cause serious soil erosion and habitat loss. Climate change and pollution threaten the supplies of water to farms, cities, industry and power stations. Rising temperatures are forcing species, ecosystems and the people that depend on them to adapt or migrate.

Restoring mountain ecosystems means considering whole landscapes. Many of the restoration actions listed in this guide can be used also in mountains. Here are some examples.

Restore forest shields: Restore and replant forests and trees to protect soil, safeguard water flows and guard against natural disasters, such as avalanches, landslides and floods.

Limit extraction and excavation: Our hunger for resources can have catastrophic consequences for mountains and hillsides. Make sure that landscapes are restored after mining operations have ended.

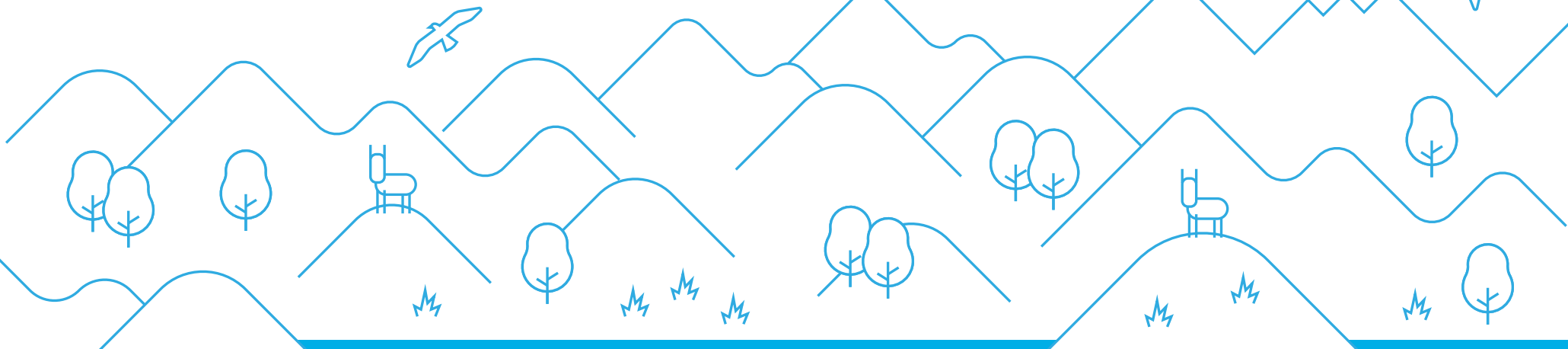
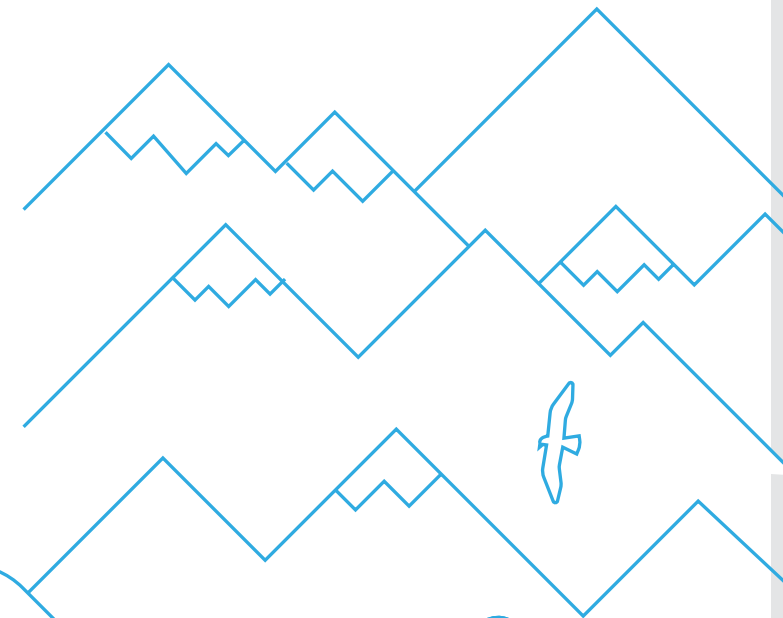
Let ecosystems migrate: Create or connect protected areas covering different altitudes so that species and ecosystems can migrate according to the shifting climate.

Farm for resilience: Promote and adopt sustainable farming techniques, such as agroforestry, that restore soils and biodiversity and can be more resilient in the face of climate change and extreme weather.

Learn from experience: Tap local and indigenous knowledge to keep the use of natural resources sustainable.

Find out more:

Read this overview of how healthy ecosystems [reduce disaster risks in mountainous areas](#). Many of the restoration techniques discussed elsewhere in this guide can also be applied in mountain ecosystems.



PEATLANDS

Though they cover only 3 per cent of the world's land, peatlands store nearly 30 per cent of its soil carbon. They control water supplies and prevent floods and droughts and provide many people with food and fuel. They also house plants and animals unique to these watery environments.

Despite their importance, peatlands around the world are being drained and converted for agriculture, infrastructure development, mining and oil and gas exploration. Peatlands are also being degraded by fire, overgrazing, nitrogen pollution and the extraction of peat for fuel and as a growing medium.

To prevent dangerous climate change, we need to hold peatland carbon where it is – wet, and in the ground. At the same time, we must re-wet and restore drained and degraded peatlands. Here are some ways to do that.

Protect peatlands: Include these sensitive ecosystems in protected areas to prevent their drainage, conversion and overuse.

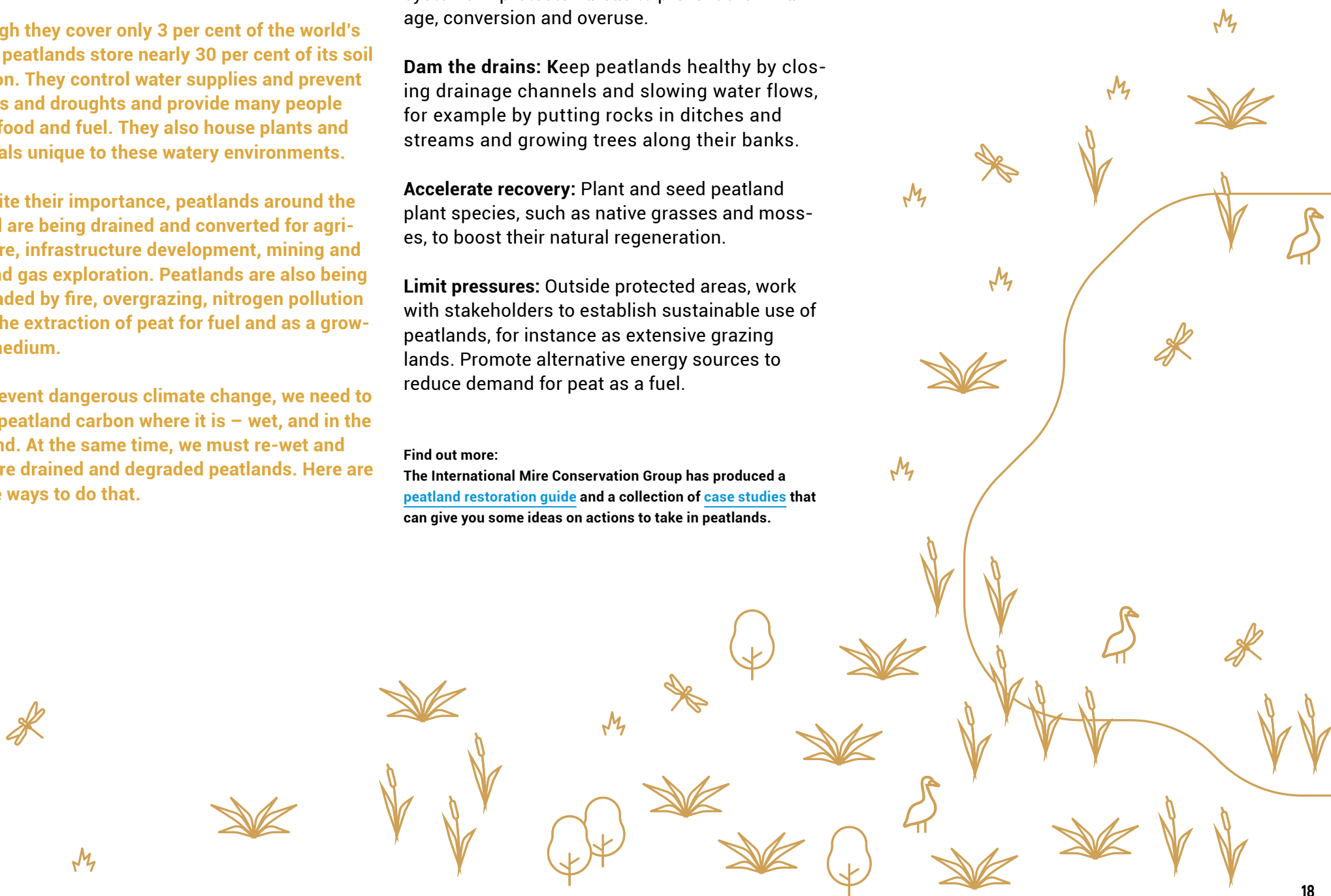
Dam the drains: Keep peatlands healthy by closing drainage channels and slowing water flows, for example by putting rocks in ditches and streams and growing trees along their banks.

Accelerate recovery: Plant and seed peatland plant species, such as native grasses and mosses, to boost their natural regeneration.

Limit pressures: Outside protected areas, work with stakeholders to establish sustainable use of peatlands, for instance as extensive grazing lands. Promote alternative energy sources to reduce demand for peat as a fuel.

Find out more:

The International Mire Conservation Group has produced a [peatland restoration guide](#) and a collection of [case studies](#) that can give you some ideas on actions to take in peatlands.



CHOICES FOR RESTORATION

As well as fixing ecosystems on the ground, let's give them a break. It is our massive collective environmental footprint that is degrading nature. We can tread more lightly by changing what we do, what we consume, and the waste we leave behind. Here's how you can cut your personal impact and let ecosystems rebound.



GO GREEN

Whether you are an individual or an organization, choose goods and services with a credible eco-label. That rewards companies that, for instance, make recyclable products, reduce packaging and meet environmental and social standards. Buy from local suppliers to cut the environmental impacts of transport and support farming products adapted to your local ecosystems. Be creative in inspiring others to help local plants thrive! [Seedballs](#), like these from Kenya, are a great way to help people green up. But be sure to choose the right seedlings for the right time and place.

LIVE LIGHT

Do you really need new clothes and gadgets? Do your family and friends want more gifts? Can't vacations or business gatherings take place closer to home? COVID-19 lockdowns have shown many people that they can live well with less consumption and travel. You can also cut your resource use by buying used goods, and by repairing, sharing and borrowing more. Follow the "reuse, recycle, refuse" principle when making decisions.

EAT RIGHT

For most people on this planet, this means: Eat less meat and dairy produce and reduce how much food you waste. Favor locally grown produce that needs less packaging and transport. Eat seasonally and regionally: find out which fruits and plants grow near you during which time of year. Many organizations have started creative calendars that help people decide what to eat when. Can't find one? Design your own! Plant-based diets are less land-hungry and can be better for your health. Choose organic produce to combat the pesticides and fertilizers degrading our agricultural and freshwater ecosystems. Punch your data into WWF's planet-based [diet calculator](#) to see how your eating habits impact Earth's ecosystems.

FUND RESTORATION

Donate to organizations and community groups involved in ecosystem restoration and sign up for updates on their projects. Check their credibility and track record before parting with any cash. Read up on how they ensure that trees or other plants survive, how they involve local communities, if they perhaps create jobs and other benefits along the way, and how their efforts will last into the future. If you have money to invest, channel it to certified green investment funds or green banks that invest in sustainability. The [Terramatch platform](#), for example, is designed to connect investors with restoration projects in need of funding.

RAISE YOUR VOICE FOR #GENERATIONRESTORATION

The UN Decade on Ecosystem Restoration will succeed if people pull together as communities, nations and as a global movement. As well as getting involved in on-the-ground restoration and taking responsibility for your personal impact on the environment, you can spread the word about how healthy ecosystems are the foundation for human well-being, and that there is a lot that we can all do to protect them.

This is vital because rebuilding ecosystems requires action from everyone, everywhere. It is also crucial to generate political momentum for restoration, because many of the underlying causes of degradation must be addressed at the national or international level. For example, only governments can change damaging economic policies, establish networks of protected areas and rein in pollution and climate change.

Political leaders and other decision makers who grasp this challenge can act boldly if they know that millions of people stand beside them. So become an advocate for ecosystems and grow #GenerationRestoration into a movement that transforms our planet's future. Here are some ways to amplify the message on World Environment Day and every day for the next decade.

TURN RESTORATION VIRAL

Whether you are a government, a group, a business or an individual, announce your restoration commitment or initiative on social media with the #GenerationRestoration hashtag. Take part in online discussions about restoration and post pictures and updates on your achievements.

GET CREATIVE

Hold a concert, paint a mural, organize an exhibition or take people on an excursion to a threatened ecosystem to mark World Environment Day and celebrate #GenerationRestoration. If restrictions needed to contain the COVID-19 pandemic make public events and gatherings unwise, maybe you can move your events and artwork online.

MAKE A SPLASH

Organize a campaign or a flash mob to press for restoration of an ecosystem that you care about. That could be the local wetland at your doorstep or rainforests far away. Use the [UN Decade visual identity](#) and social media assets to give your message global weight and meaning.

GREEN YOUR CIRCLES

Ask friends, relatives and colleagues what they value about local ecosystems and discuss what could be done to improve things. Encourage them to learn about ecosystems and their benefits and to join #GenerationRestoration.

RAISE YOUR VOICE

Take part in public forums and consultations, radio phone-ins and debates on managing and improving the local environment. Speak up in public and in private for the sustainable use of resources for the benefit of all, including future generations.

USE YOUR VOTE

Support political parties and leaders with strong commitments to restoration, sustainable development and social justice, especially if they have kept past promises to prevent environmental degradation. Hold your leaders accountable – has your country or regional government made any pledges to restoration? And if so, have they lived up to them? Were the restoration activities of a quality that benefitted people and ecosystems? Or could your leaders do more and better in the future?

JOIN UP

Become a member of an organization or political movement with influence on how our ecosystems are managed. Work to advance both ambition and action to prevent environmental degradation and its social consequences. The [UN Decade's website will be home](#) to a digital hub, connecting restoration initiatives across the globe. Whatever you do to spread the word and advance ecosystem restoration, you can use the UN Decade's [visual identity](#) on your website, social media or printed on a T-shirt or a sign at your restoration site. Read more about it in our [brand guide](#).

YOUR FEEDBACK MATTERS

Protecting what we have and healing what we damaged is a task too daunting for any one entity to lead. It takes a movement. It takes you.

Our journey has only started. Over the next ten years, the UN Decade on Ecosystem Restoration will bring together governments, businesses, science and academia, and every concerned citizen to restore our planet.

We hope that this Playbook can help you take your first steps on this journey.

Did you find it useful? Would you share it with others? What can we improve? Please contact us at restorationdecade@un.org

**THANK YOU FROM EVERYONE AT
THE WORLD ENVIRONMENT DAY AND
UN DECADE TEAMS**

