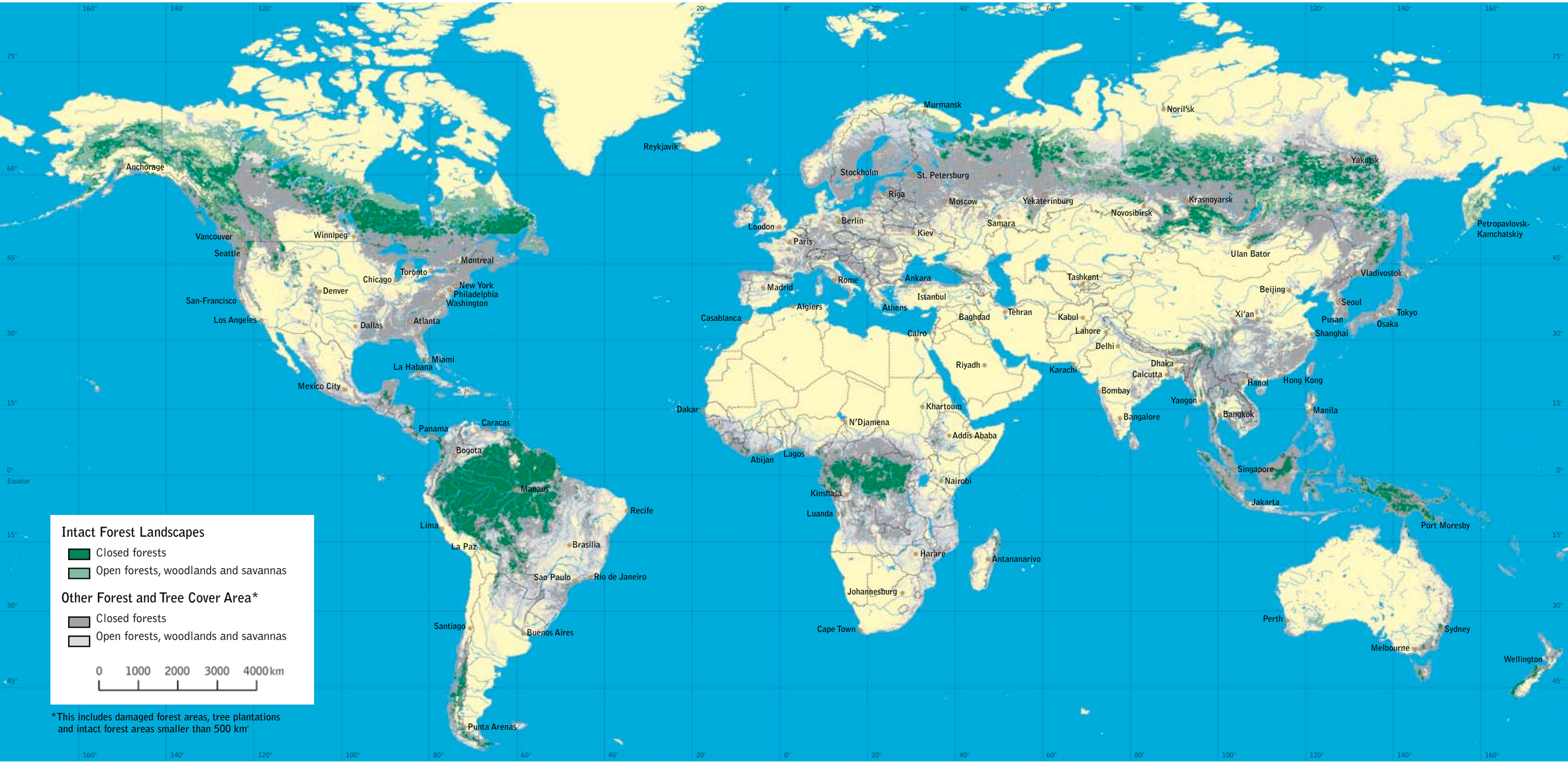
Roadmap to Recovery:
The world's last intact forest landscapes

GREENPEACE

The world's last intact forest landscapes



- Only one fifth of major forest types (distinct forest regions which would be dominated by forests in the absence of human impact, also called forest biomes) remain as intact forest landscapes. That is less than 10 percent of the planet's land area. Some major forest types, such as temperate broadleaf forest, have almost no intact forest landscapes left.
- Four fifths of major forest types have been degraded, converted to plantations or fragmented to areas smaller than 500 square kilometres by roads, settlements and other industrial activities. However, many of these smaller areas still have high a conservation value due to their rarity, unique diversity of plant and animal species, or because they are the last refuge for functioning ecosystems in a degraded landscape.
- 66 countries still have intact forest landscapes but in half of these countries, they account for less than 10 percent of the total forest area.
- The tropical rainforests of Latin America, Africa, Southern Asia and Pacific account for 49 percent of remaining intact forest landscapes.
- Twenty countries, including Canada, Brazil, Russia, Papua New Guinea, Democratic Republic of Congo, Indonesia, United States, Australia, Chile and China, are home to over 95 percent of the world's remaining intact forest landscapes.
- 82 countries out of 148 countries lying within the forest zones have lost all their intact forest landscapes.
- 44 percent of remaining intact forest landscapes are the great boreal forests of Russia, Canada and Alaska.
- Only 8 percent of remaining intact forest landscapes are strictly protected.
- As little as 4 percent of the boreal forests in the Northern hemisphere are strictly protected.

In this global assessment, the term 'intact forest landscapes' refers to areas larger 500 square kilometres. Many smaller forest areas with a high conservation value and in need of protection are not shown on this map. They are, however, included under the term 'ancient forests'.

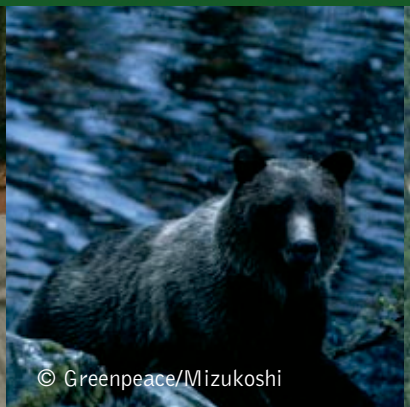
© Greenpeace

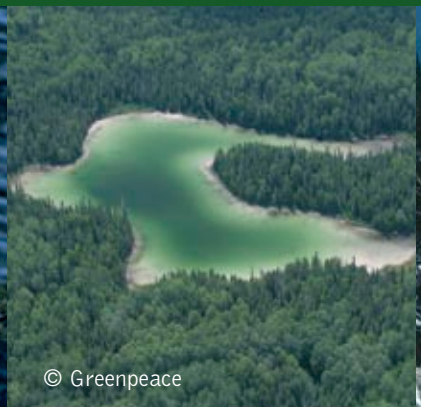
Until now, world maps have not been sufficiently accurate or consistent to reveal which forest areas remain intact, which have been damaged and to what extent. This has made it difficult to see which forest areas are most in need of protection.

Based on the most up to date, high-resolution satellite imagery and a consistent set of criteria, Greenpeace has created a new map of the world's forests. It shows us the remaining large forest areas and lets us compare them directly and accurately, for the first time. It is the starting point for monitoring forests now and in the future and the baseline of a roadmap to recovery.

For more information and references: **www.greenpeace.org/forestmaps**
For high resolution maps and a detailed methodology: **www.intactforests.org**

© Greenpeace/Beltra


© Greenpeace/Mizukoshi


© Greenpeace


© Greenpeace/Mizukoshi

© Greenpeace/Behring

Roadmap to Recovery:
The world's last intact Forest landscapes

contents:


© Greenpeace/Novis

Executive summary

We are destroying the world's precious ancient forests at an unprecedented rate. An area of natural forest the size of a football pitch is cut down every two seconds.

Half of the forest lost in the last 10,000 years has been destroyed in the last 80 years and half of that destruction has taken place since the mid 1970's.

Forest loss has a direct link to loss of biodiversity. The current extinction rate of plant and animal species is around 1,000 times faster than in pre-human times – and this will increase to 10,000 times faster by 2050. Scientists predict that the Earth is entering the sixth major extinction event in its history. This is the first one to occur because of human activity.

Until now, world maps have not been sufficiently accurate or consistent to reveal which forest areas remain intact, which have been damaged and to what extent. This has made it difficult to see which forest areas are most in need of protection.

Greenpeace has created a new map of the world's forests, based on the most up to date, high-resolution satellite imagery and a consistent set of criteria. It shows us the remaining large forest areas and lets us compare them directly and accurately, for the first time.

This ground breaking research shows that the world's remaining ancient forests are in crisis and that fewer intact forest landscapes than previously thought are left. To save them, we must act now.

Damage to ancient forests is not just about total deforestation. It is also about the degradation of forest to a point at which it is no longer a viable habitat for its plant and animal species. In the tropics alone, over 5 million square kilometres of forest have been degraded by destructive logging and a further 3.5 million square kilometres has been totally deforested during the last few decades.

Only intact forest landscapes of several thousands of square kilometres are large enough to sustain healthy populations of many larger forest animals. They are also better able to adapt to the changing global climate.

Greenpeace has created a new map of the world's forests, based on the most up to date, high-resolution satellite imagery and a consistent set of criteria. It shows us the remaining large forest areas and lets us compare them directly and accurately, for the first time

To preserve these last intact forests and the biodiversity they support, we must protect large, unbroken areas from further industrial exploitation. The moment a road or pipeline is built the forest and its precious balance of interdependent species begins to be destroyed.

These maps are a starting point for monitoring these last large forests landscapes now and in the future and are the baseline for a roadmap to recovery.

World governments can use these maps to identify which forest areas are most in need of protection and to fast track setting up a global network of protected forest areas.

Summary of findings:

- Less than 10 percent of the planet's land area remains as intact forest landscapes.
- 82 countries out of 148 countries lying within the forest zone have lost all their intact forest landscapes.

The majority of the world's last remaining intact forest landscapes consist of two major forest types - tropical rainforest and boreal forest.

- 49 percent are the tropical forests of Latin America, Africa, Southern Asia and Pacific.
- 44 percent are the great boreal forests of Russia, Canada and Alaska.

World governments can use these maps to identify which forest areas are most in of protection and to fast track setting up a global network of protected forest areas

The proportion of the remaining intact forest landscapes of the world are located as follows:

- **35 percent are in Latin America.**
  The Amazon rainforest is mainly located in Brazil, which clears a larger area of forest annually than any other country in the world.

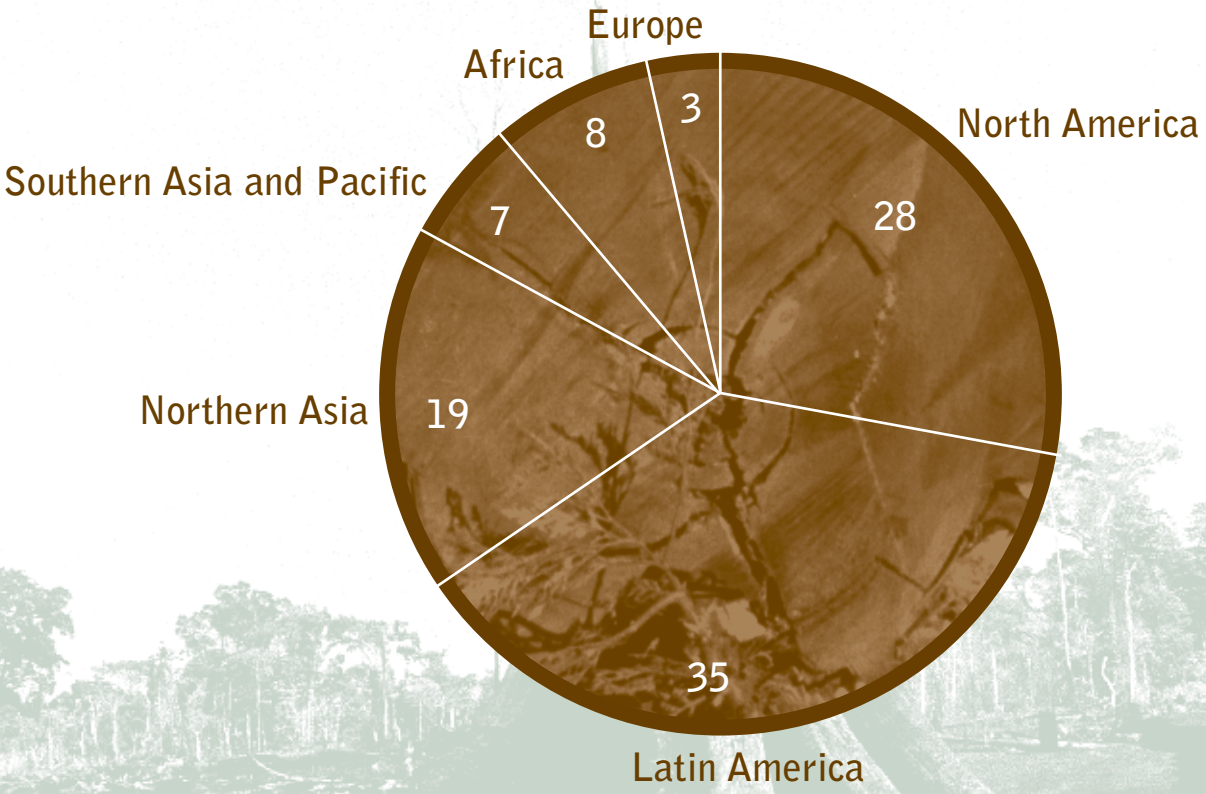
- **28 percent are in North America.**
  North America destroys 10,000 square kilometres of ancient forests every year. Many of the fragmented forests of southern Canada and the United States lack adequate travel corridors and functioning ecosystems for large mammals.

- **19 percent are in Northern Asia.**
  Northern Asia is home to the second largest boreal forest in the world. The Siberian tiger once roamed across huge areas of Northern Asia but today it can only be found in a small area of intact forest near the Sea of Japan. Only 400 remain in the wild, with twice as many in zoos.

- **7 percent are in Southern Asia and Pacific.**
  The Paradise Forests of Southern Asia and Pacific are being destroyed faster than any other forest on Earth. Much of the large intact forest landscapes have already been cut down, 72% in Indonesia and 60% in Papua New Guinea.

- **8 percent are in Africa.**
  Africa has lost most of its intact forest landscapes in the last 30 years. The timber industry is responsible for destroying huge areas of intact forest landscapes and continues to be the single largest threat to these areas.

- **Less than 3 percent are in Europe.**
  In Europe, more than 150 square kilometres of intact forest landscapes fall victim to the chainsaw every year and the last areas of the region's intact forest landscapes in European Russia are shrinking rapidly.



Percentage of intact forest landscapes that are strictly protected:

Europe	15.5
Southern Asia and Pacific	12
Africa	8.7
North America	6.7
Patagonia	32
Tropical Latin America	8
Northern Asia	4.4

Overall, only 8 percent of the world's remaining intact forest landscapes are strictly protected.

To save the world's remaining intact forest landscapes, Greenpeace is calling on governments to:

- establish moratoria on new industrial developments in all intact forest landscapes.
- set up a global network of protected forest areas encompassing all forests with a high conservation value while the moratoria are in place. This must involve local stakeholders and the prior informed consent of indigenous peoples and other local communities.
- ban forest products that come from illegal or destructive sources.
- ensure sufficient financial resources for conservation and cut subsidies that threaten forests.

For more information and references: www.greenpeace.org/forestmaps
For high resolution maps and a detailed methodology: www.intactforests.org

Overall, only 8 percent of the world's remaining intact forest landscapes are strictly protected


© Greenpeace/Novis

Introduction

Forests are vital to the future of life. They are home to two thirds of all known species of land plants and animals and to thousands of indigenous peoples that rely on them for food, water and other basic materials. They also play a key role in regulating local and global climates.

We are destroying forests at an unprecedented rate. An area of natural forest the size of a football pitch is cut down every two seconds. Half of the forest lost in the last 10,000 years was destroyed in the last 80 years and half of that destruction took place over the last 30 years.

When we destroy forests, we also eliminate the diversity of life they support. The loss and fragmentation of intact forest habitats is the main reason why many plant and animal species are threatened with extinction. Larger animals, such as primates, are particularly vulnerable to forest loss because they usually need a greater roaming and feeding area to survive.

The current extinction rate of plant and animal species is approximately 1,000 times faster than it was in pre-human times. Scientists predict that the Earth is entering the sixth major extinction event in its history and say that extinction rates will further increase 10 fold by the year 2050.

Biologists believe ancient forests contain vast numbers of undiscovered species. These too could be driven to extinction before we even find them. This biological catastrophe threatens all life, including our own.

To protect the world's remaining ancient forests, world governments must urgently establish moratoria on new industrial developments in intact forest landscapes. The moratoria must stay in place until they instigate proper conservation plans based on a global network of protected forest areas.

To protect the world's remaining ancient forests, world governments must urgently establish moratoria on new industrial developments in intact forest landscapes. The moratoria must stay in place until they instigate proper conservation plans based on a global network of protected forest areas

Why are intact forest landscapes important?

Ancient forests provide a home to an incredible diversity of plant and animal life. Orangutans, eagles, wolves, jaguars, bears, gorillas, elephants, tigers, birds, deer, frogs, orchids, insects and, last but not least, trees - from saplings to old giants.

Ancient forests also provide food, shelter, medicine, clean air and water. They make soil and slopes stable and mitigate droughts, floods and other disasters.

It is crucial to protect and preserve forests in large, intact landscapes because they are less vulnerable to threats beyond their boundaries, such as the invasion of alien species as well as to drought, loss of humidity and the resultant risk of fire.

Only intact forest landscapes of several thousands of square kilometres are large enough to sustain healthy populations of many larger forest animals. Their flora and fauna is better able to survive natural disturbances such as fires and storms. Large forest areas are also better able to adapt to the changing global climate.

Threats

The key threats to forest ecosystems and ancient forests in particular are:

- destructive and illegal logging
- forest clearing for agriculture and pasture
- road building and other infrastructure such as new settlements, pipelines and navigable waterways
- mining for metals, petroleum and natural gas
- damming for hydropower
- excessive removal of vegetation (firewood, building materials, overgrazing)
- over-hunting and the bush meat trade
- climate change

The root causes of these threats include unsustainable consumption of wood, paper and other forest products as well as increased demand for agricultural products such as meat, soya and palm oil.

In many countries, most of the land is controlled by a few rich people. This drives poor people deeper and deeper into previously inaccessible forest. In addition, perverse energy, transport, logging and agricultural policies create incentives to destroy forests, for instance in the form of public subsidies for road building, agriculture, mining or forestry.

Corruption, lack of governance and lack of enforcement of forest related laws allows illegal and destructive logging to thrive. Apart from indiscriminately destroying the forest, illegal and destructive logging brings exploitation and deprivation to local communities. It also undercuts the price of legally and responsibly logged timber, making responsible forest management less viable.

At the Earth Summit of the United Nations in Rio de Janeiro in 1992, governments from around the world agreed to conserve biological diversity (Convention on Biological Diversity) and combat dangerous climate change. Ancient forests are crucial for both. They are home to most land based species and they prevent significant amounts of carbon from being released to the atmosphere and thus contributing to climate change.

The world's remaining intact forest landscapes and the biodiversity they support have reached crisis point, but it is not too late to save them.

Corruption, lack of governance and lack of enforcement of forest related laws allows illegal and destructive logging to thrive

The seven major forest regions:
Tropical Latin America

© Greenpeace/Monk

© Greenpeace/Mantegna

© Greenpeace/Mantegna

© Greenpeace/Pantoja

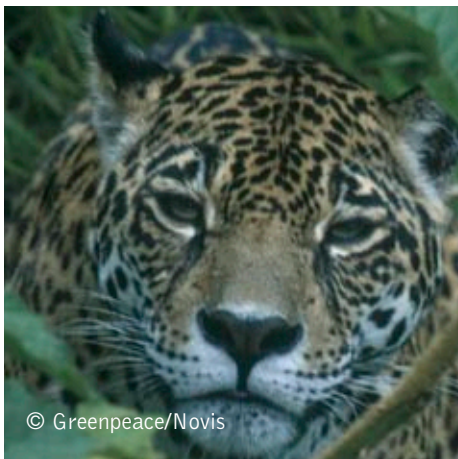
Tropical Latin America

Key findings:

- 31 percent of the tropical Latin American forest zone remains as intact forest landscapes.
- 34 percent of world's intact forest landscapes are in tropical Latin America, the world's largest forest region.
- Over 55 percent of all intact forest landscapes in tropical Latin America are in Brazil.
- 11 tropical Latin American countries have destroyed all of their intact forest landscapes (The Bahamas, Dominica, El Salvador, Guadeloupe, Haiti, Jamaica, Martinique, Puerto Rico, Trinidad and Tobago, St. Lucia and Uruguay).
- Less than 10 percent of forests across 8 tropical Latin American countries remain as intact forest landscapes (Nicaragua, Costa Rica, Honduras, Guatemala, Argentina, Mexico, Dominican Republic and Cuba).
- Only 8 percent of intact forest landscapes in tropical Latin America are strictly protected.
- Over 95 percent of all intact forest landscapes in tropical Latin America are in the tropical and subtropical moist broadleaf forest biome.

Patagonia (page 14)

34 percent of world's intact forest landscapes are in tropical Latin America, the world's largest forest region



In 2005, after pressure from Greenpeace, local communities and other organizations, 50 thousand square kilometres of Amazonian rainforest were protected in the Terra do Meio region of Para state in Brazil. These new reserves represent one of the biggest global conservation achievements. This is because they connect to forests that were already protected, including indigenous lands.

The Amazon basin in Latin America is the largest tropical rainforest in the world. To the north-west, it stretches into the Central American rainforests and mountain forests, to the south-east into the Atlantic rainforest and tropical dry forests and woodlands. To the south, it reaches the Yunga mountain forests on the eastern slopes of the Andes.

One fifth of the world´s fresh water runs through the Amazon's river system and approximately half of all land based plants and animals live in its rainforest. The Amazon is the last refuge for the jaguar, which lives in the tropical rainforests of South and Central America and has recorded ranges of up to 800 kilometres.

The Amazon is also home to millions of people, including indigenous peoples such as the Deni in Brazil, whose tribes have lived in close harmony with the forest for thousands of years. Their lives are destroyed along with the animals and plants when the forest is cut down.

Most of the Amazon rainforest is in Brazil, which clears a larger area of forest annually than any other country in the world.

Most of the Amazon rainforest is in Brazil, which clears a larger area of forest annually than any other country in the world

© Greenpeace/Beltra

© Greenpeace/Hungria

© Greenpeace/Beltra

The seven major forest regions:
Patagonia

© Greenpeace/Beltra

© Greenpeace/Beltra

© Greenpeace/Beltra

 © Greenpeace/Beltra

Patagonia

Key findings:

- 34 percent of the Patagonian forest zone remains as intact forest landscapes.
- Less than 1 percent of the world's last intact forest landscapes are in Patagonia.
- 82 percent of Patagonia's intact forest landscapes are in Chile, 18 percent in south Argentina.
- 32 percent of the intact forests are strictly protected.
- Over 89 percent of all intact forest landscapes in Patagonia are in the temperate broadleaf and mixed forest biome. The remaining 11 percent is woodland, shrubland, mountain ecosystems and glaciers within forest landscapes.


© Greenpeace/Beltra

In 2004, plans to flood 100 square kilometres of Patagonian rainforest to build a dam for Canadian aluminium giant, Noranda, were put on hold following a campaign by Greenpeace and other organizations.

The second largest coastal temperate rainforest in the world stretches across Patagonia in southern South America, from the Pacific coast of southern Chile up to the Andean mountains and over the border into southern Argentina.

Isolated from other major forest regions by the Andes and the Pacific, this forest has evolved a unique and diverse spectrum of species such as southern beeches, monkey puzzle trees and alerce, a southern relative of the Californian redwood tree, many of which are more than a thousand years old.

Destructive and illegal logging and timber plantations have fragmented and degraded most of this forest, especially in the coastal lowlands and the north. The remaining intact forest landscapes are mostly in the southern mountains.

Patagonia's forests are home to the Darwin frog, the Chilote fox and the Andean deer, which used to roam from the coast to the high mountains. Now it can only be found at remote, high altitudes between 3,300 and 5,000 metres and only a few thousand deer are left.

These forests are also home to indigenous communities, such as the Pehuenche and Mapuche, who have long depended on the natural forest wealth for their way of life.

The seven major forest regions:
Africa

© Greenpeace/Verbelen

© Greenpeace/Sims

© Greenpeace/Maravic

© Greenpeace/Mauthe

Africa

Key findings:

- 12 percent of the African forest zone remains as intact forest landscapes.
- 8 percent of world's intact forest landscapes are in Africa.
- Over 93 percent of Africa's intact forest landscapes are in Congo, the Democratic Republic of the Congo, Gabon and Cameroon.
- 23 African countries have destroyed all of their intact forests.
- Less than 10 percent of the forest zone remains as intact forest landscapes in 10 African countries (Madagascar, Liberia, Tanzania, Cote d'Ivoire, Central African Republic, Ethiopia, Nigeria, Angola, Uganda and Zambia).
- Only 8.7 percent of Africa's intact forest areas are strictly protected.
- Over 93 percent of Africa's intact forest landscapes are within the tropical and subtropical moist broadleaf forest biome.
- Less than 1 percent of Africa's remaining intact forest landscapes are within the tropical savanna and woodland biomes.

8 percent of world's intact forest landscapes are in Africa

Following years of investigations by the Greenpeace Forest Crimes Unit to uncover illegal logging in Africa and the continent's trade in illegally and destructively logged timber with Europe, a number of initiatives have been undertaken to reform Africa's logging industry. Cameroon has set up independent monitoring of the logging industry and a number of logging companies are slowly moving towards less destructive and more responsible forest management practices.

The second largest tropical rainforest in the world lies in the Congo basin, the green heart of Africa. It stretches into West African rainforests and into dry forests, woodlands and bush land to the south.

The Congo Basin is home to an immense diversity of plants and mammals, including spectacular species such as forest elephants. Many animals are unique to Congo's rainforest, such as the Congo peacock and the Okapi. Many more wait to be discovered. It is also home to three species of Great Ape; the gorilla, the chimpanzee and the bonobo. Due to rapidly increasing forest degradation and poaching, all Great Ape species face extinction.

Tens of millions of people depend on the Central African forests for their survival. Bantu subsistence farmers, fishing communities and semi-nomadic 'pygmies' all need these forests for shelter, medicine and food. Entire cultures in this region are based on their relationship with rainforests.

Considerable efforts to create protected areas in Africa have been made in the last 10 years but forest management is often poor or non-existent. Conservation efforts are thwarted because of a lack of political will, money and staff, corruption and, in some cases, even war.

Africa has lost most of its intact forest landscapes in the last 30 years. The timber industry is responsible for destroying huge areas of intact forest landscapes and continues to be the single largest threat to these areas.

© Greenpeace/Maravic

© Greenpeace/Schlijper

© Greenpeace/Sims

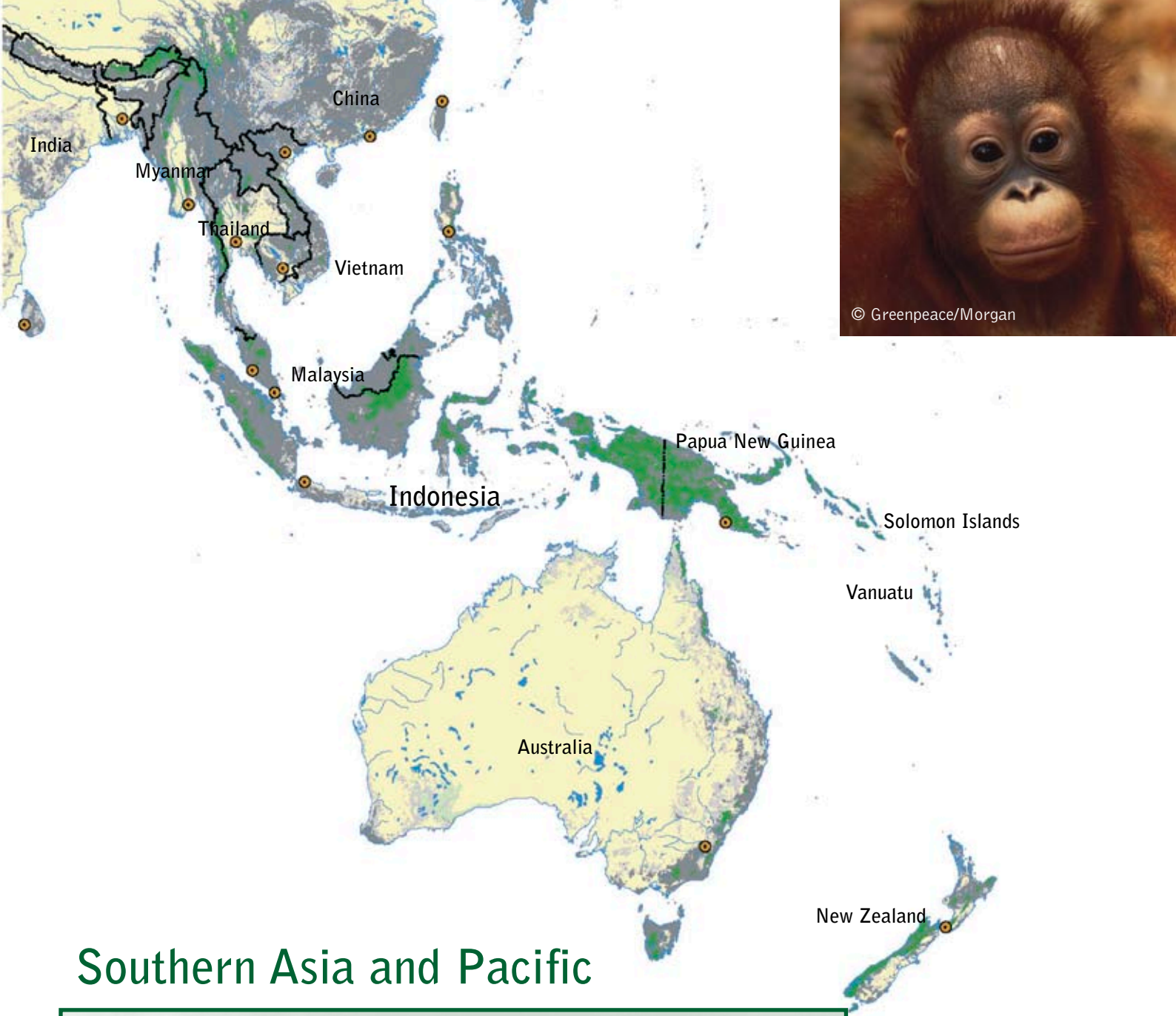
The seven major forest regions:
Southern Asia and Pacific

© Greenpeace

© Greenpeace/Sewell

© Greenpeace/Dang

© Greenpeace/Davidson



Southern Asia and Pacific

Key findings:

- 11 percent of Southern Asia and Pacific's forest zone remains as intact forest landscapes.
- 7 percent of the world's intact forest landscapes are in Southern Asia and Pacific.
- Over 57 percent of Southern Asia and Pacific's intact forest landscapes are in Indonesia and Papua New Guinea.
- 6 countries in Southern Asia and Pacific have destroyed all their intact forests (Bangladesh, Fiji, New Caledonia, Pakistan, Sri Lanka and Taiwan).
- Less than 10 per cent of forests remain intact in ten Southern Asia and Pacific countries (Thailand, Vanuatu, Malaysia, India, Laos, China, Philippines, Vietnam, Nepal and Cambodia).
- 12 percent of Southern Asia and Pacific's intact forest areas are in strictly protected areas.
- Over 68 percent of Southern Asia and Pacific's intact forest landscapes are in the tropical and subtropical moist broadleaf forests biome.
- Most of Southern Asia and Pacific's intact forest landscapes are on the islands of New Guinea and Borneo. In tropical continental Southern Asia, less than 3 per cent of the forest zone remains as intact forest landscapes.

7 percent of world's intact forest landscapes lie in Southern Asia and Pacific

In 2003, Greenpeace and its partners helped indigenous communities (the customary landowners) throw a Malaysian company involved in illegal logging, off their land in western Papua New Guinea.

Greenpeace is now supporting the communities' efforts to move towards eco-forestry and to hold the company, Concord Pacific (a subsidiary of Samling), to account for the damage it caused. The company is facing charges in the Papua New Guinea court for trespassing during its illegal logging activities.

The forests of Southern Asia and Pacific stretch from the Himalayas and China in the north, through the Paradise Forests (Indonesia, Papua New Guinea and the Solomon Islands) and to Tasmania and New Zealand in the south. This incredibly diverse region supports hundreds of indigenous cultures and creatures found nowhere else in the world, such as 38 species of the exotic bird of paradise found on the island of New Guinea.

Roughly half of the animals found on this island are unique to the region and hundreds of new species have recently been discovered there, including the rediscovered Berlepsch´s six-wired bird of paradise and the golden-mantled tree kangaroo.

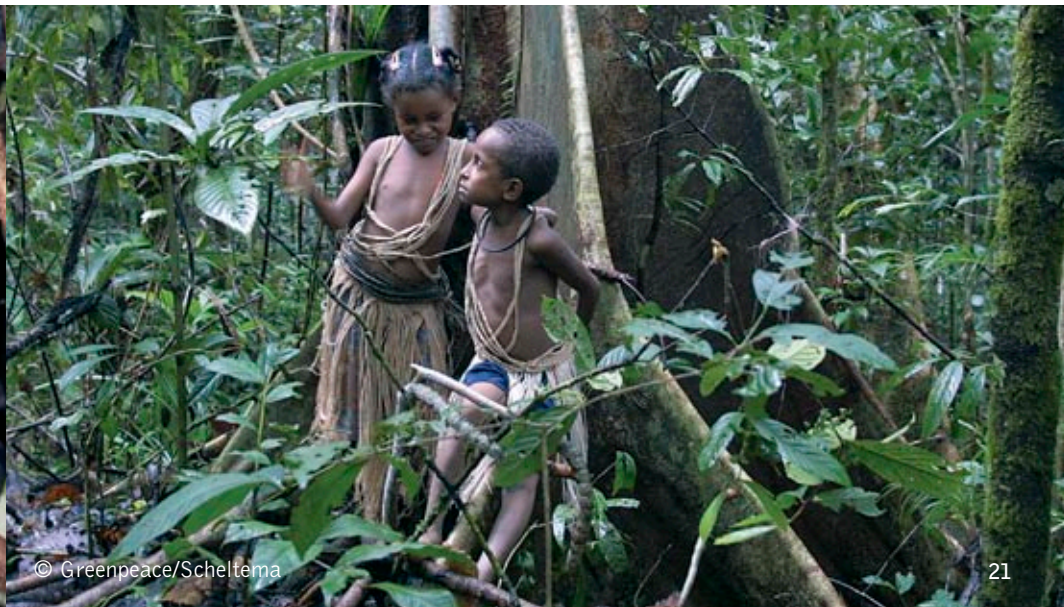
Millions of people live under these forest canopies and enjoy a relationship with the forests that we cannot even imagine. The cultural diversity of these communities is astonishing. More than 1,000 languages are spoken in New Guinea alone - one sixth of all the languages spoken on Earth.

While Brazil clears a larger area of forest annually, the Paradise Forests are being destroyed faster than any other on Earth. Much of the large intact forest landscapes have already been destroyed – 72 percent in Indonesia and 60 percent in Papua New Guinea.

In Papua New Guinea, 58 of the 260 known mammal species and 33 of the 720 known bird species are threatened. Javan rhinoceros once roamed throughout South-East Asia. It is estimated that there are now less than 100 left. Sumatran tigers, the last of the island tigers, are also in danger, numbering just 500 in the wild. At the end of 2002, it was estimated that only 3,500 Sumatran orang-utans remained and these are in protected areas too small for their long-term survival.

At the end of 2002, it was estimated that only 3,500 Sumatran orang-utans remained and these are in protected areas too small for their long-term survival.

© Greenpeace



© Greenpeace/Scheltema

The seven major forest regions:
North America

© Greenpeace/Mizukoshi

© Greenpeace/Vinai

© Greenpeace/Calhoun

© Greenpeace/Warford


© Greenpeace/Dorst

North America

Key findings:

- 38 percent of the North American forest zone remains as intact forest landscapes.
- 28 percent of the world's intact forest landscapes are in North America
- 84 percent of North America's intact forest landscapes are in Canada, 16 per cent in the United States (mostly Alaska).
- Only 6.7 percent of North America's intact forest landscapes are strictly protected.
- Over 89 percent of North America's intact forest landscapes are in the boreal (taiga) forest biome.
- Less than 1 percent of North America's intact forest landscapes are in the temperate broadleaf and mixed forest biome.

28 percent of the world's intact forest landscapes are in North America

In 2006, following a decade of campaigning by Greenpeace, other non-government organizations and indigenous peoples, the government of the west Canadian province of British Columbia pledged to ensure protection of 20,000 square kilometres of the Great Bear Rainforest and to dramatically improve logging practices in the rest of the forest.

More than 10,000 square kilometres of North American ancient forests are clearcut every year. This affects the future of forest dependent plants and animals, among them grizzly bear, puma, woodland caribou and grey wolf. The wolf was once one of the most widespread mammals on Earth. The North American wolf population has been decimated by hunting and habitat destruction over the last two hundred years.

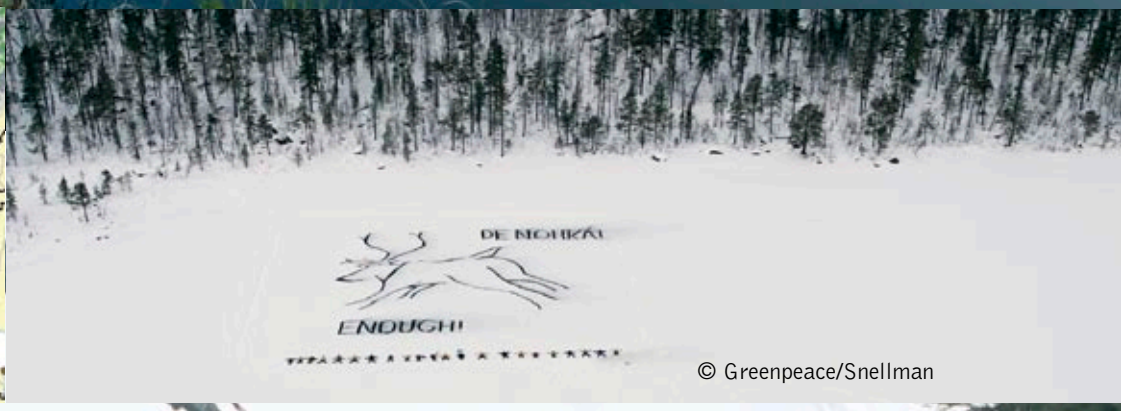
Many of the fragmented forests of southern Canada and the United States, with the exception of Alaska, lack adequate travel corridors and functioning ecosystems for large mammals.

Forest destruction also affects the livelihoods of indigenous peoples such as the Haida of Haida Gwaii island on the Canadian west coast, and the Innu of the east Canadian province of Quebec. Canada has one million indigenous people. 80 percent live in forest-based communities and depend on the forest for their livelihoods and cultural sustenance.

More than 10,000 square kilometres of North American ancient forests are clearcut every year

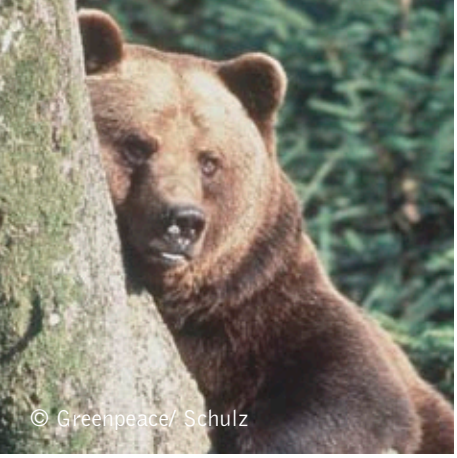
The seven major forest regions:
Europe

© Greenpeace/Snellman



© Greenpeace/Snellman

© Greenpeace/Grandelius


© Greenpeace/ Schulz

Sweden

Finland

Norway

Russia

Romania

Georgia

Europe

Key findings:

- 6.4 percent of Europe remains as intact forest landscapes.
- Less than 3 percent of the world's intact forest landscapes are in Europe.
- Over 90 percent of Europe's intact forest landscapes are in Russia.
- 36 countries in the region have destroyed all their intact forests.
- Less than 5 percent of forests remain intact in four European countries (Sweden, Finland, Norway and Romania).
- Only 15.5 percent of Europe's intact forest areas are in strictly protected areas.
- Over 92 percent of Europe's intact forest landscapes are in the boreal (taiga) forest biome.
- Only 1 percent of European intact forest landscapes are in the temperate broadleaf and mixed forest biome.

Less than 3 percent of the world's intact forest landscapes are in Europe

In European Russia, Greenpeace helped get moratoria on 12 forest areas that had been granted logging concessions. Among them are intact forest landscapes. Two new national parks are in the process of being established in the region.

Most of Europe's remaining forest lies in the far north and the north-east. To the south, it stretches into patches of temperate broadleaved forests that once covered most of central and western Europe. Further south are remnants of Mediterranean forest, woodland and scrub.

Only 14 percent of Europe´s forests are intact forest landscapes. Over 90 percent are in European Russia, 3 percent in Finland and a further 3 percent in Sweden. These intact forest landscapes, with lakes, riversides and swamps surrounded by forests, are the last refuge for many plant and animal species, including the Brown bear, which once lived in forests all over Europe, from Scandinavia and Russia to the Mediterranean Sea.

In the far North of Europe live the Komi and the reindeer herding Sami and Nenets indigenous peoples. The ongoing degradation and fragmentation of the forest is a growing threat to these people's livelihoods as well as to European plants and animals.

More than 150 square kilometres of intact forest landscapes fall victim to the chainsaw in Europe every year and the last areas of Europe's intact forest landscapes in European Russia are shrinking rapidly. Logging, road building, mining, oil and gas pipelines and railways are cutting the intact forest landscapes into small fragments. Forest management standards in European Russia are very poor and large clearcuts are the norm. In Finland, some of the last intact forests that grow on traditional Sami herding land are being logged by the Finnish Forest Service (Metsahallitus).

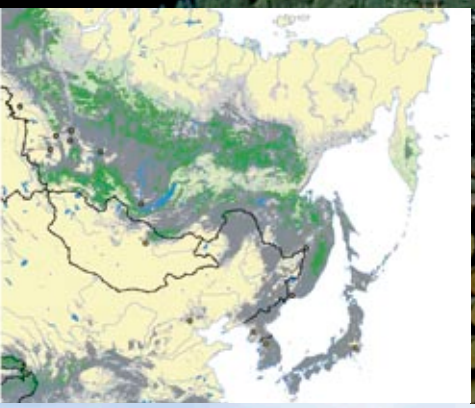

© Greenpeace/Snellman

Only 14 percent of Europe´s forests are still intact forest landscapes


© Greenpeace/Kantor

The seven major forest regions:
Northern Asia

© Greenpeace/Kantor



© Greenpeace/Morgan

© Greenpeace/Morgan

© Greenpeace


© Greenpeace/Morgan

Northern Asia

19 percent of the world's intact forest landscapes are in Northern Asia

Key findings:

- Less than 30 percent of the Northern Asia's forest zone remains as intact forest landscapes.
- 19 percent of the world's intact forest landscapes lie in Northern Asia
- 90 percent of Northern Asia's intact forest landscapes are in Russia.
- 5 countries in the region have destroyed all their intact forest landscapes (Azerbaijan, Iran, Kyrgyzstan, North and South Korea).
- Less than 5 percent of the forest zone remains as intact forest landscapes in two Northern Asian countries (China and Japan).
- Only 4.4 percent of Northern Asia's intact forest landscapes are strictly protected.
- Over 85 percent of Northern Asia's intact forest landscapes are in the boreal (taiga) forest biome.
- Only 3 percent of Northern Asia's intact forest landscapes are in the temperate broadleaf and mixed forest biome.

Greenpeace helped protect 195,000 square kilometres of Siberian wilderness by pushing for them to be listed as UNESCO World Heritage sites. A large part is within intact forest landscapes. The most famous World Heritage Sites with intact forest landscapes in Northern Asia are Lake Baikal, the volcanoes of Kamtchatka, Altai and the Sikhote-Alin mountains.

The snow forest of Northern Asia is home to the second largest boreal forest in the world, which grows mostly in the far north of the region. To the south and the east, the forest stretches into temperate forests. The Russian taiga (boreal coniferous forest) thrives even at temperatures of minus 50 degrees Celsius. In spite of the extreme conditions, countless fungi, ferns, lichens and mosses grow there.

Spanning thousands of kilometres, the landscapes change from tundra, with stunted willows and birches in the far north to dense coniferous, broadleaved and mixed forests in the south. Even large animals, such as elk, brown bear, lynch and the Siberian Tiger in the south-east, can find enough food in these vast areas. The Siberian Tiger once roamed across huge areas of Northern Asia but today it can only be found in a small area of intact forest near the Sea of Japan. Only 400 remain in the wild, with twice as many in zoos.

Like other forest regions, the snow forests of Northern Asia are also home to hundreds of indigenous peoples. The diversity of plant and animal species is greater in the region's southern rainforests between the Amur River and the Sea of Japan, than in the larch forests of the north part of the region. The threat of illegal and destructive logging is also greater in the south than the north, and is increasing with the expansion of the timber trade from Russia to China, Japan and Korea.

FOREST CRIMES UNIT

 © Greenpeace/Bialobrzeski

© Greenpeace/Bialobrzeski

What Can Be Done?

This ground breaking research shows that the world's remaining ancient forests are in crisis and that fewer intact forest landscapes than previously thought are left. To save them, we must act now.

Protected Areas

Today, only 8 percent of the world's intact forest landscapes are in strictly protected areas. To preserve these last intact forests and the biodiversity they support, we must protect large, unbroken areas from further industrial exploitation. The moment a road or pipeline is built the forest and its precious balance of interdependent species begins to be destroyed.

Empowerment of Local Communities

Over one billion people worldwide rely on intact forests for their daily survival. Living in thousands of small communities either in the forests or on their edges, they rely on it for the basics of life - food, medicine and building materials. Because they live in harmony with the forest and depend on it, they are also the main guardians of the forest.

In many forested areas, such indigenous communities have rights under law to protect their land from logging companies that decimate their environment and their lives. Yet, these communities are ill equipped to take on the huge corporations behind the loggers.

Greenpeace works closely with forest communities to help them make a living from the forest without destroying it, and to reduce the pressure on them to hand their forest land over to destructive logging companies. It is also helping to identify, mark out and map the boundaries of communities' territorial land, a key tool that helps establish their rights over their tribal territories so they can protect the forests.

Responsible Forest Management

Damage to ancient forests is not just about total deforestation. It is also about the degradation of forest to a point at which it is no longer a viable habitat for its plant and animal species. In the tropics alone, over 5 million square kilometres of forest have been degraded by destructive logging and a further 3.5 million square kilometres has been totally deforested during the last few decades. Clearcutting and other forms of destructive logging have also damaged and degraded large areas of boreal and temperate forests.

Logging companies often try to get around environmental laws by promising that they will only harvest a certain number of selected trees from forest areas in which local governments allow limited logging. In reality, huge machinery thunders through the undisturbed forest, crushing and damaging plants and animals in its way, decimating local communities, polluting waterways and damaging those trees that are not cut. The results are devastating - a scarred landscape of isolated trees, unlikely to survive without their neighbours, and a forest stripped of its plant and animal life.

Forests can provide timber without being destroyed, using a way of selecting and extracting certain trees without damaging the surrounding habitat. Responsible forest management is certified under the Forest Stewardship Council (FSC). However, FSC certified forest areas account for only 2 percent of all forests, and destructive and illegal logging is a constant threat to the work of the FSC as well as to the forests themselves.

This ground breaking research shows that the world's remaining ancient forests are in crisis and that fewer intact forest landscapes than previously thought are left. To save them, we must act now

A call for Action

Greenpeace is calling on governments to:

- establish moratoria on new industrial developments in all intact forest landscapes.
- set up a global network of protected forest areas encompassing all forests with a high conservation value while the moratoria are in place. This must involve local stakeholders and the prior informed consent of indigenous peoples and other local communities.
- ban forest products that come from illegal or destructive sources.
- ensure sufficient financial resources for conservation and cut subsidies that threaten forests.

You can also help protect ancient forests:

- pressure your government. Demand it stops allowing forest destruction.
- call on it to protect the last remaining ancient forests.
- ask it to introduce legislation banning imports of illegally and destructively sourced forest products into your country.
- only buy "good wood" that is marked with the FSC logo and ask your store to supply FSC timber and paper products.
- reduce your consumption of paper, timber and other forest products, particularly disposable products and give preference to recycled paper and other recycled material.
- log on to www.greenpeace.org to find out how you can support Greenpeace in its work to protect the world's remaining ancient forests.

What is the FSC?

The Forest Stewardship Council, or FSC, is an independent scheme that certifies responsible harvesting of forests - and clearly labels the products made out of wood from responsible forestry. Set up in 1994, the FSC promotes responsible forestry in over 700,000 square kilometres of forests in 66 countries - and that is expanding ever year.

When you buy a timber product carrying the logo of the Forest Stewardship Council (FSC), you can be sure it comes from an environmentally appropriate and socially beneficial source. FSC is the only, internationally recognized, forest certification scheme that can give credible assurance that timber products come from legally and responsibly managed forests. It is also the only scheme supported by major environmental groups as well as progressive timber companies and many indigenous people's organizations.

FSC

Thank you for reading this information. Ancient forests support all life on Earth. They need our help. Together, we can save them.

© Greenpeace/Beltra

© Greenpeace/Mauthe

Methodology and Definitions

This global map follows a first assessment of intact forest landscapes conducted by the World Resource Institute in 1997, "The Last Frontier Forests". The new Greenpeace map is more accurate because it is entirely based on the latest available satellite imagery, which is mostly from 2001 and 2002. It is also based on strict interpretation rules to make the results as globally comparable as possible.

1. The forest zone (see below for definition) was identified using existing data based on the latest available medium resolution satellite data (MODIS) and all areas outside the forest zone (more than half of the world´s land cover) excluded from the assessments.
2. Topographic maps showing roads, settlements and other human infrastructure were used to further exclude all areas within the forest zone that has been fragmented to areas smaller 500 square kilometres.
3. Only unfragmented areas larger 500 square kilometres - as derived from the topographic information - were subject to fine scale analysis of fragmentation and other human impacts using high resolution satellite imagery (Landsat 7) in order to identify intact forest landscapes (see below for definition).

'Intact forest landscapes' (green in the maps) are defined for the purpose of this global-scale map as blocks of mostly forested, but also non-forested (e.g. swamps), areas larger 500 square kilometres and a minimum width of 10 kilometres within the forest zone that show no visible sign of significant human impact (e.g. logging, burning). Excluded from these intact forest landscapes were one km buffer zones around human infrastructure (e.g. roads, waterways, settlements) and fire scars in the vicinity of human infrastructure where most fire regimes have been significantly altered (e.g. increased fire frequency).

It should be noted that some human impact is invisible from space (e.g. small forest roads and paths or specifically in Central African forests the decline of populations of large mammals as a result of over-hunting). Also smaller scale impacts (e.g. some selective logging) that happened more than 30-70 years ago, depending on the region, often become invisible on satellite imagery or indistinguishable from the natural dynamics of the forest.

The most recent human impacts are not shown on this map because the satellite imagery used is, on the average, 4-5 years old. All this leads to some – albeit globally insignificant - overestimations of intact forest landscapes despite the one km buffer exclusion zones. Only ground level verification can provide a more accurate local picture in these areas.

'The forest zone' is defined as areas with a tree canopy cover density of above 20 per cent, including areas below 20 per cent tree canopy cover density which are fully surrounded by the forest zone (data from M. Hansen).

Ancient forests are defined as forests that are shaped largely by natural events with little impact from human activities. These include all intact forest landscapes shown on this map, but also many intact forests appearing under the category 'other forest and tree cover areas', because they are smaller than 500 square kilometres.

'Other forest and tree cover areas' (grey in the maps) includes all ancient forests smaller 500 square kilometres. Most of the other forest and tree cover areas are damaged and degraded forests or are tree plantations.

© Greenpeace/Behring

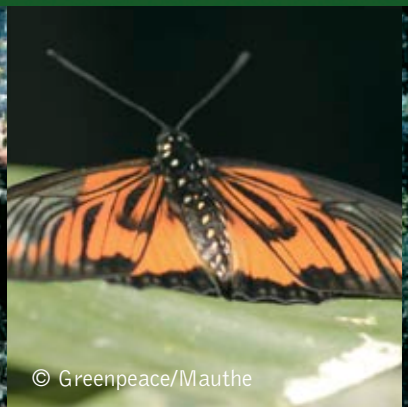
For more information and references: **www.greenpeace.org/forestmaps**
For high resolution maps and a detailed methodology: **www.intactforests.org**

With thanks to organizations who participated in the global assessment of intact forest landscapes: Biodiversity Conservation Center (Russia); International Socio-Ecological Union (Russia); Luonto-Liitto (Finnish Nature League); Global Forest Watch (United States).

GREENPEACE


© Greenpeace/Scheltema


© Greenpeace/Plowden


© Greenpeace/Mauthe


© Greenpeace/Plowden

Roadmap to Recovery:
The world's last intact forest landscapes

For more information and references: **www.greenpeace.org/forestmaps**
For high resolution maps and a detailed methodology: **www.intactforests.org**

Greenpeace is an independent, campaigning organization which uses non-violent, creative confrontation to expose global environmental problems and to force solutions essential to a green and peaceful future.

Greenpeace International Ottho Heldringstraat 5, 1066 AZ Amsterdam, Netherlands
T+31 20 718 2000 F+31 20 514 8156 **www.greenpeace.org**

GREENPEACE