ENVIRONMENTAL REPORT 2011 | 2012

AT HOME OUTDOORS – with fascination, passion, respect and responsibility

Jack Wolfskin

FOREWORD BY THE MANAGEMENT

Dear readers,

We are delighted to present our first environmental report, which is testament to our ongoing dedication to the world around us. We also want to use it to introduce you to some of the fantastic landscapes the Earth has to offer: not just with the impressive photos that we have taken on our hikes over the years but also in another sense. We intend to use this report to advertise a responsible approach to nature, our "home". Enjoying and protecting nature need to be more closely linked and follow common goals. We wish to motivate as many people as possible to follow this path alongside us.

M Bötsch, M Rupp, C Brandt and A Klotz

Anyone who enjoys being outside in any weather and in all seasons gets to know and value nature in a very special way – something that we and our customers have in common. Having said that, we are aware of the impact of our hikes because many regions suffer from visible consequences of the overexploitation of nature, including due to tourism and outdoor activities. The way we work as a company will always have an effect on the environment. However, in our company aims, we have pledged to keep these effects to a minimum. This goes for our operations as well as for our products.

Corporate responsibility (CR), the active perception of social responsibility, is part of the way JACK WOLFSKIN sees itself as a company and part of its corporate culture, since involvement in environmental and climate protection as well as protecting biological diversity are fixed elements of our CR strategy.

The aim of JACK WOLFSKIN's environmental protection policy is to keep the company's ecological footprint as low as possible, particularly with regard to our specific CO_2 emissions. In 2008, we set ourselves the target of reducing our specific CO_2 emissions by 40% by 2011 as compared to the average for 2006/2007. As a consequence, we have implemented a whole range of measures, but we decided right from the start to avoid giving preference to substitution and offsetting. We use solar power and photovoltaics, have virtualised over 50% of our servers so that we can reduce our energy consumption, use video conferencing technology in order to reduce our number of business trips, consistently use recycled and FSC-certified paper and have integrated this consideration of the environment in many of our planning and business processes.

The main way in which we aim to reduce our specific CO_2 output is the drastic reduction of the proportion of air freight. We aim to replace as much of it as possible with sea freight. By completely restructuring our procurement processes, changing our production and supplier cycles and introducing environmental standards for our global cargo transport with regard to choosing the means of transport and route planning, we have managed to reduce the proportional weight of combined air/sea freight from 15.9% in 2007 to 5.4% in 2011.

In 2008, we started switching our electricity provider to Greenpeace Energy, and all of our JACK WOLFSKIN-run locations in Germany have used 100% green electricity since January 2012.

The result of all these efforts is that we have been able to reduce our specific total CO_2 emissions by over 50%!

But JACK WOLFSKIN sees its afforestation right through to the end: since 2010, emissions that cannot be avoided have been offset through large-scale afforestation projects run by PrimaKlima -weltweit- e.V. – thus simultaneously creating valuable habitats that both humans and the rest of the natural world can benefit from. To date, JACK WOLFSKIN has planted almost 500,000 trees, covering an area of over 2.1 million m^2.

We also have high requirements of our products in terms of top quality and excellent functionality at competitive prices, without neglecting our environmental and social responsibilities. We are happy to do without ecological labels we have come up with ourselves and rely instead on more substantiated and verifiable standards such as the bluesign® standard or the Öko-Tex® Standard 100. As of October 2011, all of our underwear has been certified to the Öko-Tex® Standard 100. JACK WOLFSKIN has also been an official bluesign® system partner since that date. Our first products with the bluesign® label will be available to buy from winter 2012. We will continue to expand our range in the coming years and integrate our upstream production chain into the testing and certification process. Additionally, by our 2013 summer collection, all of our cotton will come from certified organic sources.

Another important part of our activities lies in protecting the countryside and educating people about the environment. By providing them with knowledge about the significance and value of our biological diversity, we want to motivate people to get out into the great outdoors, enjoy its beauty and take responsibility for maintaining it. JACK WOLFSKIN has been involved in a number of environmental protection and education projects for many years now.

Our wolf conservation project in Romania has been going on since 1993, and we are now also involved in re-establishing and maintaining the biggest area of forest wilderness in Europe via the Foundation Conservation Carpathia.

Arved Fuchs, a leading polar researcher, has been supporting JACK WOLFSKIN since 2007 in the education of schoolchildren as "climate ambassadors" as part of his annual Ice Climate Education project.

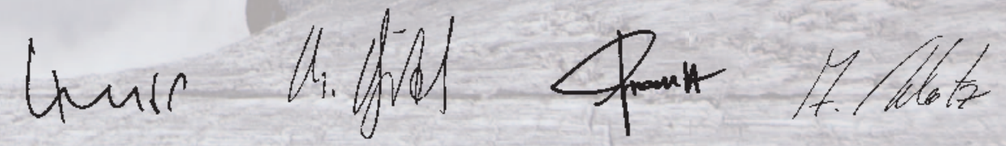
Thanks to our large-scale afforestation projects, run by PrimaKlima -weltweit- e.V., we are helping to protect and promote one of the most significant habitats around: woodland. Woodlands are essential ecosystems and habitats for countless plants and animals, store and filter drinking water, filter the air we breathe, supply nutrients and provide renewable resources, as well as much more.

With our foundation, which awards EUR 250,000 annually as the Deutscher Naturschutzpreis [German Nature Conservation Prize], we have also set a course for the future: we have been awarding the first national prize for environmental protection since 2011 in partnership with the Bundesamt für Naturschutz [German Federal Office for Nature Conservation]. We seek out and promote innovative ideas and projects that can be used to inspire people to protect the nature and encourage environmental sustainability, supporting ideas and projects that encourate people to get involved or copy the projects. The size of the project is of secondary importance. The award is given to particularly innovative and exemplary project concepts for protecting species and habitats, promoting the experience of nature and public awareness for nature. We want this prize to help a great many of these good ideas and projects on the road to implementation and success.

It currently seems next to impossible to achieve any kind of international political consensus with regard to the fight against climate change and the progressive loss of biological diversity. However, we will not be discouraged or dissuaded from continuing to pursue our goals. On the contrary, it gives us even more grounds to promote a responsible approach.

Enjoy reading this report and maybe we'll see each other out and about!

The management



Michael Rupp
CEO

Markus Bötsch
CSO

Christian Brandt
COO

Andreas Klotz
CFO

A MESSAGE FROM ARVED FUCHS

(© Arved Fuchs)

Dear JACK WOLFSKIN friends,

For over 30 years, I have been travelling to the furthest corners of the Earth and have maintained my fascination with the beauty of nature while doing so. Even seemingly everyday natural experiences move me and encourage me to travel. What would our world be like without our unique environment, without these special experiences that sometimes only last a fleeting moment but continue to affect you and move you long after they are over. I love these moments, revel in the feelings they create and enjoy being moved by nature. In fact, I am living my dream.

However, during my travels, I am also a fastidious observer of my surroundings: this is out of interest in them but also because nature demands that we remain vigilant. Thus it has become clear to me that things are not as they should be. During my numerous trips to the icy regions north of the Arctic Circle, the impact on nature caused by mankind really hit home. I am continually confronted by the effects of climate change: the sea ice is receding, glaciers are melting faster than ever and the water flowing to the seas, while whole villages sink into the melting permafrost. The obvious consequences of climate change shock me and have truly caused me great concern over the past few years. My perceptions have changed and I see my environment in a broader, more global context – not just with regard to the polar regions. The more intensively I got involved with the topic, the clearer it became that these changes were not occurring on an individual, localised, scale but are already having a global effect.

The Arctic is not just a far-flung region of our planet, it is also probably the best indicator there is for what we have wrought upon the environment with our CO_2 emissions. After all, the melting polar ice cap is already having dangerous consequences around the world due to rising sea levels.

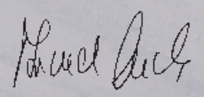
Overfishing, deforestation, extinction of species and now climate change, too... That's certainly a lot of problems and none of them are easy to solve. But when has putting our heads in the sand, just waiting and doing nothing, or pretending that everything's fine and dandy ever done us any good? So let's get involved and tackle the problem head-on, from a factual and serious point of view. We still have the ability to at least compensate for some of the effects of climate change but we need to get people to wake up, get the low-down and get invovled in promoting change.

For my part, I have decided not to simply ignore the problem. I would like to do everything I can to draw people's attention to the urgent need for action in terms of environmental protection and climate change, which is why I address the topic time and again in books, talks and newspaper articles.

JACK WOLFSKIN has been supporting me on my expeditions for almost 20 years now. This partnership has resulted in a common goal, which is to educate people in climate change developments and to emphasise the urgent need for action. We want to educate, inform and sensitise people towards the issue, but we primarily intend to show that it is possible to take action. The problems we are faced with are not without solutions; we simply have to recognise the urgency of the situation and take the necessary corrective action. Climate summits are often attended by lots of well-intentioned, rather concerned-looking individuals – but they are generally only concerned with making declarations of intention.

JACK WOLFSKIN shows that things can be done differently: this environment report explains the complex topic of climate change in a clear way, along with its causes and the far-reaching consequences it is likely to have. Using its own dedication to illustrate the issue, JACK WOLFSKIN then goes on to show that something constructive can be done if people really want to make a serious difference.

These same goals are shared by the annual Ice Climate Education project, which we set up together in 2007: we want to educate schoolchildren to become climate ambassadors who can go back to their schools and tell others about the consequences and effects of global warming and, in the ideal case, motivate others to take part in further climate projects. Climate change affects us all in one way or another and is already having a major effect on our lives. It is primarily a result of human activities – but that is not a reason to give up completely. We must see it as an opportunity to actively make a change, with the aim of preserving the Earth as we know it and need it.



Arved Fuchs
Expedition leader and author

A MESSAGE FROM PROF. ANGELIKA ZAHRNT

(© BUND e. V.)

Dear readers,

I am writing my message outdoors – in Berlin's Tiergarten park, next to Bellevue Palace, where Environment Week was opened this morning by German President, Joachim Gauck. Environment Week will take place in the palace grounds for the fourth time this year, presents products and activities held by companies, research institutes and associations on the topic of environmental protection and nature conservation. When walking around the event, many companies had positioned their environment and sustainability reports in highly visible spots.

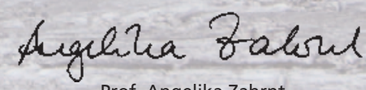
This year, Jack Wolfskin also presented its environmental report. At first glance, this appears somewhat slow-moving for a company which has been around since 1981. However, it is pioneering among outdoor equipment specialists. I'm happy to write this message because, although it was the first environment report, it was not something cobbled together by beginners. It's obvious that the company has been dedicated to the topic of environmental protection and nature conservation for many years and that environment and sustainability are not just empty words that were added to the 2008 corporate goals. Rather, they have been incorporated into management strategies and products alike and this has been communicated clearly and transparently in this report. It's not a flowery, overwrought piece of writing, but a clear and factual report, depicting what has been achieved and highlighting issues and problems – such as the use of down, or the lack of success with using recycled textiles, or the difficulties of tracking the entire value chain in a globalised production process – from the exploitation and cultivation of resources to the manufacturing process – and ensuring environmental and social responsibility.

This report makes the management's positions on certain issues clear, such as with regard to the aim of making textiles from organic cotton, not just as a product to appeal to eco-friendly shoppers but to switch the entire production process to organic cotton. Or the decision not to use any nano-particles while so little is still understood about the consequences of these technologies and their harmlessness still goes unproven – that's acting with foresight. This report shows that the diverse projects supporting environmental education and nature conservation are not just about clever marketing but about highlighting an issue that is of huge importance to the company.

The environment report is, however, not just a report about Jack Wolfskin as a company. It's also a report about the major problems of global warming and biodiversity, as shown outdoors, which highlight the immense challenges with which we are faced. The report promotes the attitude that we should all address these problems with dedication today, both in our business operations and in our own choices, in our free time.

Enjoying the great outdoors sounds so positive – associated with staying active, healthy and in touch with nature. But it can also be destructive if nature is simply the backdrop for my sporting ambition, or a convenient extension of my living room for romantic outings or a terrain in which there are no limits for my adventurous spirit. That's why it's important to combine the positive aspects with an attitude of respect and responsibility for nature. This attitude can only be achieved through education, but can take on a greater importance with a more lasting impression through an outdoor lifestyle, experiencing nature, enjoying the wonders of nature and learning respect for nature.

I hope this environment report finds a wide audience, who contribute to its improvement and the improvement of the company with their questions, criticisms and comments. I wish Jack Wolfskin every success in its projects dedicated to environmental protection and nature conservation that are reflected in its 2012–2014 Environment Programme. I hope Jack Wolfskin's environmental management programme achieves EMAS certification and that it can publish a sustainability report in order to take another important step on the journey towards sustainable management and a sustainable company.



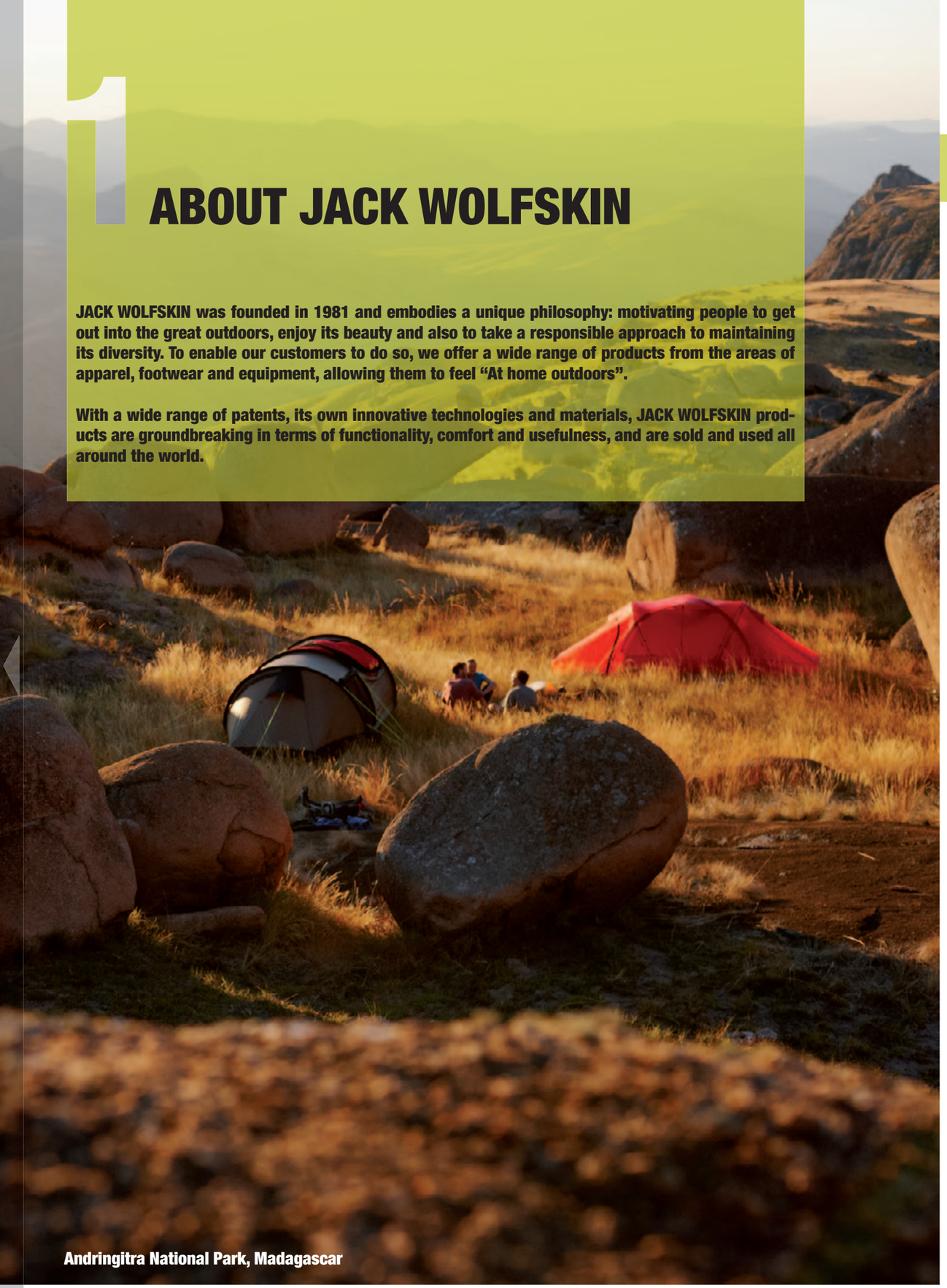
Prof. Angelika Zahrnt
Honorary Chair
Bund für Umwelt und Naturschutz Deutschland e. V.
(Friends of the Earth Germany)

CONTENTS

1 ABOUT JACK WOLFSKIN

JACK WOLFSKIN was founded in 1981 and embodies a unique philosophy: motivating people to get out into the great outdoors, enjoy its beauty and also to take a responsible approach to maintaining its diversity. To enable our customers to do so, we offer a wide range of products from the areas of apparel, footwear and equipment, allowing them to feel "At home outdoors".

With a wide range of patents, its own innovative technologies and materials, JACK WOLFSKIN products are groundbreaking in terms of functionality, comfort and usefulness, and are sold and used all around the world.



Andringitra National Park, Madagascar

1.1 WHAT MOTIVATES US

"At home outdoors" is the JACK WOLFSKIN motto. Anyone who enjoys being outside in any weather and in all seasons gets to know and value nature in a very special way – something that we and our customers have in common. They also have a special affinity to nature, they prize peace and quiet and relaxation as well as the many opportunities available for getting out and about and staying fit. And they know that if they cherish something, it's worth protecting.

ENTHRALLED BY NATURE

Being out and about in the great outdoors both enthrals us and provides us with a constant source of joy. We are aware of the impact of our hikes because many regions suffer from visible consequences of the overexploitation of nature due to urbanisation, agriculture, pollution, the introduction of foreign, sometimes invasive, species, and due to tourism.

Enjoying and protecting nature need to be more closely linked and follow common goals. We want to motivate as many people as possible to follow this path alongside us.

OUTDOOR ACTIVITIES ARE OUR PASSION

Outdoor activities are our passion and weather protection is our key area of expertise: whether it's in the mountains, in the wilderness, in far-flung countries or in the local countryside, we require our products to provide the best possible protection against wind, rain, sun, heat or cold so that they can feel "At home outdoors" at all times.

Our customers are people who enjoy being out of doors often, who enjoy getting out and about, achieving goals, exploring the unknown, enjoying scenery and treating nature and people with respect. This goes for mountaineering as much as it does for a hiking tour – a light hike or overseas travel.

RESPECT AND RESPONSIBILITY ARE OUR GOALS

As Europe's leading outdoor equipment specialist, we offer our customers products featuring the very best quality and functionality for all seasons and all weathers – without neglecting our environmental and social responsibilities. We want to prove that fairness, environmental awareness and social responsibility do not mean that you have to forego good products and corporate success.

It is our aim to approach other regions, cultures and natural environments with the utmost respect. We want to show that only a responsible approach to nature, our "home" will ensure that it is around to be enjoyed by future generations.

ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT ARE OUR CORPORATE GOALS

Our actions as a company will always be associated with negative effects on the environment. We have incorporated our aim of keeping our environmental footprint to a minimum in our corporate goals. With this in mind, JACK WOLFSKIN made the protection of resources and the climate a further corporate goal back in 2008.

"[…] As a company, we pledge to maintain balance between corporate, environmental and social responsibility. Environmental protection and sustainable development have been defined as further corporate goals.

Our aim is ambitious: we want to keep our ecological footprint as small as possible, in particular reducing our specific CO_2 emissions by 40% by 2011 in comparison to the average for 2006/2007. […]"

The management, April 2008

1.2 FACTS AND FIGURES

Les Ecrins National Park, France

FOUNDED: 1981 in Frankfurt am Main, Germany

HEADQUARTERS: Idstein/Taunus, Germany (since 1997)

CENTRAL EUROPEAN WAREHOUSE: Neu Wulmstorf, Germany

LEGAL FORM: GmbH & Co. KGaA

NUMBER OF EMPLOYEES: 677 (as at 05/2012)

MANAGEMENT: Michael Rupp (CEO), Markus Bötsch (CSO), Christian Brandt (COO), Andreas Klotz (CFO)

TURNOVER IN 2011 FINANCIAL YEAR: EUR 355 million

TRADE PARTNERS AND SALES OUTLETS

JACK WOLFSKIN sells its products via various sales channels: specialist outdoor retailers, sports retailers and JACK WOLFSKIN franchise stores. Across Europe and Asia, JACK WOLFSKIN products are available in over 600 franchise stores and over 4,000 points of sale.

The first JACK WOLFSKIN store was opened in Heidelberg in 1993. Our store sizes range from 75m² to 700 m², with our largest store located in Stuttgart, Germany.

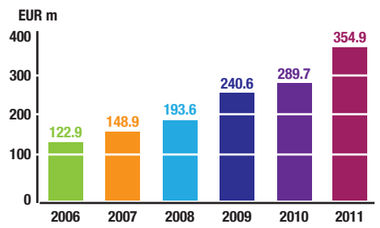
MARKET POSITION

We are Europe's leading supplier of functional outdoor apparel, footwear and equipment and the biggest franchiser in the German specialist sports retail trade.

We were able to achieve double-digit growth in the 2011 business year, totalling EUR 355 million. There were positive trends in all product groups and sales channels and above-average growth in other European countries. We were able to more than double our turnover in Asia, with our brand achieving 4th place among outdoor specialists in China within a short period of time.

At the end of the 2011 business year, JACK WOLFSKIN employed a total of 630 people and the company will continue to expand in 2012.

DEVELOPMENT OF TURNOVER 2006-2011



The trend in turnover from 2006 to 2011 shows constant growth of over 20% per year.

Boom in outdoor pursuits

Studies have shown that outdoor pursuits are associated with emotional attributes in our society: the desire for rest and relaxation from our hectic everyday lives, a love of nature and poetry, honesty, spirituality, sport, health and fitness, enjoyment, experiences and pushing the limits – all this defines the increasing popularity of exploring the countryside and getting involved in outdoor activities.

1.3 OUR PRODUCTS

JACK WOLFSKIN products feature cutting-edge technologies and decades of outdoor experience. Our products are characterised by their high degree of functionality, user-friendliness and innovation. In recent years, JACK WOLFSKIN has launched countless successful material and product innovations and has several patents for technologies in the fields of apparel, rucksacks and tents.

WEATHER PROTECTION AND FUNCTIONALITY ARE OUR KEY AREAS OF EXPERTISE

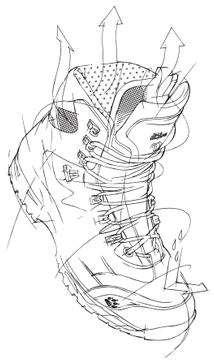
Comprehensive weather protection and a high degree of functionality are the key issues for our apparel, footwear and equipment. No matter whether it's windy, rainy, sunny, hot or cold, our customers need to be able to rely on their clothes, footwear and equipment. We provide products that guarantee the ideal protection against all kinds of weather, while simultaneously taking into account the specific requirements of the activity in question. The basis for this is provided by our own innovative, sometimes patented, technologies and functional materials, as well as those from specialist manufacturers. We complement this with our expertise from over 30 years of product development and the feedback of those who use our highly evolved products. We constantly strive to combine functionality and comfort, with exceptional quality coming as standard.

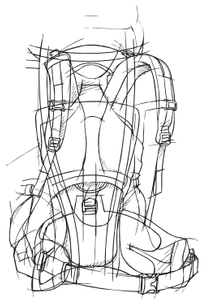
OUR COLLECTIONS

The JACK WOLFSKIN collections are divided into apparel, footwear and equipment.

JACK WOLFSKIN

APPAREL | **FOOTWEAR** | **EQUIPMENT**





Within these divisions, we also distinguish between the following areas of application: ALPINISM, TREKKING, HIKING and ACTIVE TRAIL. And that does not just go for our adult ranges, but also our younger adventurers too, as part of our FAMILY line.

ALPINISM

PRODUCTS FOR MOUNTAINEERING, NARROW PATHS AND CLIMBS, FOR CLIMBING PEAKS AND GOING ON ALPINE TOURS.
Hard-wearing, excellent breathability, good freedom of movement, protection from precipitation and cold – while remaining as light as possible. Areas that see lots of wear and tear are often specially reinforced so as to resist the contact they have with equipment, rocks and ice.

TREKKING

FOR FAR-FLUNG BACKPACKING AND CAMPING TOURS LASTING ANYTHING FROM SEVERAL DAYS TO SEVERAL WEEKS.
Reliable weather protection and good durability thanks to waterproof, robust materials and long cuts. Plenty of extra features such as pockets to keep all sorts of bits and pieces to hand, and excellent comfort thanks to features such as ventilation zips.

HIKING

PRODUCTS FOR DAY HIKES IN ALL WEATHERS ON MODERN TRAILS OR CLASSIC HIKING TOURS.
Practical and multifunctional: there are extremely sporty jackets and those where you perhaps don't notice the functions at first glance. Our hiking range is highly versatile, offers all the necessary features and comfort is always our top priority.

ACTIVE TRAIL

FOR HIGHLY ACTIVE AND HIGH-OCTANE OUTDOOR PURSUITS, WITH LITTLE OR NO LUGGAGE.
As light as possible and with minimal features. Excellent breathability and good freedom of movement are other important aspects. In addition, the clothing is cut to fit as closely to the body as possible and a very compact pack size.

FAMILY

OUR FAMILY RANGE IS BASED ON THE ASSUMPTION THAT ADULTS AND CHILDREN GO ON A HIKE TOGETHER. OUR PRODUCTS FOR CHILDREN AND YOUNG PEOPLE ARE ADAPTED SPECIALLY TO THEIR REQUIREMENTS – BOTH WITH REGARD TO MATERIALS AS WITH REGARD TO FEATURES. WE ENSURE THAT CHILDREN'S ITEMS ARE HARD-WEARING, STRAIGHTFORWARD AND ENSURE THEIR PASSIVE SAFETY:

- Reflectors are a feature of all of our childrenswear because they ensure better visibility when on and near roads.
- Clever manufacturing details help to reduce the risk of accidents by eliminating protruding drawstrings that could catch on things or dangling ties, for example.
- Checking the tensile strength and tear-resistance of small parts such as buttons, zip tabs etc. minimises the risk of swallowing.

2 CORPORATE RESPONSIBILITY

PROTECTING NATURE AND THE ENVIRONMENT AS PART OF OUR SUSTAINABILITY STRATEGY

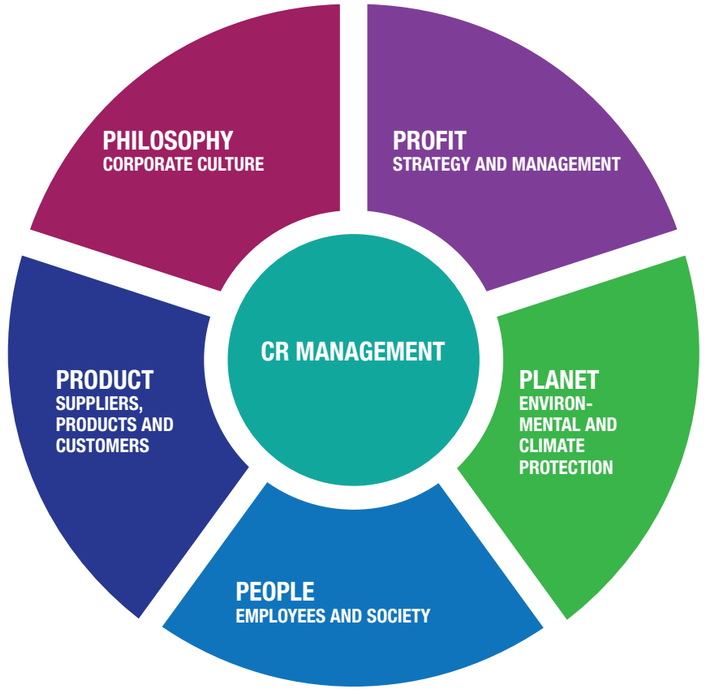
Lombadas Valley, Sao Miguel, Azores, Portugal

Corporate responsibility (CR), the active perception of social responsibility, is part of the way JACK WOLFSKIN sees itself as a company and part of its corporate culture; basic values that the company incorporates in all its work and uses to develop its strategies and define its goals.

We offer our customers products featuring the very best quality and functionality for all seasons and all weathers – without neglecting our environmental and social responsibilities. We want to prove that fairness, environmental awareness and social responsibility do not mean that you have to forego good products and corporate success.

We are of the opinion that a company can only adhere to a long-term sustainability strategy and achieve success by achieving a balance between economic, environmental and social responsibility. JACK WOLFSKIN sees CR as an important contribution to sustainable development in the areas of market, environment, workplace, community and production.

JACK WOLFSKIN's CR management encompasses the following areas:

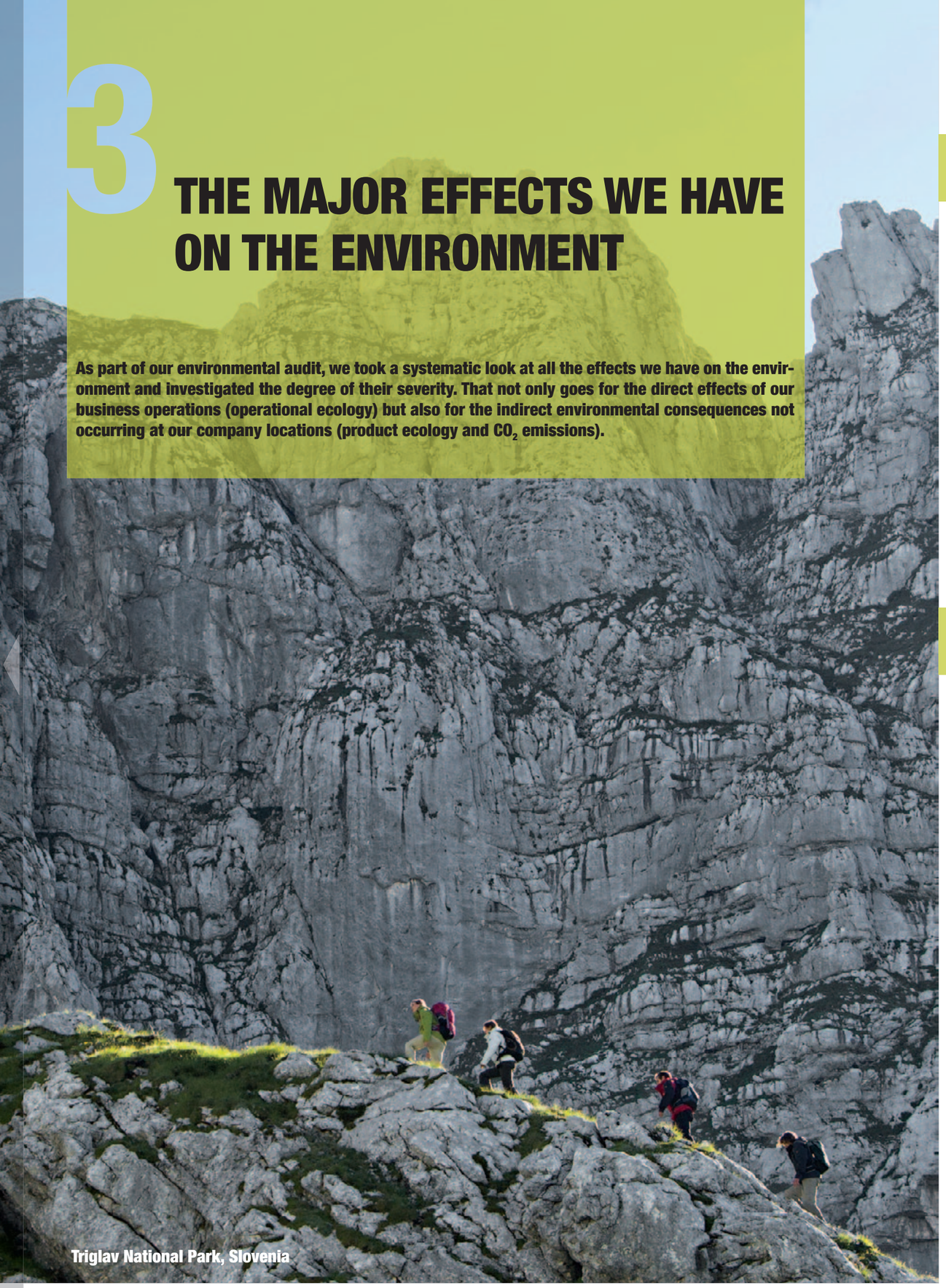


Areas of action for our corporate responsibility management

For more information about our CR pledge, please visit www.jackwolfskin.com.

3 THE MAJOR EFFECTS WE HAVE ON THE ENVIRONMENT

As part of our environmental audit, we took a systematic look at all the effects we have on the environment and investigated the degree of their severity. That not only goes for the direct effects of our business operations (operational ecology) but also for the indirect environmental consequences not occurring at our company locations (product ecology and CO_2 emissions).



Triglav National Park, Slovenia

3.1 DIRECT EFFECTS ON THE ENVIRONMENT (OPERATIONAL ECOLOGY)

The major direct effects we have on the environment:

- Amount of waste
- Heating requirements
- Paper usage
  (primarily at Idstein)
- Electricity usage
- Packaging material usage
  (primarily at Neu Wulmstorf)
- Water usage
- Use of advertising
- CO_2 emissions
  - Through heating requirements
  - Through electricity requirements
- Land usage

3.2 INDIRECT EFFECTS ON THE ENVIRONMENT (PRODUCT ECOLOGY AND CO_2 EMISSIONS)

The major indirect effects we have on the environment:

- Product ecology
- Resources and raw materials
- Manufacturing and processing
- Hazardous substances
- Ethical aspects
- Usage
- CO_2 emissions
  - Through business trips
  - Through cargo transport

Assessment of significance

We use a process of verbal argumentation to assess significance. It summarises all available data and enables us to make an assessment using the relevant criteria such as potential environmental damage, vulnerability of the local, regional or global environment, extent and frequency of the environmental aspect and the relevant environmental requirements. At the same time, the process also highlights areas for potential optimisation. In comparison to a numerical analysis, an absolute assessment is not the aim, although the results and measures derived still have to be easily and directly quantifiable.

3.3 ENVIRONMENTAL ACCOUNTING

In accordance with the EU's EMAS (Eco-Management and Audit Scheme), we have given details of the key indicators that affect the direct environmental impact of the organisation:

Waste: Annual waste and incidence of hazardous waste

Energy efficiency: Annual total energy consumption and proportion of renewable energies

Material efficiency: Annual mass flow of various materials used
(at our company: usage of paper and packaging materials)

Water: Annual water usage

Emissions: Annual total CO_2 emissions, as well as carbon footprint after offsetting

Biological diversity: Area of land use

3.3.1 LOCATIONS AND SYSTEM LIMITS

We analyse the operational ecology for the following locations:

- Our headquarters in Idstein (2007–2011 environmental balance sheet, see Chapters 5.3.2 and 5.5.3)
- Our central European warehouse in Neu Wulmstorf (2010–2011 environmental balance sheet, see Chapters 5.3.2 and 5.5.3)

We also analyse our products sold around the globe (2007–2011 environmental balance sheet, see Chapter 5.3.2).

Our CO_2 balance sheet for 2007–2011 takes into account CO_2 emissions (see Chapter 5.4.3), CO_2 avoidance through the use of green electricity and CO_2 offsetting through afforestation (see Chapter 5.4.2). It applies across all our locations to:

- Our headquarters in Idstein
- Our central European warehouse in Neu Wulmstorf
- Both of our former warehouses in Hamburg (in Neu Wulmstorf since 2010)
- Our seven German showrooms
  - Berlin
  - Hamburg
  - Langenhagen
  - Munich
  - Neuss
  - Schkeuditz
  - Sindelfingen
- Our five stores run by JACK WOLFSKIN in Germany
  - Düsseldorf
  - Frankfurt
  - Munich
  - Oberhausen
  - Stuttgart
- Our global business travel
- Our global freight transport

3.3.2 REFERENCE VALUES AND EMISSIONS FACTORS

According to EMAS, we use our gross turnover as the reference value for the CO_2 balance sheet and the number of staff as the reference value for the environment balance sheet.

Staff numbers include those permanent employees at each location, including trainees. The figures do not include temporary staff.

The gross floor area is calculated according to DIN 277.

CO_2 EMISSIONS FACTORS*

	CO_2 emissions factor	Data source
Building energy		
Heating (natural gas)	232 g/kWh	ETH Zürich
Electricity	German fuel mix 2007: 605 g/kWh	German Federal Environment Agency
	German fuel mix 2008: 570 g/kWh	German Federal Environment Agency
	German fuel mix 2009: 508 g/kWh	German Federal Environment Agency
	German fuel mix 2010: 494 g/kWh	German Federal Environment Agency
	German fuel mix 2011: figure not available at time of going to print so 2010 figure was used	German Federal Environment Agency
	M-Strom 2007–2008: 443 g/kWh	Stadtwerke München (according to § 42 EnWG**)
	M-Strom 2009–2010: 436 g/kWh	Stadtwerke München (according to § 42 EnWG**)
	M-Ökostrom 2011: 0 g/kWh	Stadtwerke München (according to § 42 EnWG**)
	Greenpeace Energy 2008–2011: 0 g/kWh	Greenpeace Energy (according to § 42 EnWG**)
Business travel		
Air travel	Various [g/km]	atmosfair (incl. IPCC's RFI factor)
Car – company car	Various [g/km]	Manufacturer guidelines, plus 25% safety margin
Car – hire car	Various [g/km]	Manufacturer guidelines, plus 25% safety margin
Car – taxi	156 g/km for diesel cars	German Federal Environment Agency
	120 g/km for natural gas-powered cars	German Federal Environment Agency, erdgasfahrzeuge.de
Train	Various [g/km]	Bahn UmweltMobilCheck, ifeu institute
Freight transport		
Air freight	Various [g/tkm]	DHL Global Forwarding GmbH according to GHG protocol (incl. IPCC's RFI factor)
Air/sea freight	Various [g/tkm]	DHL Global Forwarding GmbH according to GHG protocol (incl. IPCC's RFI factor)
Sea freight	Various [g/tkm]	DHL Global Forwarding GmbH according to GHG protocol
Road freight	Variouse [g/tkm]	DHL Global Forwarding GmbH according to GHG protocol

* According to the UN Intergovernmental Panel on Climate Change (IPCC) and the Umweltbundesamt (German Federal Environment Agency, UBA), emissions from air travel are much more detrimental to the greenhouse effect than emissions from other types of transport (IPCC, 1999, and UBA, 2008 b). In order to get an accurate picture of the effects of air travel on the climate and on the greenhouse effect, we multiply our CO_2 emissions from air travel by the factor of 2.7 that is known as the Radiative Forcing Index (RFI).

** German legislation regulating the energy industry

4 OUR ENVIRONMENTAL MANAGEMENT SYSTEM

Our business dealings will always have a negative effect on nature and the environment but we have made it our corporate goal to gradually reduce these effects to a minimum. The aim of the JACK WOLFSKIN environmental approach is to keep our environmental footprint as small as possible, in particular with regard to reducing our specific CO_2 emissions. In doing so, JACK WOLFSKIN will always give preference to avoidance over substitution and compensation.

Our involvement with the environment and climate protection as well as maintaining biodiversity is part of the way JACK WOLFSKIN sees itself as a company and a key aspect of JACK WOLFSKIN's sustainability strategy.

Pico, Azores, Portugal

JACK WOLFSKIN's environmental management system comprises the following areas:

Areas of activity in our environmental management strategy

4.1 GUIDELINES AND SCOPE OF APPLICATION

We are involved in all five areas of activity with regard to environmental protection, with our environmental management system as the coordinating link. This system helps us identify areas for potential improvement, aids us in implementing measures consistently and enables us to continue improving our environmental protection measures.

GUIDELINES

Our environmental management system is based on EMAS and DIN EN ISO 14001 European and global guidelines for operational environmental management. Our environmental management system has not been validated (according to EMAS) or certified (according to DIN EN ISO 14001).

SCOPE OF APPLICATION

The following locations have been integrated into our environmental management system:

- Headquarters, Idstein
  Jack Wolfskin Kreisel 1
  65510 Idstein
  Germany

- Central European warehouse Neu Wulmstorf
  Wulmstorfer Wiesen 5
  21629 Neu Wulmstorf
  Germany

We have binding environmental requirements for our global freight transport with respect to:

- Choice of means of transport
- Route planning
- Packaging material

Our showrooms and franchise stores around the world are also subject to binding environmental requirements in terms of:

- Use of green electricity
- Shopfitting
- Equipment
- Advertising

4.2 ELEMENTS AND INTEGRATION AT ALL ORGANISATIONAL LEVELS

In 2010, we bundled our long-term nature, environmental and climate-protection activities in one environmental management system and created the position of an environmental representative. The elements listed below enable us to continually improve our environmental approach.

ELEMENTS

- **Environment policy** as part of company policy
- **Responsibility for the environment** as an interdisciplinary undertaking, including the management
- **Internal audits** to identify areas of potential improvement
- **Internal environmental audit** for all areas of business
  - Systematic records of all direct and indirect effects on the environment
  - Assessment of significance
  - Identification of areas of potential improvement
  - Derive aims and measures
- **Internal environmental operational audit** with correction mechanisms
- **Environmental management assessment** by the management
- **Environmental balance sheet** with key figures for all major environmental effects
- **Environment dialogue** with employees and other stakeholders
- **Documentation** of relevant processes, tasks and aims
- **Environment programmes** as a catalogue of aims and measures lasting three years each
  - For all major direct and indirect environmental effects
  - With deadlines and persons responsible
- **Environmental report** for the purpose of providing transparent information to all relevant stakeholders
  - With a review of what has been achieved and a look forward to future aims
  - First published in 2012, then every three years

INTEGRATION AT ALL ORGANISATIONAL LEVELS

Integrating our environmental management system at all managerial levels reflects the high level of importance that we accord the topic in our corporate responsibility.

As the person in charge of corporate responsibility on behalf of the management, **Christian Brandt takes responsibility for environmental protection** at JACK WOLFSKIN.

The first point of contact for our staff is our **Environmental Officer, Ingmar Anderson**. This full-time position sees Ingmar Anderson report directly to the management.

Ingmar Anderson

At our headquarters in Idstein and at our central European warehouse in Neu Wulmstorf, various departments are concerned with tasks that have an impact on the environment, which are overseen by the relevant head of department. Either the heads of department themselves or the members of staff designated by them are the contact persons for our Environmental Officer for the purposes of internal audits and the coordinated implementation of the environment programme as agreed for the department.

AREA OF ACTIVITY: ENVIRONMENTAL MANAGEMENT SYSTEM – 2012–2014 AIMS

No.	Aim	Measures	Deadline	Responsibility
1	Expansion of our environmental management system and improvement of our environmental protection measures	Conduct and document internal audits in all departments associated with the environment.	Regularly	Environmental Officer, Environmental Representatives
2		Environmental management evaluation by the management	Annually	Management, Environmental Officer
3		Documentation of major processes having an effect on the environment, as well as tasks and areas of responsibility	12/2014	Environmental Officer, Environmental Representatives
4		Implementation of our environment programme for 2012–2014	12/2014	Environmental Officer, Environmental Representatives, Management
5		Conduct internal environmental operational audit	12/2014	Environmental Officer
6		Develop an environment programme for 2015–2017	03/2015	Environmental Officer, Environmental Representatives, Management
7	Record and evaluate all major direct and indirect effects on the environment	Create environmental balance sheet for 2012–2014: ■ Idstein ■ Neu Wulmstorf ■ Product ecology ■ CO_2 balance sheet	06/2015	Environmental Officer, Environmental Representatives
8	More active incorporation of our staff	Inform our staff about topics relating to the environment	Regularly	Environmental Officer, Management
9		Information event: "Environmental protection at JACK WOLFSKIN" for new trainees	Annually	Environmental Officer
10		Information event: "Environmental protection at JACK WOLFSKIN" for new staff	Regularly	Environmental Officer
11		Environmental promotions, projects and competitions	Regularly	Environmental Officer
12	Integration of environmental management system into our CR management strategy	Conduct complete CR analysis	06/2013	Environmental Officer, Environmental Representatives, Management, all departments
13		Formulate a CR mission statement	12/2013	Management, Environmental Officer, all departments
14		Development and implementation of a CR strategy	From 01/2014	Management, Environmental Officer, all departments
15		Set up CR reporting and a CR audit in line with the GRI standard	12/2014	Management, Environmental Officer, all departments

5 OUR DEDICATION TO THE ENVIRONMENT

Sao Miguel, Azores, Portugal

5.1 MILESTONES

1993

- Start of our involvement supporting the “Carpathian Large Carnivore Project” wolf conservation project

2005

- Start of the virtualisation of our servers
- Reduction of the number of printers in the workplace

2007

- First CO_2 balance sheet for the company, including total heating energy and electricity usage, business travel and freight transport
- Summary of all harmful substance specifications we have of our projects in the JACK WOLFSKIN Green Book
- Start of our support of the ICE CLIMATE EDUCATION project initiated by Arved Fuchs
- Planning of our new logistics centre in Neu Wulmstorf, incorporating improved energy usage aspects

2008

- Switchover to recycled paper for our catalogues
- Start of the switchover to Greenpeace Energy
- Resource and climate protection defined as a company goal; JACK WOLFSKIN sets itself ambitious climate protection aims
- Installation of photovoltaic systems in Idstein and Neu Wulmstorf
- Landscaping the employee campus at the Idstein headquarters with comprehensive renaturation and establishing green areas
- Introduction of a new, energy-saving lighting concept in our franchise stores
- Installation of a solar-heating plant for our sports hall in Idstein

2009

- Complete restructuring of our procurement processes in order to drastically reduce the proportion of air freight
- Idstein and Neu Wulmstorf equipped with video conferencing systems
- Introduction of a season travel card for employees at Neu Wulmstorf
- Switchover to FSC-certified wood for all coat hangers in our stores
- Electric car bought for our Idstein office
- Initiation of paperless ordering at Neu Wulmstorf
- Conservation Carpathia Foundation established

2010

- Initiation of our support for the German Federal Agency for Nature Protection’s Kinatschu children’s booklet
- Start of the switchover to organically grown cotton
- Creation of an Environmental Officer position
- Creation of an environmental balance sheet and an environmental management system
- First-ever offsetting of all unavoidable CO_2 emissions with large-scale afforestation projects from PrimaKlima-weltweit- e.V.
- Switchover to FSC-certified paper for our paper bags

2011

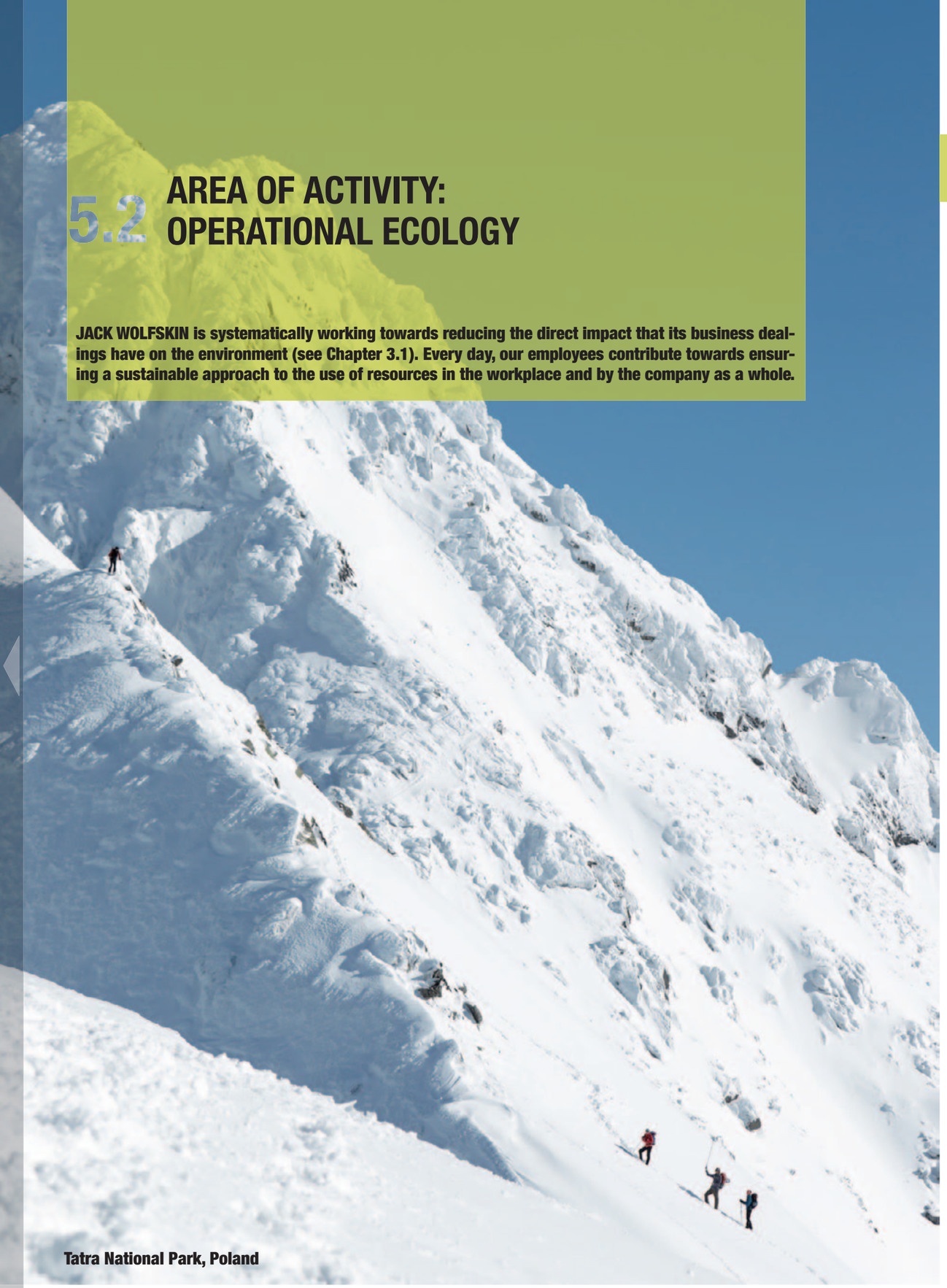
- Foundation of the annual German Nature Conservation Prize, worth EUR 250,000
- Our order handbooks were printed in a climate-neutral process for the first time
- Introduction of a new waste disposal concept
- **C**ertification of all our underwear in line with Öko-Tex® Standard 100
- JACK WOLFSKIN becomes an official system partner of bluesign®
- The average CO_2 emissions of our company car fleet are 130 g/km
- We have decreased our specific CO_2 emissions by over 50% in comparison to 2007

2012

- All of our German JACK WOLFSKIN-run locations use 100% green electricity
- Our catalogues are printed in a climate-neutral process for the first time
- Our catalogues are posted using a climate-neutral process for the first time
- Publication of our first environmental report

5.2 AREA OF ACTIVITY: OPERATIONAL ECOLOGY

JACK WOLFSKIN is systematically working towards reducing the direct impact that its business dealings have on the environment (see Chapter 3.1). Every day, our employees contribute towards ensuring a sustainable approach to the use of resources in the workplace and by the company as a whole.



Tatra National Park, Poland

5.2.1 WHAT WE HAVE ACHIEVED SO FAR

WASTE

- Waste separation at Idstein headquarters
  - Coherent waste signage system (various colours and symbols)
  - Waste separation information in kitchens since 09/2011
  - Recycling of packaging material from other companies
- Waste separation at Neu Wulmstorf
- Introduction of a new waste disposal concept in 09/2011

BUSINESS TRAVEL AND TRAVEL TO/FROM WORK

- Travel guidelines
  - The train should be used as the preferred mode of transport for travel within Germany
  - Domestic flights require advance approval by the management
  - Car-sharing should be used for events
- Particulate filters have been a requirement since becoming available on the market
- CO_2 emissions requirements have been a requirement of our leasing company since 2007
- Requirement for our taxi partners in Idstein to start using cars powered by natural gas (since 01/2009)
- Video conferencing systems in Idstein and Neu Wulmstorf since 06/2009
- Season travel card for employees in Neu Wulmstorf since 06/2009
- Purchase of an electric car for our Idstein headquarters in 11/2009
- We have a bike mechanic contact for our employees in Idstein since 2010
- At the end of 2011, the average CO_2 emissions of our company car fleet were 130 g/km

HEATING REQUIREMENTS

- Comprehensive external energy review for our Idstein headquarters in 03/2009
- Bus technology in Idstein, building C, used for natural climate control (windows open in line with day-to-day and seasonal temperatures) since 03/2008
- Solar heating system for the showers in our gym in Idstein since 07/2008
- Low-temperature boiler and underfloor heating in Neu Wulmstorf
- Heating controlled by day-to-day and seasonal temperatures

FOOD CONSUMPTION

We do not have a canteen in either Idstein or Neu Wulmstorf but provide our employees with certain items for free such as coffee, tea, hot chocolate, milk and fruit.

For more information, visit www.biosiegel.de
For more information, visit www.naturland.de
For more information, visit www.fairtrade-deutschland.de

We only buy items with the following seals of approval:

- Organic in accordance with EC Eco regulation of organic produce
- Naturland organic farming certificate
- Fairtrade

In Idstein we buy milk and fruit from local shops selling organic produce.

PAPER USAGE

For more information, visit www.blauer-engel.de
For more information, visit www.fsc.org

- Switchover to using 100% recycled paper with the Blauer Engel seal for photocopying (PureWhite from Steinbeis) in 10/2007
- Switchover to printing our catalogues on recycled paper from 01/2008
- Switchover to using 100% recycled paper with the Blauer Engel seal for corporate stationery and invoices (PureWhite from Steinbeis) in 01/2008
- Paperless ordering in Neu Wulmstorf since 11/2009
- Switchover to using FSC-certified paper carrier bags in 10/2010
- Preset duplex printing since 05/2011

ELECTRICITY USAGE

GREENPEACE ENERGY
WE GET ECO ENERGY FROM GREENPEACE ENERGY.

- We generally forego the use of air-conditioning systems (with certain exceptions, such as server rooms and the top floor of building A, Idstein)
- Reduced cooling in our server rooms
- Switchover to flat-screen monitors in 2002
- Virtualisation of our servers since 2005 (54% had been virtualised by 2011)
- Reduction in the number of printers in the workplace by approx. 50% since 2006
- Selection of energy-efficient photocopiers and printers since 06/2006
- Optimised selection of light bulbs (energy-saving light bulbs and T5 lamps) since 2008
- Bus technology in Idstein, building C, used to switch off electricity automatic ally at night since 03/2008
- Switchover to Greenpeace Energy from 03/2008
- Energy usage analysis of computers, laptops and thin clients; decision in favour of thin clients and laptops in 08/2008
- Photovoltaic systems in Idstein (since 04/2008) and Neu Wulmstorf (since 12/2008)
- Comprehensive external energy review for our Idstein headquarters in 03/2009
- All German JACK WOLFSKIN-run locations have been using 100% green electricity since 1 January 2012

Paddy fields, Madagascar

USAGE OF PACKAGING MATERIALS

- Preference of paper/cardboard over plastic packaging
- Optimisation of box sizes
- Reusable EUR-pallets

WATER USAGE

- Use of short rinse cycles
- Use of flow regulators and aerators
- Calculation of the difference between freshwater usage and wastewater discharge

USE OF ADVERTISING MATERIALS

- Switchover to recycled and FSC-certified paper for our advertising materials in 01/2008

CO_2 EMISSIONS

See information on business travel, heating requirements and electricity usage, as well as Chapter 5.4.2.

LAND USE

See information on green spaces, afforestation and development of indoor green areas in Chapter 5.5.2.

5.2.2 ENVIRONMENTAL BALANCE SHEET 2007–2011 FOR IDSTEIN

JACK WOLFSKIN has been based in Idstein, Hesse, since 1997. As a result of the boom in turnover in subsequent years (see Chapter 1.2), our employee numbers also rose: in 1997 we had 92 permanent employees at our headquarters. Today, we employ 304 and this number is continuing to rise.

In 2001, 2005 and 2008, we had to rent more office space and this now amounts to six buildings covering an area of over 16,000 m² (see also Chapters 5.5.2 and 5.5.3).

BUILDING/LAND	YEAR OF CONSTRUCTION	YEAR OF OCCUPATION BY JACK WOLFSKIN
Building A	1923	1997
Archive	1994	1997
Building B	1923	2001
Showroom	1972	2005
Building C	1972	2008
Gym	1994	2008
Car park	2008	2008

Idstein headquarters

Buildings A and B date back to 1923 and were originally used as barracks and then as a battery factory. Before we moved in and completely overhauled it, building C was used as a warehouse for a logistics company. JACK WOLFSKIN is not the owner of the land and property and, as the tenant, only has a limited influence on the shell of the building and the heating requirements it entails, something which is reflected by buildings A and B in particular.

Since 2008, Greenpeace Energy has supplied us with 100% green electricity. We have heat the water for the showers in our gym using solar power and also have a photovoltaic system.

In 2008, we also changed the function of the car park situated between buildings A and B, relandscaped it, renatured and planted with trees and shrubs. Since then, the area has been used as a campus by our employees for working or spending their lunch breaks outdoors, with the possibility for them to have a barbecue there too if they fancy it.

The campus and the building we rented in 2008 and converted into a gym offer our employees a wide range of sports opportunities. Our employees can even spend part of their working week making the most of our extensive, professionally run company sports programme.

KEY EMAS INDICATORS FOR 2011

Waste
- 48,251 kg waste in total
- 95 kg of which are hazardous waste (batteries and light bulbs)

Energy efficiency
- 483,516 kWh heating (gas)
- 615,419 kWh electricity (100 % renewable sources)
- 22,127 kWh electricity fed in from photovoltaic systems

Materials efficiency
- 4,582,242 kg total paper usage (90% recycled paper with the Blauer Engel, 10% FSC-certified paper, < 0.1% virgin fibre paper)
- 7,518 kg packaging materials used (99.7% paper/cardboard, 0.3% plastics)

Water
- 1,377 m³ freshwater usage
- 162 m³ of this for watering the green areas

Emissions
- 112,176 kg CO_2 emissions
- 100% of which offset by afforestation projects

Biodiversity
- 16,125 m² area used (land)
- 4,694 m² of which unpaved

Idstein campus

OPERATIONAL ECOLOGY: ENVIRONMENTAL BALANCE SHEET 2007–2011 FOR IDSTEIN

	2007	2008	2009	2010	2011
Reference values					
Employees	178	210	238	261	304
Gross turnover (Group)	€148,903 k	€193,579 k	€240,576 k	€289,658 k	€354,853 k
Figures in absolute terms 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
Waste	n.c.	n.c.	n.c.	n.c.	48,251 kg
Proportion of hazardous waste	n.c.	n.c.	n.c.	n.c.	95 kg
Proportion of non-hazardous waste	n.c.	n.c.	n.c.	n.c.	48,156 kg
Proportion of waste for disposal	n.c.	n.c.	n.c.	n.c.	-
Proportion of waste for recycling	n.c.	n.c.	n.c.	n.c.	100%
Heating (gas)	322,707 kWh	648,340 kWh	735,072 kWh	834,377 kWh	483,516 kWh
Total paper usage	2,374,681 kg	3,316,967 kg	4,619,683 kg	4,457,287 kg	4,582,242 kg
Proportion of recycled paper with the Blauer Engel	199,953 kg	2,755,099 kg	3,674,948 kg	3,747,301 kg	4,132,533 kg
Proportion of FSC-certified paper	48,737 kg	392,674 kg	803,910 kg	709,700 kg	448,503 kg
Proportion of TCF/ECF paper	2,125,991 kg	169,194 kg	140,825 kg	286 kg	1,206 kg
Proportion of climate-neutral print matter	-	-	-	-	15,523 kg
Photocopying and printing paper usage	3,868 kg	6,628 kg	4,625 kg	6,781 kg	4,143 kg
Proportion of recycled paper with the Blauer Engel	1,500 kg	6,045 kg	4,000 kg	6,500 kg	3,505 kg
Proportion of TCF/ECF paper	2,368 kg	583 kg	625 kg	281 kg	638 kg
Electricity usage	266,546 kWh	396,914 kWh	579,900 kWh	608,212 kWh	615,419 kWh
Proportion of electricity from renewable sources (Greenpeace Energy)	-	379,086 kWh	579,900 kWh	608,212 kWh	615,419 kWh
Electricity fed in from our own photovoltaic systems	-	7,777 kWh	20,948 kWh	20,348 kWh	22,127 kWh
Transport (business travel and freight)	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3
Packaging material used	n.c.	n.c.	n.c.	7,410 kg	7,518 kg
Proportion of paper/cardboard	n.c.	n.c.	n.c.	7,390 kg	7,498 kg
Proportion of plastics	n.c.	n.c.	n.c.	20 kg	20 kg
Water usage	764,000 l	1,344,000 l	1,709,000 l	1,463,000 l	1,377,000 l
Proportion used for watering green spaces	-	468,000 l	468,000 l	460,000 l	162,000 l
Amount of domestic wastewater	764,000 l	876,000 l	1,241,000 l	1,003,000 l	1,215,000 l

Environmental indicators 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
Waste per employee	n.c.	n.c.	n.c.	n.c.	159 kg
Heating requirements (gas) per employee	1,813 kWh	3,087 kWh	3,089 kWh	3,197 kWh	1,591 kWh
Total paper usage per employee	13,341 kg	15,795 kg	19,411 kg	17,078 kg	15,073 kg
Proportion of recycled paper with Blauer Engel per employee	1,123 kg	13,119 kg	15,441 kg	14,358 kg	13,594 kg
Proportion of FSC-certified paper per employee	274 kg	1,870 kg	3,378 kg	2,719 kg	1,475 kg
Proportion of TCF/ECF paper per employee	11,944 kg	806 kg	592 kg	1 kg	4 kg
Proportion of recycled paper with Blauer Engel	8%	83%	80%	84%	90%
Proportion of FSC-certified paper	2%	12%	17%	16%	10%
Proportion of TCF/ECF paper	90%	5%	3%	< 0.1%	<0.1%
Proportion of climate-neutral print matter	-	-	-	-	0.3%
Photocopying and printing paper usage per employee	21.7 kg	31.6 kg	19.4 kg	26 kg	13.6 kg
Proportion of recycled paper with Blauer Engel per employee	8.4 kg	28.8 kg	16.8 kg	24.9 kg	11.5 kg
Proportion of TCF/ECF paper per employee	13.3 kg	2.8 kg	2.6 kg	1.1 kg	2.1 kg
Proportion of recycled paper with Blauer Engel	39%	91%	86%	96%	85%
Proportion of TCF/ECF paper	61%	9%	14%	4%	15%
Electricity usage per employee	1,497 kWh	1,890 kWh	2,437 kWh	2,330 kWh	2,024 kWh
Proportion from German fuel mix	1,497 kWh	76 kWh	-	-	-
Proportion of electricity from renewable sources (Greenpeace Energy)	-	1,814 kWh	2,437 kWh	2,330 kWh	2,024 kWh
Proportion of electricity from renewable sources (Greenpeace Energy)	-	96%	100%	100%	100%
Transport (business travel and freight)	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3	See Chapter 5.4.3
Packaging material usage per employee	n.c.	n.c.	n.c.	28.4 kg	24.8 kg
Proportion of paper/cardboard per employee	n.c.	n.c.	n.c.	28.3 kg	24.7 kg
Proportion of plastics per employee	n.c.	n.c.	n.c.	0.1 kg	0.1 kg
Proportion of paper/cardboard	n.c.	n.c.	n.c.	99.7%	99.7%
Proportion of plastics	n.c.	n.c.	n.c.	0.3%	0.3%
Water usage per employee	4,292 l	6,400 l	7,181 l	5,605 l	4,530 l

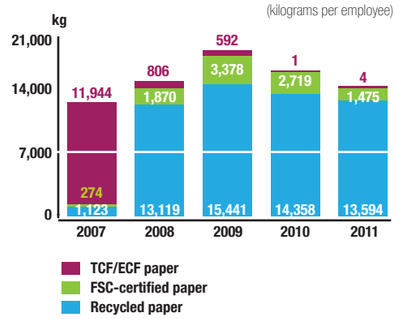
n.c. = not calculated

The specific total paper usage at the Idstein office seems comparatively high because all our catalogues and print material, as well as our paper advertising is included in this figure.

Switching our catalogues over to high-quality 100% recycled paper in 2008 was a decisive factor in the fact that our proportion of recycling paper with the Blauer Engel stamp was 90% in 2011. The rest consisted of 10% FSC-certified paper and less than 0.1% virgin fibre paper.

In 2011, we started printing some of our printed material in a climate-neutral process and we are set to significantly increase this proportion by the end of 2012 (see Chapter 5.4.2).

Total paper usage 2007–2011
(kilograms per employee)



In recent years, we have primarily implemented measures to reduce our specific electricity usage in the area of information technology. Accordingly, in 2005 we set ourselves the aim of virtualising 50% of our servers. At the end of 2011, this proportion was 54%.

With the exception of the server room and the top floor of building A, we do not use air-conditioning systems. As part of our extensive redevelopment of building C before we moved in, we completely overhauled the insulation and retrofitted it with bus technology. This means the electricity switches off automatically at night.

Since 2008, all of our electricity has come from Greenpeace Energy. It comes from 100% green renewable sources, with no nuclear power involved.

Since setting up our photovoltaic system in April 2008, we have also fed in over 71,000 kilowatt-hours of solar energy into the grid.

Electricity consumption 2007–2011
(kilowatt-hours per employee)

CO_2 BALANCE SHEET 2007–2011 FOR IDSTEIN

	2007	2008	2009	2010	2011
Reference values					
Employees	178	210	238	261	304
Gross turnover (Group)	€148,903 k	€193,579 k	€240,576 k	€289,658 k	€354,853 k
Figures in absolute terms 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
CO_2 emissions	236,128 kg	160,577 kg	170,537 kg	193,575 kg	112,176 kg
Proportion from heating	74,868 kg	150,415 kg	170,537 kg	193,575 kg	112,176 kg
Proportion from electricity consumption	161,260 kg	10,162 kg	-	-	-

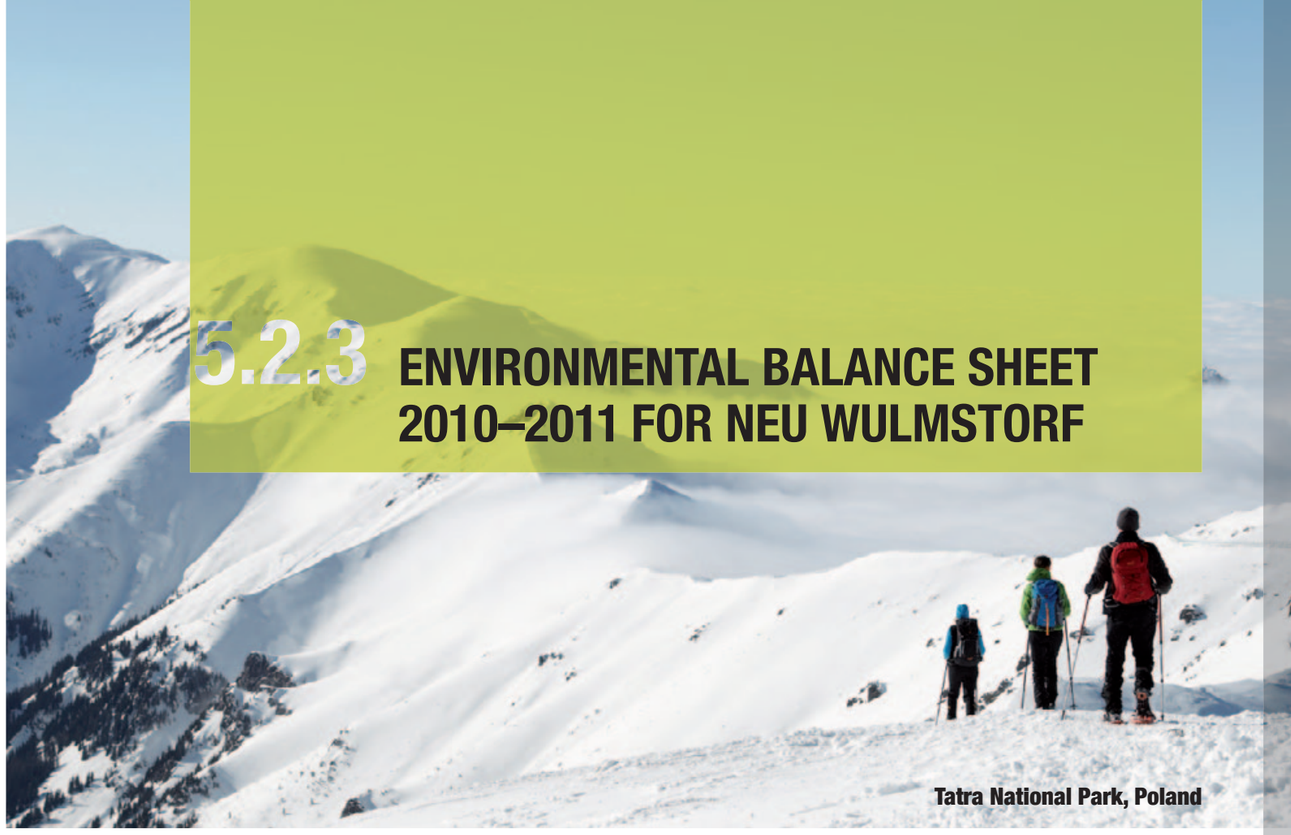
Environmental indicators 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
CO_2 emissions per employee	1,327 kg	765 kg	717 kg	742 kg	369 kg
Proportion from heating	32%	94%	100%	100%	100%
Proportion from electricity consumption	68 %	6 %	-	-	-
CO_2 avoidance from substitution*					
Through the use of electricity from renewable sources (Greenpeace Energy)	-	216,079 kg	294,589 kg	300,457 kg	304,017 kg
CO_2 offsetting					
Through afforestation projects (PrimaKlima)	-	-	-	See Chapter 5.4.3	See Chapter 5.4.3
Proportion of CO_2 emissions offset from heating	-	-	-	100%	100%
Proportion of CO_2 emissions offset from electricity consumption	-	-	N/A	N/A	N/A
Proportion of CO_2 emissions offset from transport	-	-	-	100%	100%
Through the use of climate-neutral printing processes (ClimatePartner, natureOffice and firstclimate)	-	-	-	-	39,612 kg

* Relating to German fuel mix (see Chapter 3.3.2)

By switching over to Greenpeace Energy early for our electricity, we have saved over 1,115 tonnes of CO_2 in the past few years.

For more information, visit www.greenpeace-energy.de

Our direct CO_2 emissions at our Idstein office all result from heating requirements (natural gas).
According to our strategy outlined in Chapter 5.4.1, "Avoid, substitute, compensate", since 2010, we have offset all unavoidable CO_2 emissions, including from our heating requirements, through reforestation projects.



5.2.3 ENVIRONMENTAL BALANCE SHEET 2010–2011 FOR NEU WULMSTORF

All of our incoming freight arrives at our central European warehouse in Neu Wulmstorf, Germany, which measures over 31,000 m². The goods are sorted, stored, packaged and dispatched to our retailers and end customers both in Germany and abroad. The key factor in choosing this location, which was brought into operation in 2008, was its proximity to Port of Hamburg.

The warehouse is based around a fully automatic box warehouse, where up to 300,000 boxes are stored in 38 bays and on 24 levels. If a container arrives, its freight is unloaded and stacked onto the shelves by a robotic stacker, which travels between the bays at up to 60 kph. At 24 different packing stations, our employees open the boxes of items that the robot places on the conveyor after a customer order and put the order together.


Central European warehouse, Neu Wulmstorf

138 permanent staff are employed in a two-shift system at Neu Wulmstorf. To cope with seasonal peaks in demand, an average of around 190 temporary staff are employed every month. Construction of another warehouse, measuring approx. 10,000 m², began at the end of 2011 (see also Chapter 5.5.3).

We have used 100% green electricity from Greenpeace Energy since the very start and also have our own photovoltaic system.

Our Neu Wulmstorf location also has sports facilities for employees, which they are free to use during some of their working hours.


Sao Miguel, Azores, Portugal

KEY EMAS INDICATORS FOR 2011


Central European warehouse, Neu Wulmstorf

Waste
- 1,189,446 kg waste in total
- Of which 0 kg hazardous waste (light bulbs)

Energy efficiency
- 1,065,467 kWh heating (gas)
- 1,542,164 kWh electricity usage (from 100% renewable sources)
- 52,560 kWh electricity fed in from photovoltaic systems

Materials efficiency
- 18,650 kg total paper use
  (99.8% recycled paper with the Blauer Engel, 0.2% virgin fibre paper)
- 1,467,715 kg packaging materials used
  (85% paper/cardboard, 15 % plastics)

Water
- 1,574 m³ freshwater usage
- Of which 61.8 m³ used for watering green areas

Emissions
- 247,188 kg CO_2 emissions
- Of which 100% offset through afforestation

Biodiversity
- 72,702 m² area used (land)
- Of which 32,219 m² unpaved

OPERATIONAL ECOLOGY: ENVIRONMENTAL BALANCE SHEET 2010–2011 FOR NEU WULMSTORF

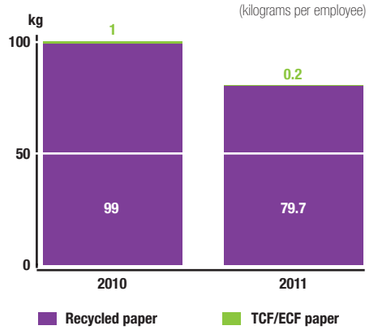
	2010	2011
Reference values		
Employees	137	138
Gross turnover (Group)	€289,658 k	€354,853 k
Figures in absolute terms 2010–2011	**2010**	**2011**
Waste	n.c.	1,189,446 kg
Proportion of hazardous waste	n.c.	-
Proportion of non-hazardous waste	n.c.	1,189,446 kg
Proportion of waste for disposal	n.c.	-
Proportion of waste for recycling	n.c.	100%
Heating (gas)	1,483,714 kWh	1,065,467 kWh
Total paper usage	16,681 kg	18,650 kg
Proportion of recycled paper with the Blauer Engel	16,508 kg	18,622 kg
Proportion of TCF/ECF paper	173 kg	28 kg
Blank paper usage	13,673 kg	11,028 kg
Proportion of recycled paper with the Blauer Engel	13,500 kg	11,000 kg
Proportion of TCF/ECF paper	173 kg	28 kg
Electricity consumption	1,388,499 kWh	1,542,164 kWh
Proportion of electricity from renewable sources (Greenpeace Energy)	1,388,499 kWh	1,542,164 kWh
Electricity fed in from our own photovoltaics systems	51,056 kWh	52,560 kWh
Transport (business travel and freight)	See Chapter 5.4.3	See Chapter 5.4.3
Packaging material usage	1,251,171 kg	1,467,715 kg
Proportion of paper/cardboard	1,077,855 kg	1,250,200 kg
Proportion of plastics	173,316 kg	217,515 kg
Labels	n.c.	6,746,335 items
Water usage	1,455,000 l	1,574,000 l
Proportion used for watering green spaces	151,000 l	61,818 l
Amount of domestic wastewater	1,304,000 l	1,512,182 l

Environmental indicators 2010–2011	**2010**	**2011**
Waste per employee	n.c.	8,619 kg
Heating requirements (gas) per employee	10,830 kWh	7,721 kWh
Total paper usage per employee	122 kg	135.1 kg
Proportion of recycled paper with the Blauer Engel **per employee**	121 kg	134.9 kg
Proportion of TCF/ECF paper per employee	1 kg	0.2 kg
Proportion of recycled paper with the Blauer Engel	99%	99.8%
Proportion of TCF/ECF paper	1%	0.2%
Blank paper usage per employee	100 kg	79.9 kg
Proportion of recycled paper with the Blauer Engel **per employee**	99 kg	79.7 kg
Proportion of TCF/ECF paper per employee	1 kg	0.2 kg
Proportion of recycled paper with the Blauer Engel	99%	99.7%
Proportion of TCF/ECF paper	1%	0.3%
Electricity consumption per employee	10,135 kWh	11,175 kWh
Proportion of electricity from renewable sources (Greenpeace Energy)	100%	100%
Transport (business travel and freight)	See Chapter 5.4.3	See Chapter 5.4.3
Packaging material usage per employee	9,133 kg	10,635 kg
Proportion of paper/cardboard per employee	7,868 kg	9,059 kg
Proportion of plastics per employee	1,265 kg	1,576 kg
Proportion of paper/cardboard	86%	85%
Proportion of plastics	14%	15%
Water usage per employee	10,620 l	11,406 l

n.c. = not calculated


Andringitra National Park, Madagascar

Blank paper usage 2010–2011
(kilograms per employee)



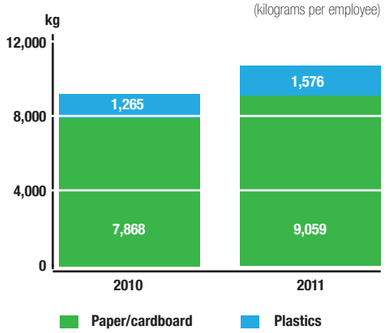
The high amount of waste at Neu Wulmstorf is down to the fact that this is where all the packaging material is based for freight coming in from all over the world. In 2011, 85% of waste were from paper/cardboard.

Since we took into account aspects such as energy consumption and CO_2 emissions when planning our new distribution centre in Neu Wulmstorf in 2008, the new warehouse uses about the same amount of energy for heating as the old locations put together, despite being almost three times larger.

The specific blank paper usage in Neu Wulmstorf is comparatively high and can be explained by the fact that blank paper is not only used for photocopying but also printing our invoices and delivery notes.

In 2011, the proportion of recycled paper with the Blauer Engel was 99.7%, with the remaining 0.3% made up of virgin fibre paper.

Packaging material usage 2010–2011
(kilograms per employee)



As a result of the fact that Neu Wulmstorf acts as our global distribution centre, the packaging material usage is very high. After all, we want to ensure that our goods get to our retailers and customers safely, and in a clean and dry condition, no matter whether they are being transported by air, sea or road transport. In 2011, 85% of packaging material were made from paper/cardboard and 15% were made from plastics.

Of particular note are the 6.74 million or so paper labels that we used to label and address our consignments in 2011.

CO_2 BALANCE SHEET 2010–2011 FOR NEU WULMSTORF

	2010	2011
Reference values		
Employees	137	138
Gross turnover (Group)	€ 289,658 k	€ 354,853 k
Figures in absolute terms 2010–2011	**2010**	**2011**
CO_2 emissions	344,222 kg	247,188 kg
Proportion from heating	344,222 kg	247,188 kg
Proportion from electricity consumption	-	-

Environmental indicators 2010–2011	**2010**	**2011**
CO_2 emissions per employee	2,513 kg	1,791 kg
Proportion from heating	100%	100%
Proportion from electricity consumption	-	-
CO_2 avoidance through substitution*		
Through the use of electricity from renewable sources (Greenpeace Energy)	685,919 kg	761,829 kg
CO_2 offsetting		
Through afforestation (PrimaKlima)	See Chapter 5.4.3	See Chapter 5.4.3
Proportion of CO_2 emissions offset from heating	100%	100%
Proportion of CO_2 emissions offset from electricity consumption	N/A	N/A
Proportion of CO_2 emissions offset from transport	100%	100%

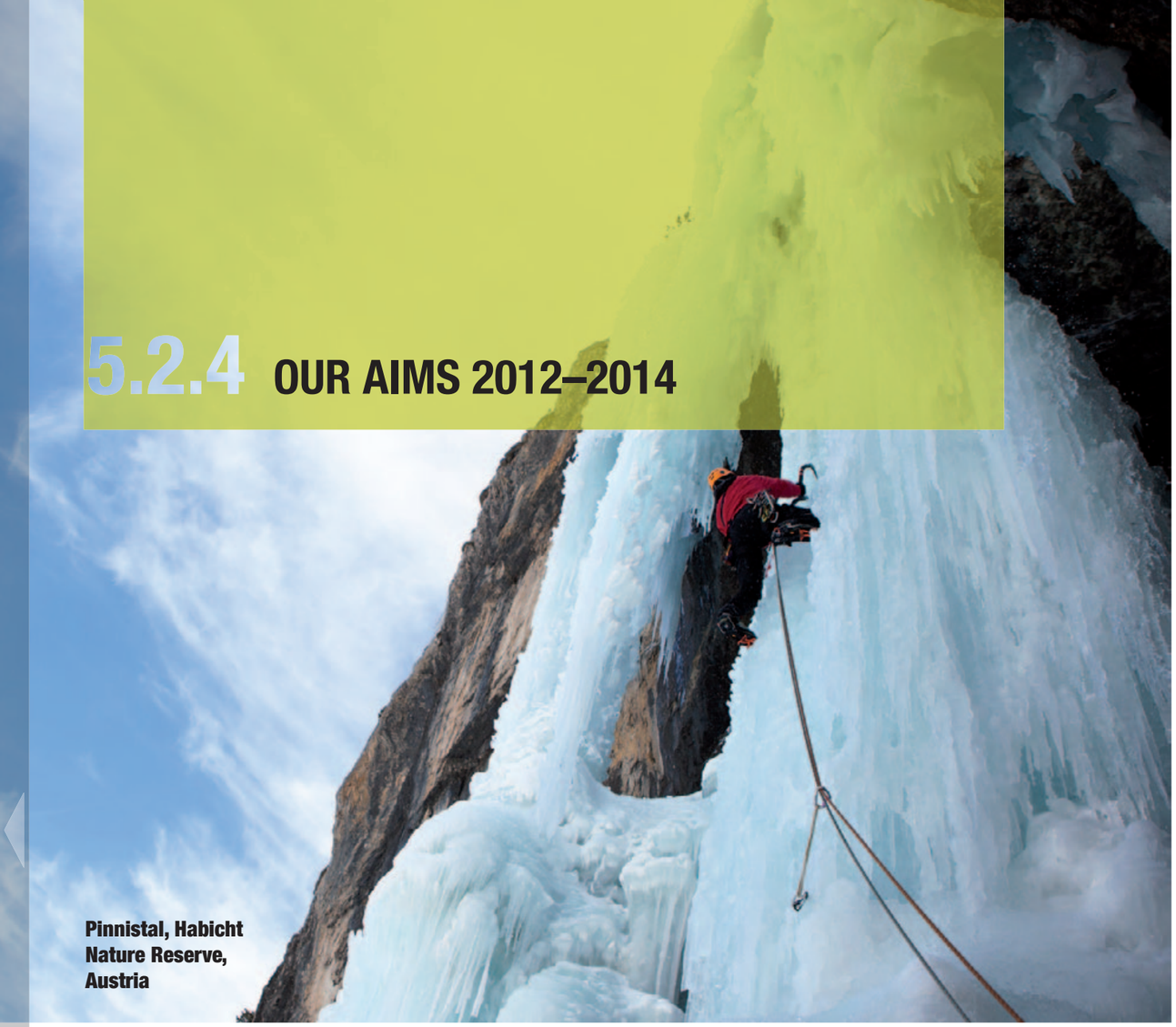
* Relating to the German fuel mix (see Chapter 3.3.2)

By switching to Greenpeace Energy right from the start, we have saved over 1,447 tonnes of CO_2 in the past two years.

For more information, visit www.greenpeace-energy.de

Our direct CO_2 emissions at Neu Wulmstorf result solely from our heating requirements (natural gas). Since 2010, we have offset all unavoidable CO_2 emissions resulting from our heating requirements through afforestation projects (see Chapter 5.4.2).

5.2.4 OUR AIMS 2012–2014



Pinnistal, Habicht Nature Reserve, Austria

AREA OF ACTIVITY: OPERATIONAL ECOLOGY – AIMS 2012–2014

Accounting				
No.	Aim	Measures	Deadline	Responsibility
1	Simplify data transfer and improve data quality	Increased integration of existing reporting systems	12/2014	Environmental Officer, Environmental Representatives
2		Assessment of external data collection and analysis tools	12/2013	Environmental Officer, Projects
General				
No.	Aim	Measures	Deadline	Responsibility
1	Develop a sustainable shopfitting concept	Lifecycle analyses for all materials used: ■ Raw materials ■ Manufacture and processing ■ Energy and water consumption ■ CO_2 balance sheet ■ Weight ■ Transport ■ Contaminants ■ Durability ■ Recyclability	12/2012	Franchise stores, Environmental Officer, Management
Waste				
No.	Aim	Measures	Deadline	Responsibility
1	Documentation of conformity with legislation on waste disposal	Create waste balance sheet in line with German legislation on waste disposal	Annually	Environmental Officer
Heating				
No.	Aim	Measures	Deadline	Responsibility
1	Reduce heating requirements	Upgrade all windows in the first floor of building A in Idstein	12/2013	Projects
2		Insulate the roof of building B in Idstein.	12/2013	Projects
Paper				
No.	Aim	Measures	Deadline	Responsibility
1	Reduce our total paper usage	Electronic document templates instead of pre-printed ones, e.g. for corporate stationery	12/2012	IT infrastructure
2		All faxes to be received and sent electronically	12/2013	IT infrastructure
3		All invoices to be sent electronically from Neu Wulmstorf	12/2013	IT infrastructure
4	Increase the proportion of recycled paper used for photocopying	Avoiding print-outs of export documentation at Neu Wulmstorf (saving around 60,000 sheets per year).	03/2012	Warehouse and distribution, Transport
5	Increase the usage of recycled paper in our global operations	Reduction of paper variety in TCF/ECF photocopying paper and restrictions on usage in Idstein	12/2012	Secretary
6		Switchover to recycled or FSC-certified paper for our clothes tags	12/2014	Trimming development
7		Switchover to recycled or FSC-certified paper for our instruction manuals	12/2014	Equipment
Electricity				
No.	Aim	Measures	Deadline	Responsibility
1	Reduce our electricity consumption	Virtualisation of 60% of our servers	12/2014	IT infrastructure
2		Technology to open windows in line with day-to-day and seasonal temperatures in Neu Wulmstorf.	06/2013	Warehouse and Distribution
3	Usage of 100% green electricity across all German locations	Switchover to Greenpeace Energy in our stores in Frankfurt, Düsseldorf and Munich	01/2012	Environmental Officer, Projects
4		Supply of our new showroom in Frankfurt with Greenpeace Energy.	01/2012	Environmental Officer, Projects
Transport				
No.	Aim	Measures	Deadline	Responsibility
1	Promotion of environmentally friendly mobility	Purchase two e-bikes and four company bikes for Idstein	12/2012	Environmental Officer, Projects
2		Set up a charging station for e-bikes and electric cars at Idstein	12/2012	Environmental Officer, Projects
3		Cover the staff bike stands at Neu Wulmstorf	12/2012	Warehouse and Distribution
4		Purchase kick scooters for Neu Wulmstorf for travel to and from work	06/2013	Warehouse and Distribution
Advertising				
No.	Aim	Measures	Deadline	Responsibility
1	Consideration of environmental/ sustainability criteria when selecting new means of advertising	■ Ongoing checks for alternatives made from natural materials (wood, rubber, stone, etc.) or recycled materials ■ If wood is chosen, ensure it is FSC-certified ■ If paper is chosen, recycled or FSC paper ■ Adhere to the following criteria: – Prohibit child labour in manufacturing – Ensure no pollutants are used – No PVC – Rechargeable batteries instead of single-use batteries – LEDs instead of incandescent light bulbs – Durability, high quality – Practicality – Minimal packaging that is suitable for recycling	12/2014	Trade Marketing

5.3 AREA OF ACTIVITY: PRODUCT ECOLOGY

At JACK WOLFSKIN, we are happy to do without ecological labels we have come up with ourselves in order to avoid overloading the consumer with labels and confusing them. Transparency is extremely important to us. As a result, we rely instead on more substantiated and verifiable standards such as the bluesign® standard or the Öko-Tex® Standard 100.

We see it as a given that all our products must, at the very least, fulfil the requirements of the Öko-Tex® Standard 100. For some substances, the requirements we set exceed this standard.

In addition, we also take ecological and ethical aspects into account in our products. This has led us to continually increase the amount of organic cotton we use since 2010, and our collection contains neither down from live plucking nor real fur.

For us, product ecology also means durability: this starts with the selection and development of high-quality materials and technologies and is continued with the high levels of comfort and perfect functionality of our products. Before making a purchase, our customers can benefit from expert advice, then, post-purchase, from a range of guarantees and our repair service. The combination of these measures means that exceptional durability is a feature of our entire product range.

JACK WOLFSKIN also sets great store by fair, humane production conditions. We work with a wide range of manufacturers in Asia and Europe. Back in 2008, we informed our contractual partners of our Code of Conduct and now constantly monitor their adherence to it via an independent auditing company. The code of conduct prohibits child labour, regulates working conditions, working hours and wages, as well as regulating occupational safety and trade union freedom.

We also pursue our principle of using established labels in this field too, and do not simply create our own. We joined the internationally recognised Fair Wear Foundation in July 2010 and provide a highly detailed and transparent supplier social responsibility report every year, which can be viewed on the JACK WOLFSKIN website.

JACK WOLFSKIN is involved in cross-company projects. In 2011, the German Federal Environment Agency published its guideline entitled "Umweltstandards bei Textil- und Schuhprodukten" (UBA, 2011 b) [Environmental standards in textile and shoe production]. The guideline, which JACK WOLFSKIN actively contributed to, primarily pertains to production facilities. It refers to concrete steps in the production processes, outlines improvements in technology and processes, taking into account the "best available technology" (BAT) and shows how companies can benefit from environmental protection, right from the start of the manufacturing process.

FAIR WEAR FOUNDATION

For more information, visit www.fairwear.org

5.3.1 WHAT WE HAVE ACHIEVED SO FAR

Corsica, France

JACK WOLFSKIN GREEN BOOK

Requirements of harmful substances have been summarised in the JACK WOLFSKIN Green Book since 2007. All suppliers, regardless of whether they provide finished items of clothing, fabrics or other components, must accept these requirements and ensure their consistent application in order to work with us.

In addition, JACK WOLFSKIN arranges extensive spot checking of each collection, conducted by independent and accredited laboratories in Germany.

The minimum requirements of our Green Book are based on both globally accepted guidelines as well as on the bluesign® standard and the Öko-Tex® Standard 100.

Using PFOS and PFOA as an example

PFOS (= perfluorooctanesulfonic acid) and PFOA (= perfluorooctanoic acid) are both perfluorated tensides (PFT), where PFT is the catch-all term for all fluororganic compounds with surfactant properties. There are myriad areas of application, ranging from non-stick pans to water-repellent textile coatings. While products containing PFOS are regulated in the EU by the 2006/122/EC Directive with an upper limit of 1 µg/m² – since they take a very long time to break down and, once released into the environment, can become concentrated – there are as yet no Europe-wide regulatory limits on the equally contested PFOA and its salts.

Since creating its Green Book in 2007, JACK WOLFSKIN has set itself strict limits for both PFOS and PFOA. This meant that we took the potential risk of both substances into consideration long before other institutions (such as the Öko-Tex® Standard 100, which only integrated PFOS and PFOA into its list of threshold values in 2009). The threshold values established still allow for contamination in trace amounts, which is unavoidable due to the production processes. This means that our requirements also comply with the recognised, highly stringent bluesign® standard. The intended use of both substances is prohibited in all JACK WOLFSKIN products.

Using PVC as an example

Up to the end of 2011, we continually reduced the amount of PVC components in our collection (clothing, shoes and equipment) and as of April 2012, our Green Book has demonstrated that we now completely avoid PVC. Since 1997, our equipment has avoided the use of PVC, it has been phased out of our clothing since 2000 and phased out of our footwear ranges since April 2012.

ÖKO-TEX® STANDARD 100

On the basis of the requirements of its Green Book, JACK WOLFSKIN ensures that, at the very least, all products comply with the requirements of the Öko-Tex® Standard 100.

Since October 2011, our entire underwear range has been certified to Öko-Tex® Standard 100 (Category 2). This internationally recognised certification testifies to the human ecological quality of textiles and is only awarded to textiles that are safe and non-hazardous to health. We specifically chose Öko-Tex® Standard 100 certification for our underwear collection because these products come into direct contact with the skin.

CONFIDENCE IN TEXTILES
Tested for harmful substances
according to Oeko-Tex® Standard 100
11.0.95179 Hohenstein

For more information, visit www.oeko-tex.com

BLUESIGN® STANDARD

Since 1 October 2011, JACK WOLFSKIN has been an official bluesign® system partner and is committed to adhering to the bluesign® standard. This represents safe textiles, environmentally friendly production and careful use of resources. The aim is to exclude from the very start the processing of substances that are hazardous to the environment and to health. This standard can be used throughout the entire production chain.

We already use materials in many of our products that comply with the bluesign® standard. They are manufactured in cooperation with long-term partners, using cutting-edge technology. In future, we will continue to increase the number of products with the bluesign® label. We will also continue to integrate the upstream production chain into the testing and certification process.

bluesign® SYSTEM PARTNER

For more information, visit www.bluesign.com

organic cotton

Cotton

Cotton is the most commonly used fibre in the textile industry. "White gold" is now grown in over 70 countries, predominantly in China, India and the USA. Large-scale cotton monocultures create massive environmental problems, primarily due to the enormous amounts of water required (around 60% of the cultivation area has to be artificially irrigated), the use of chemical fertilisers and pesticides and the use of genetically modified seeds.

Cotton plant (© Laurin Rinder, shutterstock.com)

(© schankz, shutterstock.com)

ORGANIC COTTON

There are high ecological requirements of organic cotton, including prohibiting the use of chemical fertilisers and pesticides as well as genetically modified seeds. This protects the environment in the areas where the cotton is cultivated as well as protecting the cotton farmers themselves, who are no longer subjected to hazardous chemicals in their work.

Since the 2010 summer collection, JACK WOLFSKIN has consistently switched from conventionally produced cotton to organic cotton. Now, all of our pure cotton items are made only from organic fibres. Cotton blends have also largely been switched to organic cotton. Overall, the number of products in our range containing any cotton is low.

RECYCLED MATERIALS

Our range only contains a few products that use recycled materials. We have tried offering purely recycled fleece products but always had to discontinue them because they were not accepted by customers. There were slight differences in colour and texture and the fibres pilled more markedly than on conventional fleece. However, this will not prevent us from taking recycled materials into account in our future product development.

NANOTECHNOLOGY

Since the 2010 Winter collection, JACK WOLFSKIN has phased out nanotechnologies because there have been no definitive long-term studies into the effects that they may have on the human body. Out of respect for the environment and for our customers, we will wait until definitive results have been produced before coming to the decision to use nanoparticles in our collections.

DOWN

JACK WOLFSKIN uses down as a light, comfortable filler material for clothing and sleeping bags, however our total number of down-filled products is relatively low.

JACK WOLFSKIN does not use live-plucked down**. The down is taken from animals that are bred and slaughtered for meat, with the down and feathers only taken from the animals once they have been killed. Down is a by-product of the food production industry** and only make up a very small proportion of the turnover from the animal (around 5%). No animals whose down is used by JACK WOLFSKIN are bred or killed for their down.

JACK WOLFSKIN also avoids all down originating from animals that have been force-fed, and is also against force-feeding.

As part of the topical discussion on down from force-fed birds, we have established that some of the down produced for us in Europe may comprise down from force-fed birds. Since we cannot stop the production of down products for our 2012 Winter collection, we cannot guarantee that none of the down used comes from force-fed birds. However, from the 2013 Winter collection, JACK WOLFSKIN will ensure that all of its down only comes from animals that are not bred for the production of the controversial delicacy foie gras.

Together with our suppliers, associations and other stakeholders, we are working intensively on a consistent and credible certification programme.

In addition, we will also be offering an alternative technology to down from the 2012 Winter collection.

REAL FUR

JACK WOLFSKIN does not use any real fur in its products. Breeding animals purely for their fur, and the use of fur for fashion reasons, are not principles that we agree with.

MULESING

The mulesing process, which is often used on Merino sheep, involves the removal of strips of skin from the animal's rump. The procedure is generally carried out within the first year, without anaesthetic, and is therefore very painful. It is used to prevent flystrike and infection from other insects that may live in the sheep's thick wool. The practice is less common than it was but is still prevalent in Australia, for example.

JACK WOLFSKIN distances itself from this practice and ensures that its Merino wool does not involve mulesing, which is guaranteed by the certification of our suppliers. The proportion of Merino wool in the entire collection is relatively low.

LEATHER

Leather is an important material for shoes and we always use the very best quality. When selecting leather, we make sure that it does not come from protected animals and that it is a by-product of the food production industry.

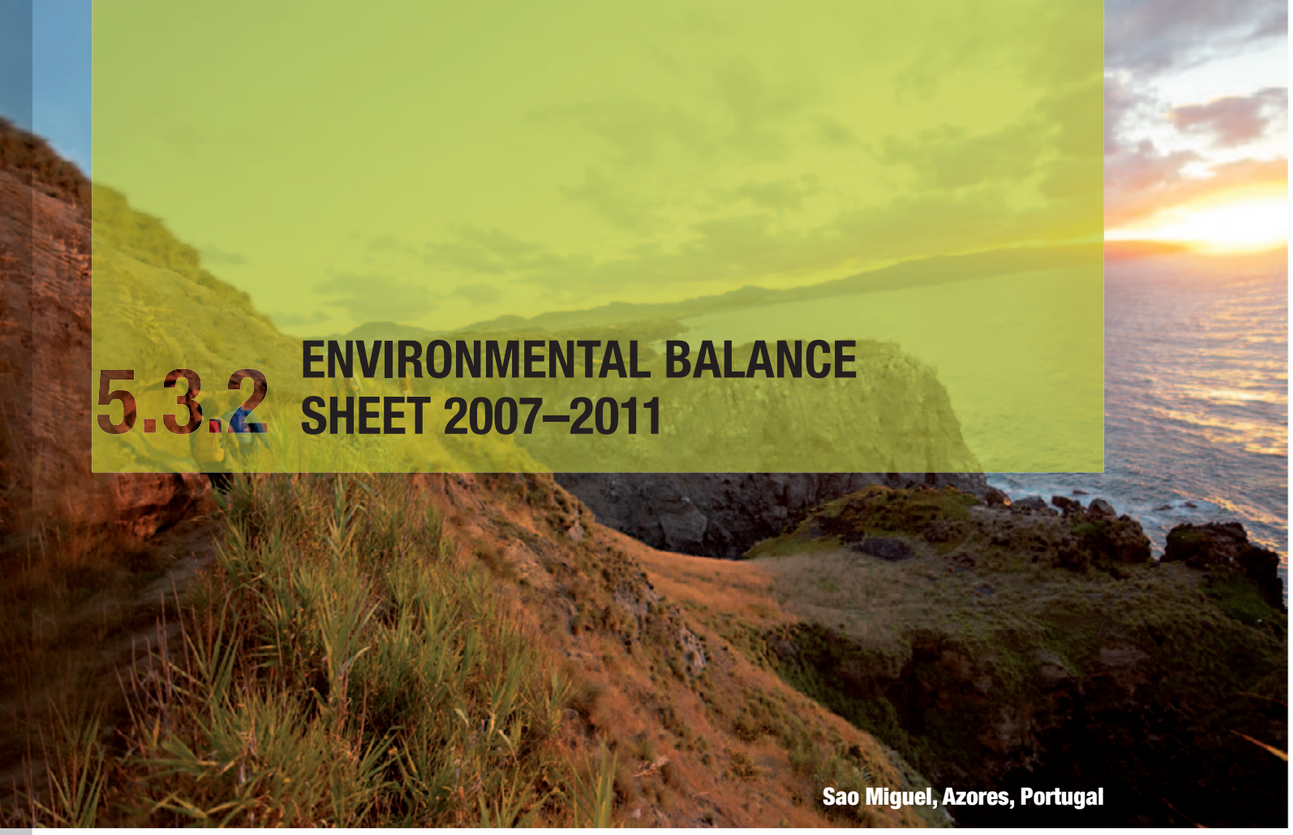
In particular, we have defined very stringent harmful substance specifications for the tanning process, which exclude the use of chromium VI, for example.

Force-feeding/foie gras production

Foie gras (French for 'fat liver') is a culinary speciality that is made from the livers of geese or ducks. Foie gras is often made into the famous pâté de foie gras.

Foie gras is made by the technique known as gavage, which involves the animals being force-fed over a period of four weeks by feeding them three or four times a day with a mixture of corn and pork fat through a tube that pumps the mixture into their stomachs. When the birds are killed, the distended livers weight one or two kilograms, instead of the usual 300 g, mainly as a result of their unnaturally high fat content.

Around 75% of the world's foie gras is produced in France. In 2005, foie gras was protected under the law as part of France's national and gastronomic cultural heritage, meaning it is not subject to French animal rights legislation. In Germany and many other countries, this type of feeding is seen as animal cruelty and is prohibited by law.



5.3.2 ENVIRONMENTAL BALANCE SHEET 2007–2011

PRODUCT ECOLOGY: ENVIRONMENT BALANCE SHEET 2007–2011

	2007	2008	2009	2010	2011
Reference values					
Employees	178	210	238	261	304
Gross turnover (Group)	€ 148,903 k	€ 193,579 k	€ 240,576 k	€ 289,658 k	€ 354,853 k
Figures in absolute terms 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
Number style colour	4,204	5,263	5,754	6,317	8,220
Proportion, apparel	69%	71%	72%	71%	70%
Proportion, footwear	12%	11%	10%	11%	13%
Proportion, equipment	19%	18%	18%	18%	17%
Weight (style, colour)	1,394,410 kg	2,883,304 kg	3,406,852 kg	3,993,553 kg	4,768,658 kg
Proportion, apparel	99.92%	64%	67%	65%	62%
Proportion, footwear	0.03%	16%	15%	18%	21%
Proportion, equipment	0.05%	20%	18%	17%	17%
Number of products (style, colour)	5,715,982	7,173,547	8,351,897	9,257,813	10,447,160
Proportion, apparel	72%	73%	74%	73%	71%
Proportion, footwear	10%	9%	9%	11%	13%
Proportion, equipment	18%	18%	17%	16%	16%

Environmental indicators 2007–2011	2007	2008	2009	2010	2011
Öko-Tex® Standard 100					
Proportion of suppliers that are contractually obliged to adhere to the requirements set out in the JACK WOLFSKIN Green Book (correspond to Öko-Tex® Standard 100 requirements at the very least)	100%	100%	100%	100%	100%
Number of products (styles) certified to Öko-Tex® Standard 100	-	-	-	-	24
Number of products (style, colour) certified to Öko-Tex® Standard 100	-	-	-	-	33
Proportion of underwear certified to Öko-Tex® Standard 100	-	-	-	-	100%
bluesign®					
Number of products (styles) carrying the "bluesign® approved fabric" label	-	-	-	-	-
Number of products (styles) certified to the bluesign® standard	-	-	-	-	-
Cotton					
Apparel products (styles) featuring cotton	203	215	234	136	183
Of which styles featuring organic cotton	-	-	-	67	122
Recycled materials					
Apparel products (styles) featuring recycled materials	-	9	10	12	3
Apparel products (style, colour) featuring recycled materials	-	23	18	23	3
Equipment products (styles) featuring recycled materials	-	-	4	-	-
Equipment products (style, colour) featuring recycled materials	-	-	10	-	-
Nanotechnology					
Apparel products (styles) featuring nanotechnology	26	27	31	21	-
Apparel products (style, colour) featuring nanotechnology	47	46	52	36	-
Equipment products (styles) featuring nanotechnology	-	-	-	-	-
Equipment products (style, colour) featuring nanotechnology	-	-	-	-	-
Down					
Apparel products (styles) featuring down	3	4	13	24	31
Apparel products (style, colour) featuring down	6	8	30	46	70
Equipment products (styles) featuring down	-	-	-	-	3
Equipment products (style, colour) featuring down	-	-	-	-	3
Proportion of down from live-plucked birds	n.c.	n.c.	-	-	-
Proportion of down from force-fed birds	n.c.	n.c.	n.c.	n.c.	n.c.
Real fur					
Proportion of real fur	-	-	-	-	-
Mulesing					
Products (styles) featuring Merino wool	3	5	10	16	21
Products (style, colour) featuring Merino wool	8	9	19	25	35
Proportion of mulesing	-	-	-	-	-
Leather					
Apparel products (styles) featuring leather	2	-	-	-	-
Apparel products (style, colour) featuring leather	2	-	-	-	-
Equipment products (styles) featuring leather	2	2	6	1	-
Equipment products (style, colour) featuring leather	2	2	12	2	-
Footwear products (styles) in which leather is used	47	93	146	149	166
Footwear products (style, colour) in which leather is used	78	155	263	351	366

n.c. = not calculated

5.3.3 OUR AIMS 2012–2014

The aim of us joining the bluesign® organisation in 2011 was and is to be able to develop controlled and certified products across the entire development and manufacturing process. Our first products with the bluesign® label will be available in the shops from Winter 2012. In the next few years, we will continue to expand our range and to integrate our upstream production into the testing and certification process.

In addition, we have also taken the decision to switch quickly and completely to organic cotton and will only use cotton from organic sources by the 2013 Summer collection, i.e. within just three years.

From the 2013 Winter collection, JACK WOLFSKIN will ensure that none of the down it uses will come from force-fed birds. In line with this commitment, since the end of 2011, the origin of the down is no longer stated by the producer but by us. In this way, we can guarantee and prove that the product range is completely free of down from birds bred for foie gras.

We have put a lot of effort into coming up with a solution for the problems associated with sourcing down. As there is currently no independently certified procedure for clothing that the company could use, we are currently working together with the industry and various certification authorities (German Down and Feather Association, the "Dialogue for Textiles and Clothing" association) in order to establish an independent seal of approval.

FIBERCLOUD

Regardless of the results of these efforts, we will be offering an alternative filler material from our 2012 Winter collection called "Fibercloud", which replicates the positive characteristics of down, and will continue to expand our product range from the 2013 Winter collection.

AREA OF ACTIVITY: PRODUCT ECOLOGY – AIMS 2012–2014

No.	Aim	Measures	Deadline	Responsibility
1	Gradual increase of the proportion of bluesign® approved fabrics in our collection	■ Certification and labelling of initial products featuring the bluesign® approved fabric label by the 2012 Winter collection ■ Strict increase in the amount of fabrics we use that carry the bluesign® certification	From 09/2012	Vendor control
2	Gradual bluesign® certification of the production chain	Accelerate the bluesign® certification by suppliers, with a focus on direct contractual partners	12/2014	Vendor control
3	100% switchover to organic cotton	All cotton to be sourced from certified organic production	03/2013	Vendor control
4	Developing certification system for down that takes into account various ethical aspects of down production	■ Nomination of the origin of down by JACK WOLFSKIN ■ Development of a certification system with those involved	12/2013	Vendor control, technologies and marketing apparel
5		Development and expansion of our Fibercloud technology	Ongoing	Technologies and marketing apparel
6	Gradual adaptation of Green Book requirements for clothing and equipment in line with the bluesign® standard in order to consistently fulfil the strictest industry standards	■ Gradual increase in the requirements for all products ■ Train our suppliers in the increasing requirements	04/2014	Vendor control
7	Öko-Tex® Standard 100 certification for our underwear collection	■ Annual renewal of the Öko-Tex® Standard 100 certificate for our underwear ■ Potentially take into account any new underwear products in the certification process	Annually	Vendor control

5.4 AREA OF ACTIVITY: CLIMATE CHANGE

When the UN's Intergovernmental Panel on Climate Change (IPCC) presented its fourth UN Climate Report in February 2007, it became clear that the changes in the global climate observed in the 20th century were just the beginning of a dramatic change in our world and that emissions of greenhouse gases need to be halved by 2050.

Sutherland, Scotland

IPCC – Intergovernmental Panel on Climate Change
Against the backdrop of the possibility of climate change, the UN Environmenal Programme (UNEP) and the World Meterological Organization (WMO) created the Intergovernmental Panel on Climate Change (IPCC). The IPCC is a body of experts who evaluate scientific data from acknowledged and published studies in order to gauge the risk of climate change caused by humans.

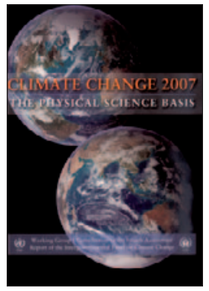
The IPCC has given its most severe warning yet about the consequences of climate change, painting gloomy scenarios of the future with a temperature increase of up to 6.4 °C. This would cause the sea to flood large stretch of coastline and numerous islands and a massive collapse in the number of animal and plant species. The planet's water and food supplies will be severely restricted. We will be subject to more frequent extreme weather events which will claim thousands of lives. And this will not just happen somewhere in the distant future, but by the end of this century.

Visit www.ipcc.ch for more information

A HOT TOPIC THAT'S GONE OFF THE BOIL

The high level of media coverage of this topic was probably largely due to a series of natural phenomena such as the "100-year floods" of 2002 and 2005, the 2003 European heat wave and Hurricane Katrina in August 2005. When former US Vice-President Al Gore released his film "An Inconvenient Truth", which was later awarded an Oscar, it sparked a global debate about the issue, including in the US.

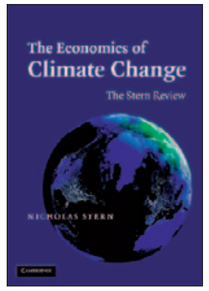
The 2007 UN Climate Report confirmed that there can no longer be any scientific doubt as to the existence and effects of anthropological climate change.



However, the main reason for the attention drawn to the issue was probably that the IPCC used the figures from a report published the year before by former World Bank Chief Economist Nicholas Stern on the economic impact of climate change. The Stern Review made one thing crystal clear: climate change is expensive – very expensive. According to the Stern Review on the Economics of Climate Change, the global community is faced with a more severe economic threat than was posed by both World Wars put together (Stern, 2006).

"Climate change is the biggest failure of the market that the world has ever seen."
Nicholas Herbert Stern, author of the Stern Review

The Stern Review "Stern Review on the Economics of Climate Change" (© Cambridge University Press)



In November 2007, the IPCC once again confirmed the risks to the climate that we can expect to see and warned that increasing temperatures would have an exponential effect (e.g. the break-up of large ice sheets). At the high point of the debate, the IPCC and Al Gore were awarded the Nobel Peace Prize.

"We can no longer afford to view global warming as a political issue, but rather, the biggest moral challenge facing our global civilisation."
Al Gore, former US Vice President and Nobel Peace Prize winner, 2007

HOW DO THINGS STAND TODAY?

It is a sobering fact that the battle against climate change has been sidelined – both on the political agenda and in public perception – with financial crises and debt burdens dominating the international media headlines. Although the scientific climate data appears ever more alarming and the wealth of scientific knowledge about climate change and its effects is continuing to grow, the topic appears to have lost importance for many people. According to surveys, the number of people who see climate change as a serious threat has declined significantly.

However, it is not only the financial crisis that is to blame but also the failure of the major UN Climate Change Conferences in Poznán, Copenhagen, Cancún and Durban, which were all characterised by grandiose declarations of intent but which avoided making any real commitments, delaying them for a future date. This sounded the death knell for the necessity of urgent action.

"If you travel to an area affected by malaria, it's not a foregone conclusion that you will get malaria. But you take preventative action to make sure you don't get the infection anyway."
Rajendra Kumar Pachauri, IPCC Chairman

WEATHER AND CLIMATE ARE NOT THE SAME THING

The problem is compounded by the fact that our snowy, cold winters and rainy, cool summers hardly seem to tally with the idea of a hotter planet. But this is going by the incorrect assumption that the recordings on our thermometers go for the rest of the world as well. It is also important to remember that weather and climate are not the same thing.

Weather
Describes the condition of the lower atmosphere at a given place and a given time.

Climate
Describes the overall weather conditions characteristic of a region or climate zone over a period of several years or decades. According to WMO guidelines, the period of observation for determining climate-related phenomena should not be below 30 years.

A) EFFECTS OF CLIMATE CHANGE ALREADY VISIBLE

For the 2007 UN Climate Report, hundreds of researchers evaluated the climate studies done over previous years, drew global consequences and published the IPCC Fourth Assessment Report: Climate Change 2007 (IPCC, 2007 a-d).

RISING TEMPERATURES

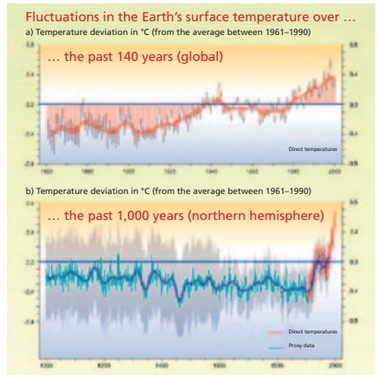
The global surface temperature of the Earth has increased by 0.8 °C since 1906, and by 0.95 °C in Europe. The last decade was the warmest since records began in 1850 and temperatures in the Arctic have risen by twice the global average.

OTHER EFFECTS THUS FAR

While 0.8 °C doesn't sound like much, if this elevation were in our body temperature, we'd definitely feel it. The Earth will continue to get warmer in the next few decades – in fact, you could say that it will be running a fever. And just like when we're not feeling well when we have a fever, the Earth will lose its equilibrium more quickly the worse the fever becomes (Latif, 2003).

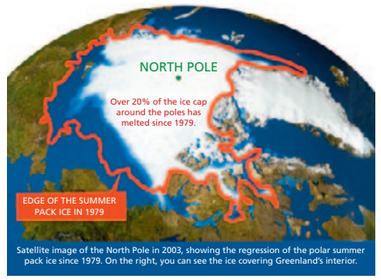
The increase in temperature has had and will continue to have a range of far-reaching consequences:

- **Weather extremes** such as heat waves, droughts and heavy rain occur more frequently.
- **The area of the Earth covered by snow** has decreased by about 5% since 1980.
- **Glaciers** around the world are receding, contributing to higher sea levels.
- **The Arctic sea ice** has retreated drastically since 1978.
- **The ice sheets in Greenland and the Antarctic** are shrinking due to melt and the break-up of glaciers, contributing to rising sea levels.
- Temperatures in the upper **permafrost**, which stores enormous amounts of the greenhouse gas methane, have increased by 3 °C since 1980.
- **The oceans** have become warmer on average and are contributing to higher sea levels due to thermal expansion.
- The **sea level** rose by 17 cm in the 20th century, and the rate at which it is rising has increased significantly since 1993 (Rahmstorf, 2008).
- The increase in CO_2 concentration in the atmosphere has led to increased CO_2 uptake in the **oceans**, which are becoming more acidic as a result. This dissolves carbon deposits, with coral reefs badly affected, for example.



Fluctuations in the Earth's surface temperature (© IPCC 2001)

Global warming records
According to the WMO, the 13 hottest years since modern climate records began in 1850 were all in the past 15 years. The hottest years around the globe were 2005 and 2010, followed by 1998, 2002, 2003, 2009, 2006, 2004, 2007, 2011, 2001, 1997, 2008, 1995, 2000 and 1999.



Edge of the summer pack ice – comparison between 1979 and 2003: the retreat of the bright ice surfaces, which reflect sunlight, accelerates global warming. (© NASA 2003)

B) THE CAUSES OF CLIMAGE CHANGE

The main cause of climate change is known as the anthropogenic greenhouse effect.

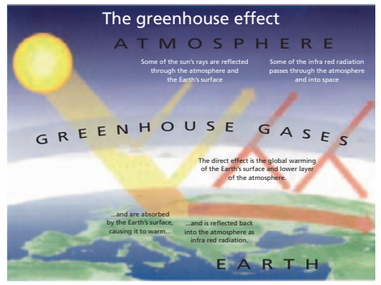
NATURAL GREENHOUSE EFFECT

The greenhouse effect is a natural phenomenon, and one that made life possible for humans on Earth. The greenhouse gases in the atmosphere, such as carbon dioxide (CO_2), enable the sun's light to reach the Earth's surface but also reflect some of the heat that is radiated from the Earth into space. Without this **natural greenhouse effect**, in which other gases such as water vapour (H_2O), methane (CH_4) and nitrous oxide (N_2O) also play a role, the average air temperature on Earth would be around –18 °C. Thanks to the natural greenhouse effect, the average temperature is around 15 °C.

ANTHROPOGENIC GREENHOUSE EFFECT

An enormous volume of greenhouse gases, primarily carbon dioxide (CO_2), results from burning fossil fuels such as coal and oil (main consumers: power stations and heating plants, transport, private households), changes in land use (e.g. clearing natural woodlands and forests for agricultural use, and from agriculture (e.g. rice cultivation and dairy farming).

This means that the CO_2 concentration in the atmosphere has increased significantly since the start of the industralised era. This increased CO_2 concentration limits the natural radiation of heat from the Earth, and the Earth radiates less energy into space than it absorbs from the Sun. The unnaturally high CO_2 levels, along with other greenhouse gases, leads to the additional warming of the Earth's atmosphere – which we call the anthropogenic greenhouse effect **(anthropogenic = caused by humans).**



The greenhouse effect (© STMUG Bayern 2004))

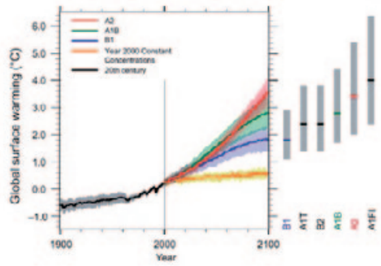
The Earth is clearly and continually getting warmer
Around 40 indicators, from the surface temperature of major lakes to changes in the Arctic permafrost, all provide information about global warming. A report by the US National Climatic Data Center (NCDC) in July 2011 used this data to show that the Earth is clearly and continually getting warmer.

German film poster for "eine unbequeme wahrheit" (© Paramount Pictures)

CO_2 concentrations at their highest levels for 800,000 years

The concentration of CO_2 in the atmosphere is at its highest level for 800,000 years. This has been proven by analyses conducted on ice cores from the Antarctic – where atmospheric greenhouse cases from previous climate epochs are trapped in tiny air bubbles. According to these tests, current carbon dioxide concentrations are higher now than they have been in the past 800,000 years.

Global temperature increase by 2100 (© IPCC 2007)



Global temperature increase by 2100 (© IPCC 2007)

Scenarios aren't prognoses but visions of a possible future

Scenarios for the future of our climate are characterised by a certain degree of uncertainty as a result of the incredibly complex factors at play. There is a certain margin of error because the effects of various factors such as population growth or CO_2 emissions due to the use of fossil fuels cannot be predicted accurately. The main weakness of all climate models is this uncertainty about the future behaviour of humankind.

CARBON DIOXIDE AS A KEY FACTOR

The proportion of carbon dioxide (CO_2) playing a role in the anthropogenic greenhouse effect is currently calculated at about 63%. The carbon dioxide levels in the air have increased by 39% since 1750, the start of the Industrial Revolution. 78% of this increase is due to the use of fossil fuels, while 22% is down to changes in land use (e.g. clearing forest areas).

Other key greenhouse gases such as methane and nitrous oxide, whose concentrations have also increased since 1750 by 148% and 18% respectively, have about half as much influence over global warming as carbon dioxide.

There is no plausible, alternative explanation for global warming. All natural factors that have led to fluctuations in climate over Earth's history are disqualified as a result of trends seen in the past few decades (Flannery, 2005, and Rahmstorf & Schellnhuber, 2006).

C) FUTURE SCENARIOS FOR THE GLOBAL CLIMATE

The IPCC report presented six climate scenarios. The worst-case scenario requires the complete switchover to renewable energies, while the best assumes a growing dependence on fossil fuels.

IT'S SET TO GET WARMER STILL

All the scenarios predict further increases in temperature and a rise in sea levels by the end of the 21st century. In many regions of the world, global warming will cause problems for humans, the natural world and the environment. Positive effects such as higher yields from agriculture and forestry in northern Europe will pale in comparison to other threats around the world.

Even if we managed to reduce greenhouse gas emissions to zero, global warming would still continue over many, many decades:

- In the next two to three decades, temperatures will increase by a further 0.6 °C as a result of the inert state of the climate.
- Sea levels will also continue to rise for several decades as a result of the thermal expansion of the water because the heat only travels very slowly from the surface to the ocean depths.

According to the IPCC, we can expect a temperature increase of 1.8 °C (1.1 to 2.9 °C) in the best-case scenario, while in the worst-case scenario we can expect an increase of 4.0 °C (2.4 to 6.4 °C). The most extreme warming will occur in the far north.

"[...] The last comparable major global warming event occurred about 15,000 years ago, when the last Ice Age came to an end. The climate saw a temperature increase of around 5 °C. However, this occurred over a period of 5,000 years – humankind is faced with a similar change but within the space of just one century [...]"
Rahmstorf & Schellnhuber, 2006

However, soon after the 2007 UN Climate Report was published, reality caught up with the IPCC model. The Potsdam Institute for Climate Impact Research (PIK) warns that the Earth is heading towards a temperature increase of around 5 to 6 °C by the end of the century.

CONSEQUENCES FOR SEA LEVELS

The IPCC assumes that sea levels will rise by a further 18 to 59 cm, although this is currently seen as wildly optimistic because it has not sufficiently taken into account the ice melt in Greenland and in the western Antarctic. According to figures from the Potsdam Institute for Climate Impact Research, the accelerated melt of ice in the polar regions and current rates of sea-level rise, which are higher than the average values in the 20th century, will cause a rise of one metre by the year 2100.

The people living in the major deltas of Asia and Africa will be most severely affected but low-lying regions such as the Netherlands, for example (one quarter of the country lies below sea level), Bangladesh or Florida will also experience massive problems. Many major European cities such as London, Hamburg, Venice and St Petersburg are located on estuaries and lagoons, which are subject to flash flooding. Around the world, around 100 million people live in areas that are at or below one metre above sea level.

In Germany, almost 14,000 km² of coastline and coastal areas on the North and Baltic Sea coasts would be below the waterline, and this area is home to over three million Germans. Dykes currently in place will not be sufficient to keep back the water, the future of many of the Hallig islands is uncertain, and cities such as Hamburg, Rostock and Kiel would become unlivable (see also Germanwatch, 2009).

The existence of many island nations will be called into question – particularly due to their susceptibility to violent storms, coastal erosion will also increase around the world (Germanwatch, 2004 b, and WBGU, 2006). This will make some islands unlivable, before they finally disappear under the water level, because their beaches will erode, the tourists will stay away, drinking water will be tainted with seawater and agricultural land will be lost.

Rising sea levels and storm surges will put lots of coastal areas at risk. (© bierchen, Fotolia.com)

CONSEQUENCES FOR GLACIERS

Throughout the world, most glaciers have receded significantly since the middle of the 19th century. By the end of the century, global warming will cause 75% of Alpine glaciers to melt away.

For more information, visit www.gletscherarchiv.de

In the medium to long term, we can expect to see a reduction in the runoff from glacierised basins. This will have significant consequences for cities and regions that rely on meltwater from glaciers for their drinking water, agriculture or electricity production.

The Himalayan glaciers cover an area of around three million hectares and are the biggest bodies of ice in the world after the polar ice caps. They supply the seven biggest rivers in Asia and are collectively known as the "Water Tower of Asia" as a result of their central role in storing fresh water. The analysis of ice cores from the Chinese Himalayas show that the past 50 years were the warmest in the past millennium, with a temperature increase of 2 °C in just 50 years. Nowhere in the world are the glaciers melting as quickly as they are in the Himalayas. If the trend continues, many Asian countries will suffer, along with their populations of many hundreds of millions of people, whose fresh water supply depends on the meltwater from the mountainous region. The fact that this will have huge consequences for sea levels goes without saying.

Additionally, when the glaciers melt in summer, this reveals large areas of scree. The loose stones can be washed away in mudslides or landslides in heavy rain, endangering the valleys and settlements below. People, settlements and agricultural land will face an increasing threat from glacial lakes outbursts (Germanwatch, 2004 a), avalanches of ice, mud and scree, as well as collapsing outcrops and moraines.

The Himalayan glaciers are the largest bodies of ice in the world after the polar ice caps. (© Momentum, shutterstock.com)

CONSEQUENCES FOR THE GREENLAND ICE SHEET

Greenland is four times the size of France. 80% of its area is covered by an ice sheet up to 3 km thick.

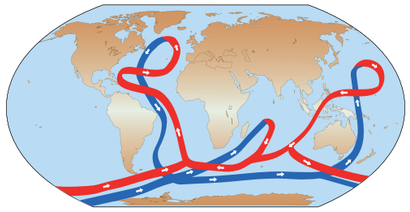
For a long time, people thought that the ice became thicker in the summer. Now we know that the ice mass simply gets forced upwards by the meltwater underneath the ice. Information from NASA also shows that the ice is changing much more quickly than previously thought. Meltwater falls through cracks in the ice and functions as a kind of lubricant between the base of the glacier and the surface of the land, which means the ice mass is conveyed to the sea much more quickly. As a result of the underground water, some glaciers are moving at a rate that is three times faster than ten years ago. This is compounded by the fact that, when it melts, the ice penetrates the deeper and warmer layers of air. This speeds up the melt, the faster it occurs, and this ice melts into water itself. Recent data suggests that Greenland's glaciers are in acute danger from warmer sea currents (WWF International Arctic Programme, 2009).

If the Greenland ice sheet were to melt completely, sea levels would rise by seven metres. The cold meltwater streaming into the Atlantic would have a significant effect on North Atlantic Drift.

If the ice sheets covering Greenland, which are up to 3 km thick, were to melt, it would cause the sea level to rise by seven metres. (© Imagix, shutterstock.com)

Greenland's ice sheet is at a higher risk than previously thought

The best estimates from earlier research predicted that a threshold value of 3.1 °C would cause the melt of Greenland's ice sheet. Following a study published by the Potsdam Institute for Climate Impact Research in March 2012, the ice sheet is much more vulnerable than originally thought. Now the threshold value for a complete melt of the ice sheet lies between 0.8 and 3.2 °C, with best estimates indicating a rise of 1.6 °C as compared with pre-Industrial Revolution levels. This means that the best estimate has been halved (Rahmstorf, 2012).



North Atlantic Drift is part of a global system of ocean currents.

CONSEQUENCES FOR NORTH ATLANTIC DRIFT

Current climate models show that North Atlantic Drift, the arm of the Gulf Stream that reaches all the way to Europe, will be weakened by the greenhouse effect, primarily due to the warming of the surface of the water and by increased precipitation.

According to the IPCC, it is highly likely that North Atlantic Drif will weaken by an average of 25% in the 21st century. The engine of this "energy conveyor belt" is the cold, dense saltwater, which comes from the coast of Greenland and Labrador and sinks down to just above the sea floor, flowing all the way to the Equator.

The massive amounts of water flowing into the sea as a result of the melt of the giant Arctic and Greenland ice sheets will either weaken the effects of North Atlantic Drift or will redirect it further south. Since it is fresh water and therefore less dense, it will prevent it from sinking off the coast of Greenland because the lighter freshwater will mix with the warmer surface water from the south and is neither cold nor salty enough to sink. As a result, no warm water will be conveyed from the south and the cycle will be broken. Temperatures in the Atlantic will increase because the influence of global warming will prevail.

North Atlantic Drift

The Gulf Stream is part of a global system of ocean currents. The arm that extends all the way to Europe, the North Atlantic Drift, provides a type of warm-water heating for Europe. The Gulf Stream originates in the Gulf of Mexico and transports warm water from the tropics to the North Atlantic. When the current of water arrives, its warmth is picked up by the west winds and blown across the land. This is what gives north-western Europe its exceptionally mild climate, as compared with other regions at the same latitude. On its way to the North Atlantic, some of the surface water evaporates, so the ocean's salinity and density increases. Just off the coast of Greenland, the water sinks by around 3,000 to 4,000 metres and flows just about the sea floor back towards the Equator, where it circulates.

CONSEQUENCES FOR THE ARCTIC

The Arctic is sometimes called the Earth's freezer because the icy region reflects the Sun's rays back into space. However, the area covered by Arctic sea ice is now smaller than ever, the Arctic is warming at a rate that is twice that of the rest of the planet and the negative headlines seem to record a new catastrophe every day.

In September 2007, the European Space Agency (ESA) revealed that the Arctic sea ice had reached its lowest levels since the start of satellite observations 30 years ago. Since 1979, the area covered by Arctic sea ice has shrunk by 20%, while snow cover has decreased by 10%. In March 2008, satellite data from NASA revealed that the old and resistant layers of ice in the Arctic were melting and were being replaced by thin, salty ice, which is much more susceptible to the summer melt. We now know that the Arctic sea ice is melting at a rate that is four times faster than the average predicted by previous climate models.

According to data from the National Oceanic and Atmospheric Administration (NOAA), temperatures in the Arctic in autumn 2008 were five degrees above the long-term average, the highest they had been since records began. The third Arctic Report by NOAA established the highest annual sea level rise in the Arctic, with an increase of 0.25 cm (NOAA, 2008).

In September 2011, the Arctic sea ice melted to a new low, according to data from the University of Bremen. The retreat of the ice accelerates global warming because the dark surface of the sea absorbs more of the sun's energy than the light-coloured ice. NASA's National Snow and Ice Data Center (NSIDC) predicts that there will be no Arctic ice in the summer by 2030.

The disappearing Arctic sea ice will deprive species such as the polar bear of their habitat. (© Yvonne Pijnenburg-Schonewille, shutterstock.com)

If the sea ice disappears in the summer, many animals that need the ice to find food or reproduce will lose their habitat, including polar bears and seals. The changing weather, snow and ice conditions and the negative impact of climate change on flora and fauna will also have dramatic consequences for the food supply, culture and lifestyles of people who live there (Germanwatch, 2005, and ACIA, 2004, 2005, and AMAP, 2011). The fragile ice often means that hunting is no longer possible for the indigenous poeples of the Arctic, such as the Inuit.

For more information, visit www.gfbv.de and www.inuit.org

On the other hand, the area usable to agriculture would increase as a result of climate change and the Arctic Ocean would become navigable. For the first time in August 2008, both the North-East and North-West Passage were free from ice at the same time and navigable. This happened again in 2011.

Until now, the 6,500 km stretch of the North-East Passage was only navigable on a few days a year, cleared by Russian icebreakers. This route through the Arctic Ocean, which links northern Europe with Japan, northern China and Korea is up to 40% shorter than the route via the Suez Canal. If it becomes warmer, this short cut will be open for up to 150 days a year.

North-West Passage

The North-West Passage, which extends around 5,800 km, links the Atlantic with the Pacific by way of the Arctic Ocean. The search for this trade route, which would link Europe and Asia via the Canadian Arctic instead of the long journey around Cape Horn, took 400 years and claimed many lives. The fate of the Franklin expedition is perhaps the best known: in 1845, British seafarer and Arctic explorer Sir John Franklin began his search for the North-West Passage – but none of 129 people on the expedition survived.

Around 50 years later, Norwegian polar researcher Roald Amundsen (first person to the South Pole in 1911) set off on his three-year search for the legendary route through the Arctic ice – and finally found it in 1906.

However, the North-West Passage remained unnavigable for a very long time. In the labyrinth of islands and ice floes, channels opened up in the ice as quickly as wind and currents could close them again. But just one century later, global warming had shrunk the Arctic ice cap and by 2030, the Arctic will be free of ice in summer, all the way to the North Pole. The North-West Passage will probably become a major shipping lane, with climate change making the short-cut to Asia a reality that people in the 16th century could only dream of.

Roald Amundsen, discoverer of the North-West Passage (© rook76, shutterstock.com)

It should be mentioned with some trepidation that the Arctic Ocean would become accessible for fishing and the exploitation of raw materials. According to estimations, the Arctic is home to around one quarter of all the as yet untapped oil and natural gas fields in the world. International oil companies are already investing in harbours and infrastructure in the polar region (see also Seidler, 2009). However, accessing and using these fossil fuels would simply prolong climate change indefinitely.

Alaska, but above all the Russian Arctic, is home to huge deposits of copper, nickel and other precious minerals. If the ice recedes, they will be free for the taking. In addition to these raw materials, neighbouring states will also be interested in the rich fishing and crab-fishing grounds offered by the area.

For more information, visit www.amap.no

The fight for the Arctic's resources

Since the ice has been melting in the Arctic, the race for resources has increased its pace. The five neighbouring Arctic states (Denmark, Canada, Norway, Russia and the US) are all staking their claims. They all want to prove to the UN that their land continues under the water. If this is the case, they have the right to tap the oil in the Arctic themselves.

CONSEQUENCES FOR THE PERMAFROST

The temperatures in the upper permafrost, which stores huge amounts of the greenhouse gas methane, have risen by 3 °C since 1980. If the Siberian and North American permafrost continue to thaw in the summer, organic substances that are currently frozen will start to break down. This will release enormous amounts of methane and carbon dioxide and will accelerate the greenhouse effect (Umweltbundesamt, 2006, and Jones et al., 2010).

Houses, roads, pipelines and industrial facilities are already sinking due to the thaw of the permafrost. The buttresses of pipelines and the route of the Qinghai-Tibet railway, which crosses 550 km of permafrost, require expensive cooling systems to prevent the ground from thawing out. Whole forests are sinking because the soft ground no longer offers them purchase.

Thawing permafrost means that houses and streets are subsiding. (© gary yim, shutterstock.com)

CONSEQUENCES FOR THE ANTARCTIC

For a long time, the Antarctic was seen as stable because the temperature of the Antarctic ice was significantly below zero. However, the indications from the western Antarctic seem to show an acceleration, with worrying signs that a "sleeping giant has awoken" and that the ice field could melt within 500 to 700 years as a result of a warming of just a few degrees. This is because the ice does not melt from the top, but from the bottom.

The disturbing factor is the increase in dynamic ice floes: warm seawater can melt the icebergs on the coast to such an extent that the remaining continental ice shelf breaks up. Seawater that penetrates between the rock and ice further accelerates the break-up of the ice. The ice streams that have been flowing into the sea following the break-up of an enormous section of the Larsen B ice shelf measuring 3,250 km^2 in 2002, are now flowing up to eight times faster.

We are now faced with the question as to whether the warmer seawater will also one day lead to the break-up of the giant ice shelfs, such as the Ross ice shelf. The complete collapse of the West Antarctic Ice Sheet would lead to a rise in global sea levels of four to five metres.

Methane

Methane (CH_4) is the second biggest greenhouse gas after carbon dioxide (CO_2). Over a period of a century, its influence on the greenhouse effect is 23-times higher than that of carbon dioxide. The methane concentration in the atmosphere has almost tripled in the past 150 years. This increase can be explained by increased food requirements, the main sources of methane are rice cultivation, dairy farming and the use of fossil fuels.

CONSEQUENCES FOR HUMAN HEALTH

Climate change will have a range of effects on human health. Water supply, water quality, food supply, heat stress, humidity and air pollution are just some of the factors at play.

Periods of hot weather already affect the health of many people. Office buildings may give rise to hazardous conditions for health if they have large glass facades or insufficient air-conditioning systems. From 1881 to 2009, the annual average temperature in Germany has risen by 1.1 °C. Data from the Deutscher Wetterdienst [German Meterological Service] shows that the number of summer days (days with temperatures of over 25 °C) has more than doubled since 1950.

The geographic regions affected by infectious disease will also change. Many diseases will become more prevalent, malaria and dengue fever will return to Europe and North America (Höppe, 2004). The number of people with cardiovascular disorders and asthma will increase, as well the number of people affected by allergies. In regions with a low ability to adapt, food scarcity will increase, which will have a detrimental effect on child growth and development. Increased frequency of extreme weather events will cause more deaths, disease and injury (UBA, 2003, and WHO, 2006).

WEATHER EXTREMES

Major reinsurers, such as Munich Re, have shown an increase in the amount of damages claimed as a result of natural disasters and weather catastrophes. 2011 was the most expensive year so far for natural disasters for national economies, far exceeding the costs in the year holding the previous record, 2005. Almost 90% of the damage-relevant events were weather-related. In addition to the earthquakes in Japan and New Zealand, 2011 also saw severe flooding in Thailand, Brazil, Australia, Cambodia and China, as well as a series of destructive tornadoes in the US (Munich Re, 2012). Russia, Central America and Armenia endured heat waves, and millions of people in the Horn of Africa suffered famine as a result of a catastrophic drought.

Spring 2011 was the driest in Germany since records began, while winter 2011 was also unusually dry, warm and sunny, according to data from the Deutscher Wetterdienst [German Meterological Service]. Forest fires even had to be extinguished in the Bavarian Alps in November 2011.

The IPCC warns that climate change will lead to more heat waves, droughts and more severe tropical storms, the frequency of heavy precipitation will also increase. Researchers predict that countries in the western European Mediterranean will be hit by more heat waves such as the one in 2003. The poorest of the poor will be hit hardest again. The IPCC predicts more droughts for West Africa in particular, which is already ravaged by famine (IPCC, 2012 b).

CLIMATE REFUGEES

One of the reasons why Ministries of Defence are also getting involved with climate change, for example, is because it has become a security threat. People are already seeking refuge from droughts, scarcity of drinking water, extreme weather events and rising sea levels (International Alert, 2007, WBGU, 2007, and Welzer, 2008).

Small island states are requesting that the UN Security Council addresses the issue of climate change as a major threat to international peacekeeping and to take the appropriate action. The south-west Pacific island group Tuvalu is under severe threat from rising sea levels and has begun the gradual evacuation and resettlement of its citizens (Germanwatch, 2004 b).

Parts of the Maldives will be submerged

If sea levels rise as expected, large parts of the Maldives' 200 inhabited coral islands would be submerged. The small state with its 385,000 inhabitants consists of a total of 1,190 islands, with none of them higher than 1.8 metres above sea level. Tourism and fishing are the main sources of income. Some of the tourism revenue is redirected to the State. If you can't stop climate change, you need to buy land elsewhere. People don't want to leave their homes, but they also don't want to live as climate refugees and spend decades living in tents.

(© WitthayaP, shutterstock.com)

Floods in Thailand

Of the countless weather-related catastrophes in 2011, the floods in Thailand, which were caused by extreme rainfall, are of particular note. Around 800 people lost their lives and large parts of the capital Bangkok were under water. Not only were hundreds of thousands of homes and enormous areas of agricultural land flooded, but also large industrial areas with production plants, particularly affecting Japanese companies. Supply bottlenecks and interruptions in production were some of the consequences for their customers.

RISKS OF CHANGE FOR COMPANIES AND INDUSTRY

It's not just since the publication of the Stern Review that it has become clear that climate change will also entail major risks for companies and industry (see Wuppertal Institut, 2008, for example). Although some industries such as suppliers, agriculture and forestry, transport and construction will be particularly severely affected; climate change will also have an impact on transport routes, cultivation of raw materials, suppliers and producers and thus pose a risk for all industries. Extreme weather affects not only agriculture, fishing, forestry and water supply, but also tourism, healthcare, insurance and activities at risk from storms, such as offshore oil extraction.

The outdoor sports and tourism industries rely on maintaining nature and the environment like no other branch of industry. By the end of the century, there will hardly be any snow in the Alps at altitudes below 1,500 metres. If temperatures increase by just one degree, two thirds of German ski areas are no longer guaranteed to have snow. Throughout the world, the melting of glaciers will destroy breathtaking landscapes and tourist destinations. In summer 2005, the glaciers in Switzerland and on Zugspitze that play a key role in tourism were covered in a protective film in order to prevent further melting. As a result of global warming, walking in the high mountains will become more dangerous as a result of ice falls and rockfalls. The Mediterranean region will be hit by more frequent and more extreme heatwaves, water scarcity and forest fires, while northern Europe may benefit from the rising temperatures with increased tourism.

In agriculture and forestry, the damage owing to extreme weather events such as longer droughts, storms or hailstorms will increase significantly. There will also be a higher risk of the spread of pests and fires. The costs of irrigation will also increase. Due to the changes in the seasons (many plants bloom and ripen two to three weeks earlier), the risk of frost damage will also increase. Intensively farmed animals will also suffer more stress as a result of the summer heat. Opportunities will arise with the expansion of arable land to the north, with possible double cropping and the cultivation of species that thrive in warmer weather.

Energy providers have to plan for the fact that extreme weather events such as storms, heatwaves or heavy rain will cause more damage to their infrastructure. Power stations will increasingly suffer from water shortages or the water will be too warm to use for cooling, while hydroelectric power stations may come to a standstill. Blackouts will cause significant risks for the economy with regard to supply and production. Water companies will also have to deal with longer droughts in the summer, as have been predicted for Europe in the future.

In the field of transport, extreme weather events will cause damage to infrastructure that will significantly affect transport. Inland shipping will be affected by more frequent low water (limited load capacity) and high water (downtime). This would break the supply chain and would thus affect other industries too. As a result of climbing energy prices and possible emissions duties, transportation will get more expensive. In addition, there will be more severe legal regulation, for example by including shipping in the emissions trade.

Many ski areas are already suffering from a lack of snow. (© Markus Bormann, Fotolia.com)

Water scarcity affects both power stations and inland shipping. (© Tomasz Parys, shutterstock.com)

CONSEQUENCES FOR ECOSYSTEMS

The IPCC estimates that around 20 to 30% of animal and plant species known to science are threatened with extinction if the global temperature rises by more than two to three degrees above pre-industrial levels. If it rises more than four degrees, 40% of species could be affected.

The reason for this dramatic effect is primarily because the global climate has never changed at such a rapid pace. The global temperature would reach levels not seen for millions of years and would rise so rapidly that many species of plants and animals would not be able to adapt to the new conditions.
Another problem is that many valuable ecosystems in the world are located in unique places such as in the valleys of particular rivers and exist nowhere else. Ecosystems that climb up mountain rockfaces will eventually come up against their limit when they reach the summit. As a result of the interspersal of landscapes with human settlements and infrastructure, most regions no longer have a "safety valve" to release the pressure (see also Chapter 5.5).

Coral reefs are bleached as a result of rising water temperatures and their skeletons are dissolved by the increasing acidity of the oceans. (© photoenatura, Fotolia.com)

D) A TARGET OF TWO DEGREES

With a global increase in temperature of more than two degrees as compared with pre-industrial levels, we can expect to see major disruption to the biosphere and water levels as well as major consequences for ecosystems, food production and economic development. Scientists speak of a "critical threshold" when it comes to global warming, beyond which abrupt climate change would become more likely and the consequences and risks of climate change would be almost impossible to manage.

Taking into account the fact that the temperature has already risen by 0.8 °C since 1906 and is expected to rise by a further 0.6 °C in the next two to three decades owing to the inertia of the climate, this means that we only have very little room for manoeuvre.

The IPCC warns that if greenhouse gas emissions do not decrease substantially by 2020 at the latest, global warming will set in motion irreversible processes such as the melting of the Greenland ice sheet, the acidification of the oceans or the release of large amounts of methane from the thawing permafrost.

With these findings in mind, the IPCC forcefully underlined once again in November 2007 that the Earth cannot be allowed to warm by more than 2 °C as compared with pre-industrial levels. For the international community, this means that greenhouse gas emissions must be reduced by 50% across the globe by the middle of the century, or by 80% in industrialised countries.

Key climate indicators, however, are already changing outside the pattern of natural variability followed by modern society and economy. The aim of achieving a maximum rise of 2 °C (compared with pre-industrial levels) no longer seems realistically achievable (Richardson et al., 2009).

"[...] The crisis seems to be looming much faster than scientists had predicted. Some large regions, known as hot spots, such as the Arctic and Western Antarctica are warming at a very rapid pace. Greenland's ice is melting much faster than predicted, sea levels are rising faster and the structures of ecosystems and species are changing drastically. [...] The political aim declared by the EU is to limit climate change to a maximum of 2 °C above pre-industrial levels. With this in mind, we still have another 1 or 1.5 °C to go. However, warming of 4 to 5 °C would double the natural difference between the Ice Age and the interglacial period. It would no longer be accurate to talk of a warm period, but a hot period, which would change the Earth completely. […]"
Schellnhuber, 2006 b

Tipping points

There are various tipping points in the Earth's climate system. These refer to threshold values established by researchers beyond which a process will be set in motion that could then never be stopped or reversed. We can expect that changes will occur as direct or indirect consequences of the increasing temperatures, and that these changes will not happen progressively but will take the form of a rather abrupt capsizing of the system – and that such changes will sometimes be irreversible over a long period of time. The rising temperatures mean that we are getting ever nearer to these tipping points.

THE SCALES LOOK SET TO TIP

As if the effects of climate change observed until now weren't enough to spur people on to make a change, there have also been worrying findings regarding natural CO_2 emissions, released as a result of global warming. Climate change could easily mean that severe or abrupt changes occur without warning. Rising temperatures mean that the likelihood of such abrupt, irreversible processes occurring in the Earth's climate system also increases. If ecosystems reach a certain tipping point through global warming, the greenhouse effect will see a drastic turn for the worse. The Earth's climate could take on a completely new state that we would never be able to reverse (Schellnhuber, 2006 a, Lenton et al., 2008, UBA, 2008 and ETC/ACC, 2010).

"The climate is like a rowing boat. If it tips slightly to one side, it will right itself again. If you tip it further, it will still just able return to its original position. But if you tip it too far, it will suddenly tip into another stable state – namely, with its keel facing upwards."
Elizabeth Kolbert, 2006

According to research findings, the climate in the Arctic is already just about at tipping point. The retreat of the sea ice and the old, highly resistant ice are just two indicators of its precarious situation. The thawing of the permafrost is another because it could release huge amounts of the greenhouse gas methane into the atmosphere, and the receding Taiga boreal forests, a major store of CO_2.

Currently, 15 such weak points have been observed in our climate system. The changes they experience will not be limited to the area where the tipping point is reached, however, but will generally have global consequences.

For more information, visit www.pik-potsdam.de

1. Arctic sea ice
- The retreat of the bright areas of sea ice, which reflect the sun's light, increases the effects of global warming because the dark surface of the sea absorbs more of the sun's energy than the ice.
- Species such as polar bears, walruses or seals that use the ice for hunting or raising their young, are slowly losing their habitat.

2. Greenland ice sheet
- If the Greenland ice sheet were to melt completely, this would result in a sea-level rise of seven metres.
- The cold meltwater flowing into the Atlantic would have a major influence on North Atlantic Drift.

3. North Atlantic Drift
- North Atlantic Drift and the warmth that it transports to western Europe would weaken if there were to be more freshwater entering the sea from the melting ice in Greenland because the density of the water would be lower.
- Sea levels in the North Atlantic would increase by up to one metre as a result of the dynamic adaptation to the differences in the way the currents flow.

4. Permafrost
- If the Siberian and North American permafrost continues to thaw in summer, enormous amounts of methane and carbon dioxide would be released, severely compounding the greenhouse effect.

5. The boreal forest
- If the forests were to die off, this would release massive amounts of carbon dioxide into the atmosphere.
- Many animals and plants would also lose their habitats.

6. Arctic ozone hole
- Northern Europe could be affected by an ozone hole that is brought about by climate change.

7. Tibetan plateau/Himalayan glaciers
- As snow cover diminishes on the Tibetan plateau, regional warming will increase because the dark rock absorbs more of the sun's energy than the ice and snow.
- Should the Himalayan glaciers disappear, hundreds of millions of people will suffer across Asia, whose fresh water supply depends on meltwater from the mountains.
- It is quite possible that the Indian monsoon would be affected.

8. Indian monsoon
- The complex interaction of warming, regional air pollution and changes in patterns of land use could make unpredictable and sudden changes to the winds that bring the life-giving rains of the monsoon.
- The region may alternate between periods of extreme drought and flooding.
- The food supply of one billion people is at risk.

9. Sahara
- Dust from the African Sahel provides the tropical Atlantic and the Amazon rainforest with nutrients. Climate change could see these dust storms that blow over the Atlantic run out.

10. West African monsoon
- The number of drought years in the Sahel zone could double by the end of the century, or lead to a complete breakdown of the monsoon system, both of which would have catastrophic consequences for the population in this region.

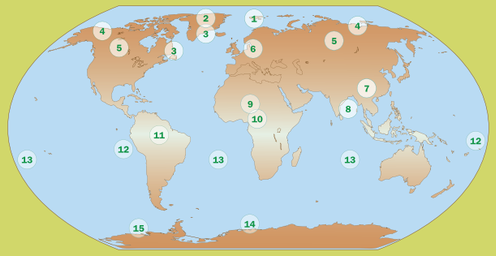
11. Amazon rainforest
- Increased temperatures in the Amazon basin would mean more water would evaporate. The rainforest would dry up and the dead trees would release carbon dioxide.
- The collapse of the ecosystem would signify an enormous loss of biodiversity.

12. El Niño
- The periodic warming in parts of the Pacific caused by the El Niño phenomenon could become a permanent state.
- This phenomenon is associated with heavy rainfalls in South America and extreme droughts in Indonesia and Australia.
- The increase in sea temperature would lead to the mass extermination of coral reefs.

13. Ocean hyperacidity and ocean warming
- The rising concentration of CO_2 in the atmosphere leads to increased amounts of CO_2 stored by the oceans. Water and carbon dioxide combines to form carbonic acid, which increases the ocean's acidity.
- This hyperacidity prevents sea-dwelling organisms such as plankton or corals from forming their calcium skeletons. However, they play a major role in the oceans' food chain and in the global material cycle.
- Warm water expands, thus contributing to further sea-level rises.
- Coral reefs are bleached by increasing water temperatures and sustain irreversible damage.
- Rising water temperatures affect marine plankton (microorganisms). Plankton does not just form the basis for the marine food chain but marine phytoplankton (from the Greek phyton = plant) also stores a massive amount of atmospheric CO_2 and provides almost two thirds of the oxygen in our atmosphere.

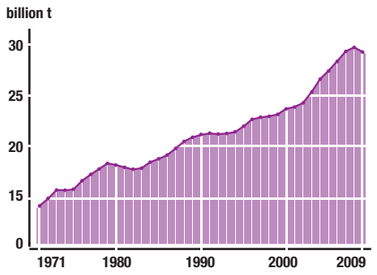
14. Antarctic Circumpolar Current
- Fresh water from the melting ice in the Antarctic may prevent the circulation of nutrients. Krill and phytoplankton levels, which form the basis of the marine food chain, would be depleted (SCAR, 2009).

15. West Antarctic Ice Sheet
- Warm sea water could melt the icebergs at the coast to such an extent that the remaining continental ice shelf could melt too.
- Seawater penetrating the layer between the rock and the ice sheet further accelerates the break-up of the ice.
- The complete collapse of the ice sheet would see global sea levels rise by a further four to five metres.



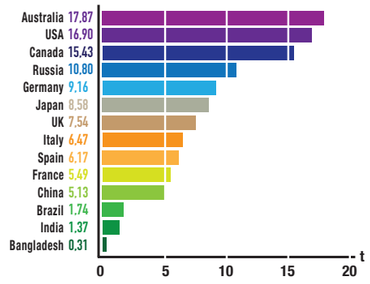
Global map of ecosystems and climate phenomena that are heading towards a tipping point (according to the Potsdam Institute for Climate Impact Research**).**

Global energy-related CO_2 emissions 1971–2009
(in billions of tonnes)



(Source: IEA 2011)

CO_2 emissions per head in tonnes (2009)



(Source: IEA 2011)

According to the IEA, in 2010, 44% of CO_2 emissions resulting from the use of fossil fuels resulted from burning coal. (© Hub.-Wilh. Domröse, shutterstock.com)

CO_2 EMISSIONS CONTINUE TO RISE

According to the IPCC, the concentration of CO_2 in the atmosphere must be stabilised at a maximum level of 420 ppm. This value currently already stands at 389 ppm, and is increasing at a rate of around 2 ppm per year. Worldwide, greenhohuse gas emissions have increased by more than 50% since 1970. CO_2 emissions, by contast, have increased by about two thirds. The industrialised countries are responsible for nearly 60% of this increase – although they only represent one fifth of the world's population.

In addition to the use of fossil fuels, the large-scale clearance of tropical forests also contributes to the increase in CO_2 emissions (WWF Deutschland, 2008 b). In many developing countries, tropical forests are the biggest source of emissions, such as in Indonesia and Brazil. The main cause of the destruction of forests is due to agricultural activities such as the clearance of arable and grazing land by slash-and-burn practices. The major problem is the large-scale clearance of such land for monocultures for the palm oil, sugar cane and soya industries, which are also used on the European markets as foodstuffs or biofuel (Germanwatch, 2011).

Cattle farming and the greenhouse effect

According to the Food and Agriculture Organization (FAO), cattle farming has a significant impact on the climate, both with regard to the clearance of forest areas (forests are destroyed, along with their capacity to store CO_2, slash-and-burn emits high amounts of CO_2), as well as with regard to methane output by the animals themselves (FAO, 2006). This means that with 80% of agricultural land in the Amazon being used as grazing land, this has catastrophic consequences for the climate and for biodiversity.

A report by the International Energy Agency (IEA) shows that global carbon dioxide emissions increased by a total of 1.6 gigatonnes in 2010, the highest increase since records began. Developing countries are currently showing the fastest increases in CO_2 emissions. Around one quarter of the increase in their CO_2 emissions result from products that they produce for other countries, primarily developed countries (Germanwatch, 2011; see also Latif, 2011).

In 2007, China replaced the USA for the first time as the world's biggest emitter of carbon dioxide. However, this comparison is hardly fair when you take into account that almost 1.4 billion people live in China, or almost 20% of the world's population, while the US is home to under 5%, it produces almost 18% of the world's CO_2 emissions (IEA, 2011).

A comparison between Africa and Germany

The entire African continent, with around one billion inhabitants, only emitted about 20% more CO_2 in 2009 than Germany with its 82 million inhabitants. Between them, just five countries (South Africa, Egypt, Algeria, Morocco and Nigeria) are responsible for more than three quarters of Africa's CO_2 emissions. If they are taken out of the equation, the rest of Africa is responsible for less than 1% of global CO_2 emissions (IEA, 2011).

THE WORLD WILL BE VERY DIFFERENT

"The Earth has existed for 4.5 billion years and has only been populated by humans for the past 150,000 years. This means that on the Earth's geological clock, we sprung up just one minute before midnight! What's at play now is not the Earth itself but our ability to survive on it."
Sebastian Copeland, 2007

The prognoses of human CO_2 emissions are currently beyond what was thought possible when the 2007 IPCC report was written. In the future, we will probably have to deal with a climate that has outstripped the levels that the IPCC had predicted in its simulations.

CO_2 emissions have increased much faster than predicted – one reason for this is the rapid growth in energy consumption in emerging economies. According to the IPCC, carbon dioxide emissions from the use of fossil fuels have increased by an average of 3.5% per year since 2000 – three times faster than they did between 1990 and 1999.

The main reason for the sky-rocketing CO_2 emissions is the increased dependence on coal for energy, particularly in densely populated emerging nations such as India and China. If we do not take aggressive action against greenhouse gas emissions, people will continue to focus on the cheapest energy source – and that's coal.

ALTERNATIVES COULD BE AVAILABLE

"Meanwhile, the most cautious approach – which is to wait until the empirical data has proven beyond any doubt which is the best course of action – is also actually the most risky approach. The first warning signs may only appear once the carbon dioxide levels have already exceeded a critical threshold, making the effects of climate change irreversible."
Elizabeth Kolbert, 2006

The climate reacts with a kind of time delay. CO_2 emissions released by humans into the atmosphere can stay there for about 100 years (by contrast, water vapour, which is equally important, eventually achieves a certain point of saturation and falls as precipitation), which is part of the reason why climate change is such a long-term problem. According to the IPCC, global greenhouse gas emissions must be halved by 2050. To achieve this, we need to significantly expand the use of renewable energies and energy efficiency must be boosted massively. According to the IPCC, the technologies are available to do this: in all sectors, whether it's energy supply, transport, building services, industry, agriculture, forestry and waste processing, avoidance technologies are either already available and affordable or will be by 2030 at the latest. However, they need to be used much more consistently than they have been so far (see also Stern, 2009).

CLIMATE ENGINEERING

Various, sometimes rather absurd, possibilities are discussed under this heading (see natur + kosmos, 2008 b, for example). Some such possibilities include:

- Enormous mirrors/parasols in space (to limit the amount of sunlight reaching the Earth)
- Fertilising the seas with iron (to stimulate plankton growth; after they have died off, the plankton will sink into the depths with the CO_2 absorbed from the atmosphere)
- Artificial clouds of seawater vapour (that would reflect sunlight)
- Artificial pollution of the atmosphere with sulphur particles (to reflect sunlight back into space)
- CO_2 sequestration from power station flue gases and storage in sediments or in the depths of the ocean (carbon capture and storage, CCS)

These measures are either technologically or financially unfeasible and their far-reaching consequences unpredictable, or they are downright irresponsible (see also UBA, 2011 a).

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NUCLEAR POWER IS NOT A SOLUTION

It should have become completely clear after the Fukushima disaster in March 2011 at the latest that nuclear power is not a viable option for the future. When you take into account though that Chernobyl was 25 years ago, we can hope that the decision by the German government to phase out nuclear power that was reversed and then re-introduced will really spell the end for nuclear power.

After all, nuclear power is in no way CO_2-neutral when you take into account the entire process chain (uranium mining, processing and transport, construction of nuclear power plants, etc.). In addition to the dangers of operating nuclear power stations, there are also the as yet unresolved issues of where and how to store the waste, the dangers posed by terrorism (weapons-grade material, construction of bombs, attacks on nuclear power plants) as well as a foreseeable medium-term shortage of fuel.

The 429 nuclear reactors currently in existence throughout the world cover just 13% of the world's energy needs but they also use oil and gas for heating, as well as petrol, diesel and kerosene for transport. In these areas, nuclear energy contributes almost nothing to the energy supply. When this is also taken into account, it only covers around 2% of requirements (IPCC, 2012 a).

The catastrophe at Fukushima showed once again that the risks of nuclear power cannot be calculated. (© ArnoldW, shutterstock.com)

THE KYOTO PROTOCOL

Back in 1992, all the countries attending the Rio de Janeiro summit made a commitment to do something about greenhouse gas emissions. In 1997, the Kyoto Protocol was finally drafted and approved. The Kyoto Protocol was the first time that industrialised countries made commitments to reduce their emissions of the six major greenhouse gases, including carbon dioxide (CO_2). Germany stated that it would reduce its emissions by 21% over the period from 2008 to 2012 as compared with 1990, with the country set to benefit from the decommissioning of inefficient industrial plants in the former East Germany.

The Kyoto Protocol was signed by all the industrialised nations, with the exceptions of Australia and the USA. Developing countries did not get any targets because the industrialised countries were to lead the way in the fight against climate change.

For more information, visit www.unfccc.int

GERMANY AND THE EU SET THEMSELVES NEW TARGETS

In 2007, Germany pledged to reduce its CO_2 emissions by 40% by 2020 as compared to 1990 levels. In April 2007, the German government presented its "2020 climate agenda", which it would use to achieve this goal (UBA, 2007 a). The European Union also pledged to adhere to the two-degree target and also made its own target to reduce emissions by 20% by 2020 as compared with 1990. This reduction in emissions is to be achieved primarily through improved energy efficiency and the promotion of renewable energies.

OVERLY GENERAL, NON-BINDING DECLARATIONS OF INTENT

With the inauguration of US President Barack Obama in 2009, it seemed as if the global climate protection movement might finally see some welcome changes. However, it's a sad fact that all recent UN climate summits have stuck to overly general declarations of intent and that a binding follow-up agreement to the Kyoto Protocol, which is due to expire in 2012, is still a long way off.

COP17/CMP7
UNITED NATIONS
CLIMATE CHANGE CONFERENCE 2011
DURBAN, SOUTH AFRICA

Even the last UN climate change conference in the South African city of Durban had few real successes. It was intended that the summit would define legally binding climate protection targets that would apply to all states – not just to industrialised countries as was hitherto the case, but also to emerging and developing countries (according to the Kyoto Protocol these include China, India and Brazil) – and the targets would apply from the year 2015. However, the Durban conference revealed that there would be no international climate deal before 2020, and whether it will apply to countries such as India and China is anyone's guess.

There has also been no real progress seen in the forest protection programme known as REDD+ (Reducing Emissions from Deforestation and Degradation), which was initiated at the 2009 UN climate protection conference in Copenhagen.

The states have formulated their intentions for a new climate agreement as follows:

- An agreement must be reached by 2015
- All countries should be obliged to comply with its extensive terms
- It should be implemented from 2020
- A climate protection fund should be established
- The Kyoto Protocol should be continued

Until now, the emissions targets from the Kyoto Protocol only apply to 37 industrialised countries but not to the US and China. The major emerging nations will outstrip today's industrialised nations in terms of greenhouse gas emissions within the next few years. It seems clear that growing economies such as China, India and Brazil have to do more for the climate. However, until now, they have discounted this responsibility by saying that they, too, have the right to economic development. As the only industrialised nation to do so, the US has also rejected all its international climate protection duties. The Durban agreement will hardly change anything about that.

THE ISSUE OF CLIMATE CHANGE CANNOT BE POSTPONED

"If climate change was brought about by people eating cute little kittens, millions of people would have been up in arms long ago. Our society would see such behaviour as an attack on its moral order. If the climate were to change rapidly within a few hours, we would be shocked. But the slow nature of these processes conceal the dangers of climate change."
Daniel Gilbert, Professor of Psychology at Harvard University

The extent to which another postponement of climate protection is negligent is shown in stark relief when we look back on one of the IPCC's warnings: "If greenhouse gas emissions do not decrease significantly by the year 2020, global warming will set irreversible processes in motion and we will almost certainly no longer be able to prevent major damage to the climate from occurring." It then becomes crystal clear that the results of the Durban conference fall a long way short of what is necessary. According to the Durban road map, the next international legal agreement on lowering emissions is to be reached in 2015 but will only enter into force from 2020. That would be much too late in order to achieve a substantial reduction in global emissions by 2020 – which is necessary in order to maintain the two-degree limit.

ipcc
INTERGOVERNMENTAL PANEL ON climate change

For more information, visit www.ipcc.ch

HOW DO WE PROCEED?

The world is now looking to the results of the major United Nations Conference on Sustainable Development – UNCSD, which took in Rio de Janeiro from 20 to 22 June 2012, marking 20 years since the groundbreaking Conference for the Environment and Development (also in Rio), which agreed on the Framework Convention on Climate Change and the Convention on Biological Diversity.

RIO+20
United Nations Conference on Sustainable Development

For more information, visit www.uncsd20012.org

In November 2012, all the heads of state will be meeting in Qatar in order to discuss a new climate protection deal as part of the 18th UN Climate Protection Conference.

The IPCC has also announced the publication of its fifth climate report for 2013 and 2014, after which the world will probably hold its breath, shocked at the prospects with which it is faced.

We are all responsible

The fight against climate change is a challenge facing society as a whole, we are all of us responsible: politicians, administrators, economists, citizens, media representatives, environmental agencies, scientists and researchers.

Science and education have a special role to play as a result of the complexity of the topic. The media and environment agencies are called upon to "translate" the scientific findings into generally comprehensible information. Politicians and administrators must then create the financial, legal and organisational conditions that are necessary for effective countermeasures and adaptation strategies.

Companies are called upon to make the most of their opportunities for sustainable action and to create a balance between economics, environment and social issues. This is going to be difficult in a globalised world where the price of a product is the most decisive factor in success.

At the end of the day, consumers have a choice and can make more informed choices and reduce consumption. It is often the small changes in behaviour that make a difference but sometimes we just have to rid ourselves of bad habits. Switching to green energy, buying regional, organically produced foodstuffs, choosing to go by bike to the bakers on a Sunday and buying efficient cars, avoiding leaving devices on stand-by and separating rubbish are just a few examples. They show that we all have the ability to make a positive change (see also Jackson, 2011).

Sometimes, it requires a certain perseverance and insistence, such as with the issue of the anti-nuclear movement in Germany. But sooner or later we reach a point where the time has come for change – and hopefully not once the catastrophes have already occurred. And hopefully this change will be a permanent one.

5.4.1 OUR STRATEGY: AVOID, SUBSTITUTE, COMPENSATE

In the battle against climate change, it currently seems impossible to reach the necessary international political consensus. However, this will not prevent JACK WOLFSKIN from continuing to pursue its own path. Dedication to the environment and climate too often takes the form of activism and lobbying, which is often neither serious nor a lasting commitment. However, that is not our way and not the path that JACK WOLFSKIN chooses to tread.

AVOIDANCE COMES BEFORE SUBSTITUTION OR COMPENSATION

In 2008, we set ourselves the target of reducing our specific CO_2 emissions by 40% by 2011 as compared with the average for the years 2006/2007. The first step was to analyse all company processes and create an action plan in order to bring about permanent reductions. From the beginning, we gave precedence to avoidance, followed by substitution and compensation.

This led to us adopting a whole range of measures over the past few years to avoid the CO_2 emissions resulting from our business operations. For example, the use of solar heat and photovoltaics, by the virtualisation of servers, the use of video-conferencing systems, the consistent use of recycled and FSC-certified paper (see Chapter 5.2) and reducing our dependence on air freight by completely restructuring our procurement processes.

We have reduced our specific total CO_2 emissions by over 50%

By changing to Greenpeace Energy, we have also ensured that all our energy comes from 100% green sources.

We currently take part in large-scale afforestation programmes to compensate for any unavoidable CO_2 emissions.

Since 2010, we have been compensating for emissions that we can't avoid, despite our best efforts, with large-scale afforestation projects run by PrimaKlima -weltweit- e. V. – thus also creating valuable habitats. Since the start of 2012, we have also had our catalogues printed and distributed via a climate-neutral process.

5.4.2 WHAT WE HAVE ACHIEVED SO FAR (SELECTION)

FREIGHT TRANSPORT: SEA FREIGHT INSTEAD OF AIR FREIGHT, A CHALLENGE FOR LOGISTICS

From a climate protection perspective, air travel is the worst option

Emissions from aviation have a much stronger influence on the greenhouse effect than those from other types of transport: burning aviation fuel (kerosene) not only results in the release of carbon dioxide and nitrogen oxide but also vapour trails (which dissipate to become cirrus clouds), when the water vapour condenses. All of these substances exaggerate the greenhouse effect and lead to the additional warming of the Earth's atmosphere. In order to ascertain the warming effect of the individual substances, the IPCC introduced the Radiative Forcing Index (RFI). This index shows by which factor the warming effect of the plane's CO_2 emissions need to be multiplied in order to quantify the warming cause by all the components of the aviation emissions. According to the IPCC, the RFI is somewhere between two and four, with 2.7 seen as the most accurate estimate (IPCC, 1999 and UBA, 2008 b).

The major findings at the start of our CO_2 accounting in 2007 were as follows:

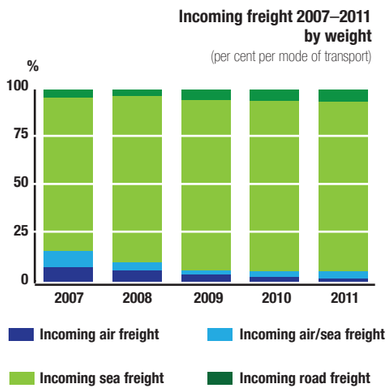
- Our incoming freight made up the majority of our total CO_2 emissions, accounting for 73.1%.
- Although our combined air/sea freight accounts for only 15.9% of our total incoming freight weight, this results in 90.5% of our incoming freight CO_2 emissions.

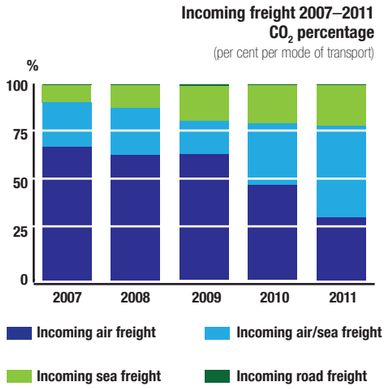
This means that the main aspect involved in reducing our specific CO_2 emissions (see Chapter 5.4.3) was to drastically reduce the proportion of air freight in our total freight usage.

Container ship (© E.G.Pors, shutterstock.com)

COMPLETE RESTRUCTURING OF OUR PROCUREMENT PROCESSES

While completely restructuring of our procurement processes, we changed our entire production and supply cycles and set binding environmental standards for our global freight transport with regard to which type of transport to choose and how to plan routes.





AS LITTLE AIR FREIGHT AS POSSIBLE

Our main aims remain to use air freight as little as possible, to replace as much air freight as possible with sea freight, and to optimise all transport routes, including pre- and post-travel.

We reduced the proportion of our incoming freight transported by combined air/sea freight from 15.9% in 2007 to 5.4% in 2011. While we still used air freight for 7.7% of our incoming goods in 2007, this was only 1.5% in 2011. We reduced the weight of incoming sea/air freight from 8.2% in 2007 to 3.9% in 2011. The majority of our incoming freight volume is now transported with sea freight alone (88.2%). In this respect, the proximity of our European central warehouse to Hamburg port really pays off.

This has resulted in a reduction of the CO_2 percentage in both modes of transport from 90.5% in 2007 to 78.8% in 2011.

GHG PROTOCOL ACCOUNTING

In order to make progress with regard to data quality and investigative effort when weighing up the pros and cons of our freight transport, we have worked closely with DHL Global Forwarding GmbH since 2009. The CO_2 accounting for our global freight transport is done using the principles of the Greenhouse Gas Protocol.

For more information, visit
www.ghgprotocol.org

COMPANY CARS: ACHIEVING EU TARGETS VIA FLEET MANAGEMENT

EU targets for CO_2 emissions from company cars

With a proportion of approx. 26%, transport accounts for a significant amount of CO_2 emissions in the EU, around half of which come from road transport. The EU target for CO_2 emissions from road vehicles was 140 g of carbon dioxide until 2008, based on a voluntary agreement adopted by European car manufacturers and the European Commission in 1998. As European car manufacturers did not adhere to the targets despite making progress in the area, the EU decided to implement legally binding limits of 130 g CO_2/km by 2012 for cars (120 g CO_2/km for cars and light commercial vehicles). The EU's long-term target is 95 g CO_2/km by 2020 for cars and light commercial vehicles, which corresponds to 3.6 litres for diesel engines and 4.1 litres for petrol engines.

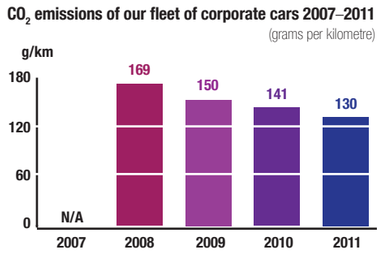
We use video-conferencing technology in our sites at Idstein and Neu Wulmstorf in order to avoid the need for business trips. We also acquired an electric car for our Idstein site in 2009, which is fuelled by 100% green energy. Since 2009, we have also stipulated that our taxi partners in Idstein use vehicles powered by natural gas.

The JACK WOLFSKIN travel guidelines stipulate that train travel should be used where possible for travel within Germany. Public transport has the major advantage of being more energy efficient and produces fewer harmful emissions, while also offering much higher transport capacity as compared with travel by car. However, the flexibility and transport possibilities offered by the car, particularly for our sales teams, who depend on such characteristics, cannot be achieved by public transport.

Our electric car is powered by 100% green electricity.

Our corporate cars are leased, and we had 75 vehicles in 2011. As soon as they came on to the market, we gave our leasing partner requirements with regard to our vehicles being equipped with particulate filters, and also with regard to CO_2 emissions since the end of 2007.

Thanks to our requirements, the average CO_2 emissions of our fleet of company cars was 130 g/km at the end of 2011, 23% below our average value for 2008. This means we have achieved the EU target.

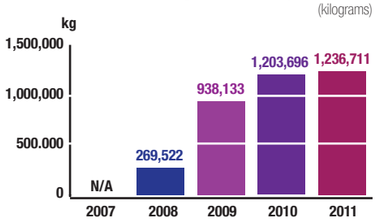


N/A = not available

Ahrntal, South Tyrol, Italy

GREENPEACE ENERGY: 100% GREEN ELECTRICITY

CO_2 avoidance by using green electricity 2007–2011
(kilograms)



N/A = not available

Renewable energies move up to second place

In 2011, renewable energies became the second biggest energy source in Germany, outstripping nuclear and coal for the first time. They now cover 20.1% of German energy requirements, with the increased use of wind and biogas and the boom in solar power accounting for most of this. Lignite was still in first place in 2011, followed by renewable energies, coal, nuclear, energy from gas power stations and other energy sources.

JACK WOLFSKIN started the gradual switchover to Greenpeace Energy in March 2008. Its electricity is from 100% renewable sources, with none from nuclear.

Since January 2012, all of our German sites have used 100% green electricity. As a result, the proportion of our total CO_2 emissions accounted for by our building energy consumption (see Chapter 5.4.3) decreased from 14.4% in 2007 to 4.4% in 2011.

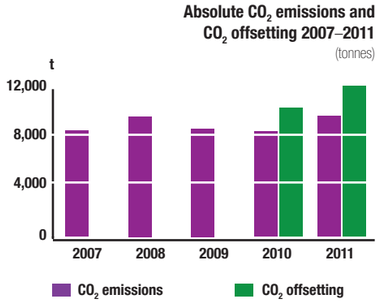
By switching to 100% green electricity, we have also avoided producing 3,648 tonnes of CO_2.

GREENPEACE ENERGY
WE GET ECO ENERGY FROM GREENPEACE ENERGY.

For more information, visit
www.greenpeace-energy.de

CO_2 AVOIDANCE BY USING GREEN ELECTRICITY 2007–2011

	2007	2008	2009	2010	2011
Idstein					
Total electricity consumption	**266,546 kWh**	**396,914 kWh**	**579,900 kWh**	**608,212 kWh**	**615,419 kWh**
Proportion, German fuel mix	266,546 kWh	17,828 kWh	-	-	-
Proportion Greenpeace Energy	-	379,086 kWh	579,900 kWh	608,212 kWh	615,419 kWh
Proportion, German fuel mix	100%	4%	-	-	-
Proportion Greenpeace Energy	-	96%	100%	100%	100%
Hamburg and Neu Wulmstorf					
Total electricity consumption	**768,842 kWh**	**1,061,801 kWh**	**1,901,027 kWh**	**1,703,835 kWh**	**1,542,164 kWh**
Proportion, German fuel mix	768,842 kWh	984,235 kWh	732,471 kWh	-	-
Proportion Greenpeace Energy	-	77,566 kWh	1,168,556 kWh	1,703,835 kWh	1,542,164 kWh
Proportion, German fuel mix	100%	93%	39%	-	-
Proportion Greenpeace Energy	-	7%	61%	100%	100%
Showrooms					
Total electricity consumption	**37,259 kWh**	**53,598 kWh**	**56,815 kWh**	**64,128 kWh**	**62,843 kWh**
Proportion, German fuel mix	37,259 kWh	37,405 kWh	15,734 kWh	17,584 kWh	-
Proportion Greenpeace Energy	-	16,193 kWh	41,081 kWh	46,544 kWh	62,843 kWh
Proportion, German fuel mix	100%	70%	28%	27%	-
Proportion Greenpeace Energy	-	30%	72%	73%	100%
Stores					
Total electricity consumption	**380,192 kWh**	**395,954 kWh**	**394,027 kWh**	**342,042 kWh**	**379,631 kWh**
Proportion, German fuel mix	380,192 kWh	395,954 kWh	336,843 kWh	264,001 kWh	96,593 kWh
Proportion Greenpeace Energy	-	-	57,184 kWh	78,041 kWh	283,038 kWh
Proportion, German fuel mix	100%	100%	85%	77%	25%
Proportion Greenpeace Energy	-	-	15%	23%	75%
CO_2 emissions factor, German fuel mix	605 g/kWh	570 g/kWh	508 g/kWh	494 g/kWh	494 g/kWh
CO_2 emissions factor Greenpeace Energy and M-Ökostrom	-	-	-	-	-
CO_2 avoidance, Idstein	-	216,079 kg	294,589 kg	300,457 kg	304,017 kg
CO_2 avoidance, Hamburg and Neu Wulmstorf	-	44,213 kg	593,626 kg	841,694 kg	761,829 kg
CO_2 avoidance in showrooms	-	9,230 kg	20,869 kg	22,993 kg	31,044 kg
CO_2 avoidance in stores	-	-	29,049 kg	38,552 kg	139,821 kg
Total CO_2 avoidance	**-**	**269,522 kg**	**938,133 kg**	**1,203,696 kg**	**1,236,711 kg**



PRIMAKLIMA -WELTWEIT- E. V.: CO_2 OFFSETTING THROUGH AFFORESTATION

JACK WOLFSKIN reduced its specific CO_2 emissions by over 50% between 2007 and 2011 (see Chapter 5.4.3). Reducing our damaging greenhouse gases by 50% is something we can be very proud of. But JACK WOLFSKIN wants to see this responsibility through to the end: since 2010, we have been offsetting all CO_2 emissions that we cannot avoid with large-scale afforestation projects run by PrimaKlima -weltweit- e. V., a Düsseldorf-based afforestation initiative that has been running since 1991.

PrimaKlima -weltweit- e. V.

PrimaKlima was founded as a registered association in 1991. The benefit to the public of this association has been recognised for 20 years now. In May 2010, PrimaKlima was awarded the DZI Donation Seal by the German Central Institute for Social Affairs (DZI). PrimaKlima has already planted over 13 million trees (325 species), contributing to an annual CO_2 absorption of almost 60,000 tonnes. PrimaKlima helps private households, companies, associations and communes to work out their own CO_2 footprint. Using these results, options for reducing energy consumption and more environmentally friendly energy use can be highlighted. Then it is possible to calcualte how many trees would have to be planted to achieve CO_2 neutrality. You can test the electronic CO_2 calculator on www.prima-klima-weltweit.de.

For more information, visit
www.prima-klima-weltweit.de

MORE THAN 2.1 MILLION SQUARE METRES OF NEW FOREST

An area of over 2.1 million square metres of new forest has been planted and a further 682,000 square metres has been planned to offset our unavoidable CO_2 emissions for 2012. The new forest will store an average of approx. 100 tonnes CO_2 per hectare every decade over its growing period.

Trees and carbon storage

When they grow, trees take carbon dioxide (CO_2) from the atmosphere, store it as biomass and give off oxygen. This means that they lower the air's CO_2 content and contribute to maintaining stable CO_2 levels in the atmosphere. As a rule of thumb, one hectare (= 10,000 square metres) of new forest will absorb an average of 100 tonnes of CO_2 per decade of its growing period.

CO_2 OFFSETTING THROUGH REFORESTATION 2010–2011

Year	Country	Project period	Size of reforested area	CO_2 storage (in 10 years)	Proportion	CO_2 offsetting (entire period)
2010	Germany	50 years	34.5 ha	3,448 t	34%	17,240 t
	Nicaragua	40 years	23.1 ha	3,303 t	33%	6,745 t
	South Africa	50 years	42.2 ha	3,376 t	33%	16,880 t
Total 2010			**99.8 ha**	**10,127 t**		**40,865 t**
2011	Germany	50 years	40.6 ha	4,058 t	34%	20,290 t
	Nicaragua	40 years	26.9 ha	3,847 t	33%	7,855 t
	South Africa	50 years	49.4 ha	3,952 t	33%	19,760 t
Total 2011			**116.9 ha**	**11,857 t**		**47,905 t**
Total			**216.7 ha**	**21,984 t**		**88,770 t**

One of our afforested areas in Lower Saxony (© PrimaKlima -weltweit- e. V.)

ALMOST 500,000 TREES PLANTED

To date, we have planted almost 500,000 trees, thus creating a valuable habitat (see Chapter 5.5.2). As requested by JACK WOLFSKIN, one third have been planted each in Germany, South Africa and Nicaragua. This mix minimises the risks of local natural catastrophes such as forest fires, wind damage or pest damage.

By directly supporting the South African government, which has a major interest in the rehabilitation of degraded areas, our spekboom plantations in South Africa are protected and good management practices are promoted.

(© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

THE PRIMAKLIMA CATALOGUE OF CRITERIA

The PrimaKlima catalogue of criteria is based on the principles for sustainable forestry as set out by the Forest Stewardship Council (FSC). PrimaKlima guarantees JACK WOLFSKIN afforestation with native species of trees and the continuous usage of the area as woodland.

Forest Stewardship Council (FSC)

The Forest Stewardship Council (FSC) is an independent, not-for-profit NGO based in Bonn with national working groups across 80 countries. It is supported by environmental organisations such as the WWF and Greenpeace, trade unions and those representing indigenous peoples. The mission of the Forest Stewardship Council is the global promotion of an environmentally friendly, socially and economically responsible forest management strategy. The strict FSC criteria serve to avoid uncontrolled logging, the violation of human rights and damage to the environment, as well as to maintain the functions of the forest.
To do this, the FSC has set out binding principles and criteria for good forest management.

For more information, visit www.fsc.org

Spekboom plantations on an afforested area in South Africa
(© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

Plant cultivation in Nicaragua
(© PrimaKlima -weltweit- e. V./Taking Root)

Planting the first tree in a afforestation area in Nicaragua
(© PrimaKlima -weltweit- e. V./Taking Root)

Plan Vivo standard

Plan Vivo is a system for developing land-use projects that have a long-term positive effect on the climate, ecosystems and livelihoods of the local population. By protecting existing forests and planting new native species in developing countries, Plan Vivo projects, which are implemented in cooperation with small-scale farmers, do not only bring environmental benefits but also create new livelihoods for local people.

For more information, visit
www.planvivo.org

Our forest areas in Nicaragua have been certified to the Plan Vivo standard. Plan Vivo projects are a cooperation with small-scale farmers and do not just have ecological benefits but also create new potential income for the people living there.

PrimaKlima helps the climate

An example: the average German household is responsible for 10 to 15 tonnes of CO_2 emissions per year. By planting new areas of forest, these CO_2 emissions can be balanced out. PrimaKlima calculates that a donation of EUR 10 is necessary to offset one tonne of CO_2. It currently costs an average of approx. EUR 1,000 for PrimaKlima to help establish another hectare of new forest – with large variations in price from country to country. According to a rule of thumb, the new forest absorbs an average of 10 tonnes of CO_2 per year in its growth period. This means that the average German household can offset its annual CO_2 emissions by making a (tax-deductible) donation of EUR 100 to 150 for PrimaKlima to regenerate an area of 1,000 to 1,500 m^2. Within one decade, the new trees in this area will remove the 10 to 15 tonnes of CO_2 from the air. In each further decade of growth, more CO_2 will be stored and after 50 years, five times this amount will have been absorbed. PrimaKlima favours repeated offsetting. If CO_2 neutrality is to be achieved in the long term, this process must be continued year after year.

For more information, visit www.prima-klima-weltweit.de

CLIMATEPARTNER, GOGREEN AND CO.: CLIMATE-NEUTRAL PRINTING AND POSTAGE

As a further component of its climate strategy, JACK WOLFSKIN not only consistently uses recycled paper but also uses a climate-neutral service for printing and postage.

While the amount of printed material using this climate-neutral process is still quite low, we are aiming to increase this to at least 70% of the total printed weight by the end of 2012. We have already had our 2012 summer catalogue printed in this way and have offset all the CO_2 emissions associated with the production of the catalogue by way of CO_2 emissions certificates. JACK WOLFSKIN works in line with the Gold Standard, the highest standard for climate protection projects according to the principles of the Kyoto Protocol. 1,318 tonnes of CO_2 have been offset for our summer catalogue alone.

Climate-neutral printing

The principle of climate-neutral printing is this: CO_2 emissions occurring during print production are offset by investing in climate-protection projects.

Emissions balance sheet: To work out climate neutrality, a detailed emissions balance sheet is drawn up for the printed item in question. First of all, the printers is subject to intensive analysis. In addition to taking into account the CO_2 emissions associated with production (through energy use, logistics, inks, print preparation and pre-press, print plates, etc.), the individual parameters for the specific print product (paper type, print run, ink, transportation, etc.) are also taken into account.

Offsetting: On the basis of this emissions balance sheet, the CO_2 emissions are offset with investments in acknowledged climate-protection projects. There is generally a portfolio of various climate-protection projects to choose from. Offsetting is done on the basis of the mechanisms in the Kyoto Protocol. Through the voluntary purchase and permanent phasing out of emissions credits, emissions rights are taken off the market, thus supporting the aim of reducing greenhouse gas emissions.

Gold Standard: The most demanding and widely recognised standard for Kyoto projects is known as the Gold Standard, which was developed as a measure for carbon offsetting projects by NGOs and scientists – under the auspices of the WWF. The Gold Standard guarantees real reductions in emissions, takes into account local ecological and social conditions and ensures that the project is implemented in addition to measures that had been planned in any case.

Transparency: All print material receives a specific ID with which the plausibility of the carbon offsetting can be checked online.

ClimatePartner°
climate neutral print product
Certificate number:
513-53156-1111-1004
www.climatepartner.com

For more information, visit
www.climatepartner.com

GOGREEN
Der CO_2-neutrale Versand mit der Deutschen Post

For more information, visit
www.deutschepost.de/gogreen

Since 2012, we have been consistently posting our catalogues with GoGreen, the climate-neutral service from Deutsche Post, and pro clima, the initiative from Schweizer Post. The principle is the same as for climate-neutral printing: a detailed emissions balance sheet is created for each item to be posted on the basis of which the CO_2 emissions can be offset through investments in recognised climate-protection projects.

JACK WOLFSKIN pays a fee for each catalogue so that the CO_2 emissions released during transport can be offset via Kyoto-approved climate-protection projects.

pro clima
post.ch/klimaneutra
Versand

For more information, visit
www.post.ch (Engagement)

5.4.3 CO_2 BALANCE SHEET, 2007-2011

This table shows that JACK WOLFSKIN includes its heating and electricity consumption, business travel and complete incoming and outgoing freight transport in its CO_2 balance sheet.

	2007			2008			2009			2010			2011		
ENERGY CONSUMPTION OF BUILDINGS	**Energy consumption**	**CO_2 emissions**	**Percentage of total CO_2**	**Energy consumption**	**CO_2 emissions**	**Percentage of total CO_2**	**Energy consumption**	**CO_2 emissions**	**Percentage of total CO_2**	**Energy consumption**	**CO_2 emissions**	**Percentage of total CO_2**	**Energy consumption**	**CO_2 emissions**	**Percentage of total CO_2**
Idstein															
Heating requirements	322,707 kWh	74,868 kg	0.9%	648,340 kWh	150,415 kg	1.6%	735,072 kWh	170,537 kg	2.0%	834,377 kWh	193,575 kg	2.3%	483,516 kWh	112,176 kg	1.2%
Electricity consumption	266,546 kWh	161,260 kg	1.9%	396,914 kWh	10,162 kg	0.1%	579,900 kWh	-	-	608,212 kWh	-	-	615,419 kWh	-	-
Hamburg/Neu Wulmstorf															
Heating requirements	1,026,038 kWh	238,041 kg	2.9%	1,366,058 kWh	316,925 kg	3.3%	2,363,255 kWh	548,275 kg	6.5%	2,619,465 kWh	607,716 kg	7.3%	1,065,467 kWh	247,188 kg	2.6%
Electricity consumption	768,842 kWh	465,149 kg	5.6%	1,061,801 kWh	561,014 kg	5.9%	1,901,027 kWh	372,095 kg	4.4%	1,703,835 kWh	-	-	1,542,164 kWh	-	-
Showrooms															
Heating requirements	40,365 kWh	9,365 kg	0.1%	45,039 kWh	10,449 kg	0.1%	45,039 kWh	10,449 kg	0.1%	45,039 kWh	10,449 kg	0.1%	45,039 kWh	10,449 kg	0.1%
Electricity consumption	37,259 kWh	22,542 kg	0.3%	53,598 kWh	21,321 kg	0.2%	56,815 kWh	7,993 kg	0.1%	64,128 kWh	8,686 kg	0.1%	62,843 kWh	-	-
Stores															
Heating requirements	19,189 kWh	4,451 kg	0.1%	21,095 kWh	4,894 kg	0.1%	21,607 kWh	5,013 kg	0.1%	21,607 kWh	5,013 kg	0.1%	23,309 kWh	5,408 kg	0.1%
Electricity consumption	380,192 kWh	230,016 kg	2.8%	395,954 kWh	225,694 kg	2.4%	394,027 kWh	171,116 kg	2.0%	342,042 kWh	130,416 kg	1.6%	379,631 kWh	47,717 kg	0.5%
Total energy consumption of buildings	**2,861,138 kWh**	**1,205,692 kg**	**14.4%**	**3,988,799 kWh**	**1,300,874 kg**	**13.7%**	**6,096,742 kWh**	**1,285,478 kg**	**15.1%**	**6,238,705 kWh**	**955,855 kg**	**11.5%**	**4,217,388 kWh**	**422,938 kg**	**4.4%**

BUSINESS TRAVEL	**Distance**	**CO_2 emissions**	**Percentage of total CO_2**	**Distance**	**CO_2 emissions**	**Percentage of total CO_2**	**Distance**	**CO_2 emissions**	**Percentage of total CO_2**	**Distance**	**CO_2 emissions**	**Percentage of total CO_2**	**Distance**	**CO_2 emissions**	**Percentage of total CO_2**
Aeroplane	2,160,484 pkm	536,492 kg	6.4%	3,074,135 pkm	763,370 kg	8.1%	3,922,232 pkm	920,890 kg	10.8%	3,222,291 pkm	772,790 kg	9.3%	4,438,470 pkm	1,102,410 kg	11.6%
Car	1,637,622 vkm	336,051 kg	4.0%	2,277,185 vkm	468,748 kg	4.9%	3,422,204 vkm	691,296 kg	8.1%	3,100,341 vkm	559,620 kg	6.7%	3,366,907 vkm	557,760 kg	5.9%
Train	n.c.	n.c.		n.c.	n.c.		n.c.	n.c.		389,872 pkm	15,259 kg	0.2%	410,775 pkm	16,045 kg	0.2%
Total business travel	**3,798,106 km**	**872,543 kg**	**10.5%**	**5,351,320 km**	**1,232,118 kg**	**13.0%**	**7,344,436 km**	**1,612,186 kg**	**19.0%**	**6,712,504 km**	**1,347,669 kg**	**16.2%**	**8,216,152 km**	**1,676,215 kg**	**17.6%**

FREIGHT TRANSPORT	**Freight weight**	**CO_2 emissions**	**Percentage of total CO_2**	**Freight weight**	**CO_2 emissions**	**Percentage of total CO_2**	**Freight weight**	**CO_2 emissions**	**Percentage of total CO_2**	**Freight weight**	**CO_2 emissions**	**Percentage of total CO_2**	**Freight weight**	**CO_2 emissions**	**Percentage of total CO_2**
Incoming freight															
Air freight	251 t	4,153,112 kg	49.8%	245 t	4,183,863 kg	44.1%	192 t	3,377,236 kg	39.7%	150 t	2,668,862 kg	32.2%	128 t	2,263,354 kg	23.8%
Sea/air freight	266 t	1,370,448 kg	16.4%	153 t	1,566,483 kg	16.5%	86 t	893,992 kg	10.5%	171 t	1,748,487 kg	21.1%	323 t	3,299,414 kg	34.7%
Sea freight	2,591 t	561,443 kg	6.7%	3,633 t	775,286 kg	8.2%	4,516 t	962,653 kg	11.3%	5,339 t	1,074,982 kg	13.0%	7,352 t	1,469,882 kg	15.5%
Road freight	140 t	15,778 kg	0.2%	140 t	15,773 kg	0.2%	227 t	25,354 kg	0.3%	351 t	22,009 kg	0.3%	535 t	27,921 kg	0.3%
Total incoming freight	**3,248 t**	**6,100,779 kg**	**73.1%**	**4,171 t**	**6,541,405 kg**	**69.0%**	**5,021 t**	**5,259,234 kg**	**61.9%**	**6,011 t**	**5,514,340 kg**	**66.5%**	**8,338 t**	**7,060,571 kg**	**74.3%**
Outgoing freight (export)															
Air freight							5 t	4,572 kg	0.1%	24 t	265,488 kg	3.2%	21 t	89,744 kg	0.9%
Sea freight							48 t	14,511 kg	0.2%	20 t	6,046 kg	0.1%	110 t	25,430 kg	0.3%
Road freight							822 t	197,124 kg	2.3%	1,081 t	56,074 kg	0.7%	1,297 t	66,068 kg	0.7%
Total outgoing freight (export)	**n.c.**	**Outgoing incl. domestic**		**653 t**	**307,579 kg**	**3.2%**	**875 t**	**216,207 kg**	**2.5%**	**1,125 t**	**327,608 kg**	**3.9%**	**1,428 t**	**181,242 kg**	**1.9%**
Outgoing freight (domestic)															
Road freight	n.c.			3,008 t	100,791 kg	1.1%	3,786 t	125,925 kg	1.5%	n.c.	148,938 kg	1.8%	5,026 t	167,782 kg	1.8%
Total outgoing freight	n.c.	168,895 kg	2.0%	3,661 t	408,370 kg	4.3%	4,661 t	342,132 kg	4.0%	n.c.	476,547 kg	5.7%	6,454 t	349,024 kg	3.7%
Total freight transport	**n.c.**	**6,269,674 kg**	**75.1%**	**7,832 t**	**6,949,775 kg**	**73.3%**	**9,682 t**	**5,601,366 kg**	**65.9%**	**n.c.**	**5,990,887 kg**	**72.2%**	**14,792 t**	**7,409,595 kg**	**77.9%**
Total CO_2 emissions		**8,347,909 kg**			**9,482,767 kg**			**8,499,030 kg**			**8,294,411 kg**			**9,508,748 kg**	
Gross sales [€1,000]		**148,903**			**193,579**			**240,576**			**289,658**			**354,853**	
CO_2 emissions per €1,000 gross sales		**56.1 kg**			**49.0 kg**			**35.3 kg**			**28.6 kg**			**26.8 kg**	
Difference to 2007					**-12.6%**			**-37.0%**			**-48.9%**			**-52.2%**	
CO_2 compensated by afforestation		**-**			**-**			**-**			**10,127,000 kg**			**11,857,000 kg**	
Percentage of compensated CO_2 emissions		**-**			**-**			**-**			**122.1%**			**124.7%**	

n.c. = not calculated

FREIGHT TRANSPORT AS THE MAIN SOURCE OF EMISSIONS

In the period from 2007 to 2011, our freight transport was responsible for an average of 73% of our CO_2 emissions, most of which was accounted for by incoming freight (69%).

The increase in our CO_2 emissions from 10.5% in 2007 to 17.6% in 2011 caused by business travel can be explained by our international expansion and the corresponding increase in air travel.

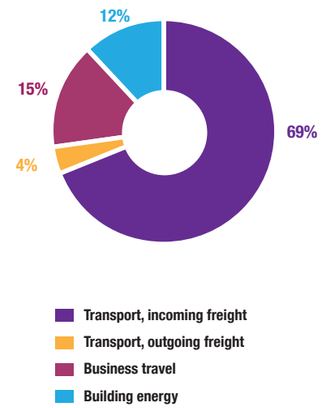
Our CO_2 emissions owing to building energy consumption decreased from 14.4% in 2007 to 4.4% in 2011.

2007–2011 RESULTS: CO_2 EMISSIONS LOWERED BY OVER 50%

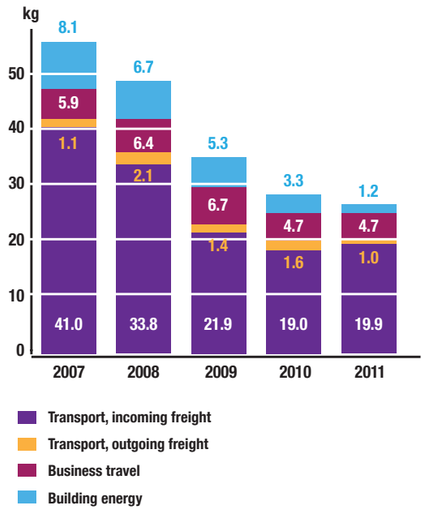
We lowered our specific CO_2 emissions from 56.1 kg CO_2 per EUR 1,000 of gross turnover in 2007 to 26.8 kg CO_2 per EUR 1,000 of gross turnover in 2011. This equates to a 52.2% decrease in damaging greenhouse gases!

In addition, we also fed a total of 229,702 kilowatt hours of electricity into the grid from photovoltaic systems in the period from 2008 to 2011.

Average distribution of our total CO_2 emissions 2007–2011
(per cent)



CO_2 emissions 2007–2011
(kg per EUR 1,000 gross turnover)



AREA OF ACTIVITY CLIMATE CHANGE* – AIMS 2012–2014

CO_2 avoidance				
No.	**Aim**	**Measures**	**Deadline**	**Responsibility**
1	Reduction of our specific CO_2 emissions by 5% as compared with 2011.	Further reductions in the proportion of air freight, particularly in incoming freight.	12/2014	Transport, Management, Environmental Officer, Projects
2		Further reductions in the proportion of sea/air freight, particualrly in incoming freight.	12/2014	Transport, Management, Environmental Officer, Projects
3		Increased efforts to increase preference for the train for business trips.	12/2014	Management, Environmental Officer

CO_2 avoidance through substitution				
No.	**Aim**	**Measures**	**Deadline**	**Responsibility**
1	Increase the proportion of electricity from renewable energies to 100%.	Switchover to Greenpeace Energy in Jack Wolfskin stores ■ Frankfurt ■ Düsseldorf ■ Munich	01/2012	Environmental Officer, Projects
2		Supply our new showroom in Frankfurt with Greenpeace Energy.	01/2012	Environmental Officer, Projects

CO_2 offsetting				
No.	**Aim**	**Measures**	**Deadline**	**Responsibility**
1	Compensation of all unavoidable CO_2 emissions from building energy consumption, business travel and freight transport.	Afforest a further 68.2 hectares in order to offset the unavoidable CO_2 emissions likely to be incurred during 2012.	12/2012	Management, Environmental Officer, PrimaKlima -weltweit- e. V.
2		Afforest a new area of forest in order to offset the unavoidable CO_2 emissions likely to be incurred during 2013 and 2014.	12/2014	Management, Environmental Officer, PrimaKlima -weltweit- e. V.
3	Offset CO_2 emissions for at least 70% of the weight of our printed material.	Climate-neutral printing of our catalogues.	From 01/2012	Management, Environmental Officer, Trade Marketing
4		Climate-neutral printing of our CR-related print matter.	From 01/2012	Management, Environmental Officer
5	Offset the CO_2 emissions from our postage.	Climate-neutral postage of our catalogues.	From 01/2012	Management, Environmental Officer, Trade Marketing
6		Climate-neutral postage of our CR-related print matter	From 01/2012	Management, Environmental Officer, Communication

*Measures for avoiding CO_2 emissions can also be found under the sections for heating, electricity and transport (see page 41).

5.5 AREA OF ACTIVITY: BIODIVERSITY

What would our planet be like without its biodiversity? Without its many species of flora and fauna, its spectacular natural landscapes and habitats? Well, it would stand to lose a great deal. In addition, we humans cannot exist on a planet without animals, plants and habitats. After all, they give us everything we need in terms of food, energy and such to ensure our survival on Earth. It was biodiversity that enabled the human race to exist. Our survival, or our well-being at the very least, depends on maintaining this biodiversity. We must finally realise the value of biodiversity and the consequences that its ongoing loss would entail.

Sao Miguel, Azores, Portugal

From totems to coats of arms

"[…] Lions, tigers and wolves were both competitors and dangers alike. […] The power and strength of the animals could be transferred to an individual by keeping parts of their bodies as trophies, or creating pictures or figures of the animal. A totem animal reminded people of their ancestry and their collective strength. The custom of integrating animals into names and coats of arms has similar roots. It was always done so that some of the qualities of the animal would supposedly rub off on the bearer. […]."
natur+kosmos, May 2012

The industriousness of insects

Pollinating insects such as bees, bumblebees, hoverflies and butterflies play a very important role in ecosystems. It has long been recognised that pollination is on the decline across much of Europe. This leads to lower yields from agricultural crops and fewer wild plants, even endangering their existence. Although the main sources of carbohydrates such as wheat, oats and rye are pollinated by the wind, around 70% of agricultural crops are reliant on insects for pollination, including fruit trees, hazel trees and other essential sources of vitamins (UFZ, 2009).

A) ON THE VALUE OF BIODIVERSITY

Throughout all eras and cultures of human history, animals and plants have been used not only for food but also for producing clothing, tools, utensils and medicines. They were often highly prized, or even worshipped – primarily the large mammals, birds, trees and forests. For this reason, you can still find them depicted on coats of arms and flags representing cities, regions and states, in particular the wolf, eagle and lion.

VALUE AND PRIDE

Many countries and regions are happy to extol the fact that certain animals, plants and landscapes are exclusive to them, and only them – thus enhancing its credentials as a tourist destination. For example, New Zealand attracts visitors with its breathtaking natural beauty and Kiwi birds, China with its bamboo forests and the Giant Panda, and the US is proud of its national parks, using the Bald Eagle on its coat of arms, and Australia promotes the kangaroo and the koala bear to the same level as it does Ayers Rock and its cultural history. Africa's tourism also benefits from its natural beauty with incredible vistas, elephants, lions, giraffes, hippos and rhinos.

The animals on the Australian coat of arms, the kangaroo and the emu, were chosen because they cannot move backwards and thus represent the progress and forward-looking nature of Australian culture.

All of this indicates value, respect and pride in our natural heritage. We place value on the things that we like, the things that move us emotionally and the things that are of direct use to us.

ESSENTIAL OR NOT?

But what about mice, or insects such as beetles and flies? Are they not annoyances, and therefore inessential? And if they become pests too, endangering our cereals, fruit and vegetables, do we really need them? All too often, we answer the question as to whether something is valuable or not with the general statements that the item is "not useful" or "inessential" – either consciously or unconsciously. Butterflies may be pretty and bees may sting, but with a little thought, it's clear that both provide an invaluable service as pollinators. Without them, most of our fruits, such as apples and cherries, could not exist. And of course there wouldn't be any honey, either.

People evaluate the value of an item by whether they can derive a direct benefit from it, regardless of whether this benefit is economic or emotional. But it's easy to forget that flies have an important role in the food chain, and that their larvae, and flies themselves, are food for other animals such as songbirds. But we like to hear these birds sing nevertheless. And they eat flies that rob us of our sleep and prove an annoyance on sunny summer days. In turn, the birds are food for other animals. It's not very attractive to see them as prey, but if we see the predator's young, a fox cub perhaps, then it all makes sense again because these cubs also need to eat in order to grow. And even dead animals and plants provide the earth with important nutrients.

These examples and cycles are repeated all over the world, all the time. The number of species, the links between them and the interaction of the species with nature are so manifold that we can only hope to see a fragment of the whole picture. This means that it is simply presumptuous and irresponsible to decide upon the right of certain species to exist. Diversity has its value, and it is worth preserving. Indeed, it is our moral duty to do so.

WHAT DIFFERENCE DO A FEW SPECIES MAKE?

Emotional value and perceived benefit are only one of the issues at play. Some people might say that you can always see rare or exotic animals and plants in zoos and botanical gardens.

The problem with this is that we already only know of many species from museums. And these are not just ancient stuffed relics from times long past. Among the fossilised remains of dinosaurs and the ice-preserved remains of the mammoth, are also plants and animals that flourished on Earth until as recently as one or two centuries ago. All too frequently we hear about an animal that is the "last of its species" being archived, killed or dying in captivity. This affects all groups of flora and fauna, including insects, reptiles, fish, birds and mammals as well as lichens, grasses and trees.

Many old German paintings still depict aurochs, for example. But then the animal was literally no longer in the picture. The last aurochs, the ancestor of domestic cattle, supposedly died in 1627.

The thylacine, or Tasmanian tiger, was the largest carnivorous marsupial ever to have lived on the Australian continent. The last known example died in a zoo in 1936. For years, experts in genetics have tried to revive the extinct species using its genetic material, since this last animal not only represented its extinction in Australia but throughout the world – it only existed in Australia.

Thylacine (© Hein Nouwens, shutterstock.com)

UNKNOWN SPECIES DIVERSITY

We are currently aware of just under two million species in the world but the total number is pegged at between 10 and 100 million (Streit, 2007, and Reichholf, 2008). So what difference does it make if there are few less species here and there?

Perhaps more than we might think: the species from museums and zoos mentioned above are only those that we know of. However, a whole host of species disappear from our planet before we are even aware of the fact that they exist, and with them a major link in the food chain and possibly also an important provider of pharmaceutical raw materials, for instance.

Nature's dispensary

"… Almost half of all medicines commonly taken in Germany are based on plants. These substances come from just 90 species. However, there are an estimated 240,000 species of vascular plant, which means that we are probably only aware of a fraction of the medicinal substances that nature provides. Many plants have developed substances throughout evolution that enable them to protect themselves against disease and parasites. These substances are often useful to humans too. One such example is paclitaxel, a chemotherapy drug, which is produced by the bark of the Pacific yew and is now manufactured synthetically because the Pacific yew is threatened with extinction. How would it have been if we had let it die out before discovering its secret?"
German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2010 b

BIODIVERSITY IS MUCH MORE THAN THAT

Biodiversity is much more than just species diversity: it also includes habitats and genetic diversity.

Biodiversity

Biodiversity (*bios* = life, *divers* = varied) describes the diversity of the ecosystems in which living things coexist, the diversity of species that have resulted from the long process of evolution, and the diversity of the genetic heritage of groups and individuals of a species (genetic diversity).

The **sea**-dwelling organism plankton (microscopic organism) not only forms the basis for the marine food chain, from which humans also ultimately benefit, but marine phytoplankton (Greek: phyton = plant) also captures large quantities of atmospheric CO_2 and provides us with almost two thirds of the oxygen in our air.

Forests and moorland are not just home to a multitude of species, they also naturally store CO_2. 20% of all greenhouse emissions are a result of deforestation, particularly in the tropics and sub-tropics (see also WWF Deutschland, 2008 b). The protection of these habitats or reforestation is thus an important, almost essential, contribution to the maintenance of biodiversity and climate protection.

Forest clearance (© Christopher Kolaczan, shutterstock.com)

Diversity is nature's life insurance policy

"[…] There is barely a corner of the Earth left uninhabited. The glacial permafrost is home to a whole range of algae and invertebrates. Even the tar-crusted funnels of deep-sea volcanoes have been shown to be teeming with microorganisms. The secret of this success is its diversity: the more species and genetic diversity there is, the higher the chance that adaptation will occur and be successful. This also applies to extreme changes such as climate change. The diversity of species, genes and ecosystems is nature's life insurance […]."
BMU, 2010 b

DIVERSITY AS A SAFEGUARD

In the mid-19th century, approximately 500,000 to one million Irish people starved because a fungus destroyed the potato harvest. Today, potatoes make up about 50% of vegetables that humans eat, which means that we are not really taking full advantage of the variety nature has to offer. Although one quarter of the 240,000 species of plant available are edible, only around 3,000 species are commonly eaten. Just 20 species account for 90% of the plants we eat, of which wheat, corn, rice and potatoes are the most significant. There is little left of the thousands of varieties cultivated from individual species available. In earlier times, if there were problems with one variety, you could just resort to another. However, modern farming continues to limit the supply to key, high-yield varieties.

The dangers posed by this were highlighted in the great rice crisis of the 1970s. An aggressive virus destroyed rice harvests from India to Indonesia. 6,273 varieties were tested and only one was resistant to the virus. Rice could very easily have become an extinct species.

Life is diversity, and diversity is life

"The world's rice paddies are dominated by two rice species. There are 100,000 known varieties of the first species alone. Do we really need them all? Is it not a better idea to concentrate on the cultivation of a few varieties? But nature showed us back in the 1970s what can happen if only those species survive that we deem "important", when a virus destroyed rice harvests from India to South East Asia. People were faced with starvation and ruin – until scientists discovered the one variety of thousands that could withstand the virus. This shows that protecting biodiversity is about more than just maintaining natural beauty. It means ensuring the basis for our survival."
BMU, 2008 a

BIODIVERSITY ABSORBS THE EFFECTS OF CLIMATE CHANGE

Even the effects of climate change can be absorbed to a certain degree by maintaining biodiversity because it will enable species to adapt to the changes in climatic conditions (e.g. drought-resistant crops) and protection against catastrophes (e.g. mangroves protecting against flooding).

Species such as the sundew are moorland specialists
(© Maslov Dmitry, shutterstock.com)

Climate change can be combatted by maintaining habitats because natural carbon dioxide sinks such as oceans, forests and marshlands reduce the amount of carbon dioxide in the atmosphere. Currently, though, deforestation is responsible for 20% of carbon dioxide emissions caused by humans. If we lose a section of moorland, it is not only its unique flora and fauna that we lose – it is transformed into a source of extreme CO_2 output. Moors trap CO_2 from the atmosphere as long-living peat. They are therefore excellent carbon stores and absorb four times as much CO_2 per hectare as the tropical rainforests. In order to be able to maintain their storage function, they require high water levels all year round. If the groundwater levels sink too far, oxygen penetrates to the carbon in the peat and CO_2 is released. This occurs as a result of the decrease in rainfall and longer dry periods associated with climate change but also as a result of the drying out of such areas for use in agriculture and forestry (WWF Österreich et al. 2010).

According to the German Federal Agency for Nature Conservation (BfN, 2010), sustainable agriculture is of enormous potential benefit to climate protection and biodiversity. For example, the following items are of exceptional benefit to climate protection and nature conservation:

- **Protecting** valuable grasslands
- Renaturation of drained moors, marshlands and meadows
- Organic farming
- **Sustainable forestry**

NATURE AS AN ARCHITECT

Lotus leaf with water-repellent effect
(© Inga F, Fotolia.com)

Nature has always been an inspiration to humans, for example giving us the desire to fly through the air like a bird. Although we have achieved this, it was not all that long ago. We were only able to work out the principles invovled by carefully studying a bird's wing. Using biology as inspiration for technology is known as bionics: for example, the inspiration for Velcro, patented in 1951, was the interlocking hooks on burdocks that ensure the propagation of the species by ensuring that their fruits become adhered to mammals' fur. In the 1990s, marketable products such as house paint were patented and inspired by the lotus effect observed in the flowers, which engendered surfaces that were water repellent and self-cleaning. Riblet coatings were inspired by shark skin to reduce drag on aircrafts and save fuel. You can only imagine how useful it would be if we were to be able to manufacture ropes with the strength, elasticity and low weight of spider silk.

ECONOMIC VALUE

With their ratification of the Convention on Biological Diversity (CBD), which entered into force in 1993 as the first central international agreement on species conservation, the 190 signatories were obliged to significantly reduce the loss of biodiversity by 2010.

For more information, visit www.cdb.int

As the aims were not achieved, it seemed necessary to put an actual economic value on the loss of biodiversity. What the Stern Review was to climate change (see page 54), the TEEB Study (The Economics of Ecosystems and Biodiversity) aims to be to the protection of biodiversity. The initial results of the economic impact of the damage to ecosystems were presented in May 2008 (European Commission, 2008), and these were followed by four reports (TEEB, 2009 a–b, and 2010 a–b). These reports showed that the economic value of the services provided by ecosystems is much higher than economists and biologists had previously assumed. A follow-up report was presented at the 10th International Conference on the Convention on Biological Diversity in Nagoya, Japan. It highlighted approaches, conclusions and made recommendations that would enable us to integrate the economic significance of nature into decision-making processes (TEEB, 2010 c).

The TEEB study "The Economics of Ecosystems and Biodiversity"

The TEEB study

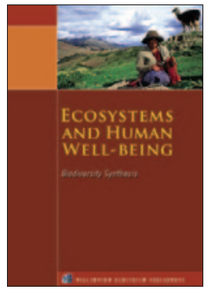
In contrast to goods and services as we know them, many services provided by ecosystems do not have a market price and are therefore not taken into account during cost/benefit analyses. The Economics of Ecosystems and Biodiversity study (TEEB) attempts to put an economic value on services provided by an ecosystem. For the first time, it was not only the direct value creation that was taken into account but also the services provided by nature. The economic models used in the TEEB study are based on the assumption that nature has a multitude of benefits for humans: food, sustainable raw materials such as wood, clean water, protection against floods and soil erosion, storage of carbon dioxide, and much more. The more we humans destroy nature, the faster its economic value will sink. Since December 2008, TEEB has had its main office at the UN offices in Bonn.

For more information, visit www.teebweb.org

ECOSYSTEM SERVICES

There are a whole range of measurable direct and indirect indicators for biodiversity and its development (e.g. the density and distribution of species, the proportion of land covered by forest and the amount of area that is protected by conservation areas, for example). The TEEB study is attempting to give the services provided by ecosystems and economic value. For the very first time, it is not only the direct value creation of tourism, hiking and hunting that is being calculated but also the value of services provided by nature. Some such services include food, sustainable raw materials, clean water and air, pharmaceuticals, building materials, protection from flooding and soil erosion, carbon storage, and much more.

According to the Millennium Ecosystem Assessment published in 2005 by the World Resources Institute (WRI), we are reliant on intact ecosystems for our economic, physical, mental and cultural well-being.



The WRI's Millennium Ecosystem Assessment

Ecosystems provide us with the following services (WRI, 2005; according to TEEB, 2010 c):

- **Supply services**
  - **Food:** Ecosystems offer us the conditions we need to grow food – both in the wilderness as well as in agricultural ecosystems
  - **Raw materials:** Ecosystems offer us an incredible range of building materials and fuels
  - **Fresh water:** Ecosystems provide us with surface water and groundwater
  - **Raw materials for pharmaceuticals:** Many plants are used as traditional medicine, as well as for the basis of a wide range of pharmaceutical products
- **Regulation services**
  - **Regulation of the local climate and air quality:** Trees give us shade and absorb pollutants, forests influence the amount of precipitation we receive
  - **Carbon sequestration and storage:** When trees and other plants grow, carbon dioxide is absorbed from the atmosphere and stored in its tissue
  - **Minimising the effects of extreme events:** Ecosystems and living organisms create buffers for natural disasters such as floods, storms and landslides

- **Wastewater treatment:** Microorganisms in the soil and in marshlands break down both human and animal waste
- **Avoiding erosion and maintaining the fertility of the soil:** Soil erosion is a key cause of soil impoverishment and desertification
- **Pollination:** Of the world's leading crops, 75% are reliant on pollination by insects
- **Biological pest control:** Ecosystems are of major importance to natural pest control and vector-borne diseases

■ **Habitats and supporting services**
- **Habitats for flora and fauna:** A specific plant or animal will be able to find everything it needs to survive within its habitat. Migratory animals are dependent on such habitats along their migration routes, for example.
- **Maintaining genetic diversity:** Genetic diversity determines the distribution of species and varieties and is the basis for having species that can cope with local conditions; they form the gene pool for the further cultivation of crops and livestock

■ **Cultural services**
- **Mental and physical recuperation:** The significance of natural landscapes and city parks for physical and mental health is becoming increasingly recognised
- **Tourism:** Ecotourism offers significant economic benefits and is an essential source of income for many countries
- **Aesthetic enjoyment and inspiration for artistic and cultural works:** Language, knowledge and appreciation of the natural environment have always been closely linked throughout human history
- **Spirituality and familiarity:** All the world's major religions emphasise our relationship with nature; natural landscapes shape our identity and give us a sense of belonging.

The WRI study lists 24 ecosystem services that are absolutely essential to human life or that could only be replaced at enormous technological and financial cost. Of the key ecosystems essential to these services, 15 are showing a negative trend and are threatened with decline or are not being used in a sustainable way (WRI, 2005).

THE ADDED VALUE OF INTACT ECOSYSTEMS

The TEEB study shows that intact ecosystems are usually worth more than the profit that could be achieved by exploiting or destroying them. In Asia, for example, **mangrove forests** are sacrificed for shrimp farms. This leads to a drastic reduction in the value of the affected areas in comparison to the natural ecosystem because the calculations should take into account the fact that the mangrove forests protect the coastal areas from storm surges, are a nursery for many fish and other sea creatures and also, according to recent calculations, also store significant amounts of CO_2 in their soil. Although mangroves only make up 0.7% of all tropical forest, their destruction releases millions of tonnes of carbon into the atmosphere every year.

Mangrove forest (© dieter76, Fotolia.com)

Without maintaining their **natural beauty**, many regions would lose one of their draws for tourists, if not the only one. If you think of everything that is associated with tourism (arrival and departure, accommodation and food/drink, equipment, sightseeing, entrance fees, souvenirs, employment, and much more) – even if you don't take into account the highly important value of relaxation – it becomes clear that the revenues achieved by tourism depend largely on maintaining the environment and natural beauty of the area.

Costa Rica is often cited as a case in point. These days, environmental and forest protection is seen as a key factor in Costa Rica's state-supported environmental policy, which has seen the restoration of huge areas of previously destroyed rainforest. More than 50% of the country has now been reforested, with almost no other country benefitting so successfully from ecotourism: it is now the biggest factor in the Costa Rican economy. Around 27% of the country's area is protected as nature reserves, with more than 20 national parks dotted around the country – each with very different defining characteristics. Tourists pay around USD 1.5 billion every year to visit the natural wonders of Costa Rica's rainforests and mountains.

Costa Rica's rainforests are one of the key drivers behind the country's flourishing tourism industry. (© maupe, Fotolia.com)

If the **forests** of the world were a business, the TEEB study calculated that they would form one of the top five largest companies in the world. Year after year, global turnover of wood products exceeds USD 200 billion.

With their species diversity and material cycles, their significance as a natural carbon sink and provider of oxygen, as a transport route, a provider of active ingredients for the pharmaceutical industry and as an important source of food for humans, we also cannot emphasise the value of our **oceans** highly enough. According to the Food and Agriculture Organization (FAO), fish is a major food source for over 2.9 billion people, providing at least 15% of their protein (FAO, 2008). But instead of appreciating all that they do for us, we are threatening life in the oceans with acidification and warming as a result of climate change (UBA, 2009). In addition, they also suffer from overfishing, pollution, eutrophication, non-sustainable aquaculture and the exploitation of marine resources, according to the results of the 2010 World Ocean Review (maribus gGmbH, 2010).

The 2010 World Ocean Review

For more information, visit http://worldoceanreview.com/

Rubbish in the world's oceans also becoming problematic for humans

Rubbish, particularly plastics, deposited in the oceans is increasingly becoming an environmental problem. The majority of plastic waste deposited in rivers ends up in the seas, some of it is shredded or thrown overboard from ships or results from cargo losses. The plastics do not break down but decompose as a result of the sun, high temperatures and salt. The tides and waves break them up into smaller and smaller pieces. The sunlight makes some of these pieces brittle and fragile and releases the plasticisers and toxic substances in them. Much of the plastic ends up as pellets measuring about 3 to 5 mm, which are broken down gradually until they are pulverised. These tiny particles are mistaken for plankton by sea creatures and eaten. Even smaller particles and the chemicals they release are consumed by the plankton themselves.

Larger animals are also affected by mechanical injuries. Seals, turtles, fish and dolphins get trapped in plastic bags, drink crates and fishing nets. Some birds also mistake the plastic waste for food, eat it and feed their young with it. Whales and dolphins eat the waste too. If the animals do not die from consuming the waste and its toxins, they can also starve because, despite having bellies full of waste, they do not receive any nutrients from it.

In addition, the plastics in the sea act as magnets for dangerous chemicals such as DDT, PCB, flame retardants and so on. These poisonous substances are consumed via the food chain by birds, marine mammals and finally humans.

Coral reefs are some of the most productive and diverse ecosystems on Earth. Although they take up only about 1% of the world's seas, they are home to more than a third of the known species living there. Tropical coral reefs are the most diverse marine biotope, not so much as a result of the diversity of the reef-building corals themselves but as a result of the biodiversity of the organisms living on and from the reefs (BMU, 2008 d). Millions of people's protein supply depends on fishing from coral reefs (WBGU, 2006, and WWF Australia, 2009).

Entire coral reefs are being bleached as a result of the increasing water temperatures associated with climate change and are being irreparably damaged. The increasing acidification of the oceans then dissolves their dead calcium carbonate skeletons. Coastal fishing, coastal runoff and pollutants, and the exploitation of raw materials add to the reefs' problems and make them more susceptible to disease. Coral reefs are not only habitats for countless marine organisms, they also often create a natural barrier for islands (as breakwaters) and protect them from spring tides, for example. Tourism associated with diving is also affected because tourists value the "rainforests of the seas" highly as holiday destinations. According to the IPCC, Australia's Great Barrier Reef, the largest coral reef with the highest biodiversity in the world, is also facing massive bleaching, which could lead it to die out within the next ten years (IPCC, 2001; see also WBGU, 2006).

Coral reef (© Ramon Stijnen, shutterstock.com)

Although **whales** were almost hunted to extinction, we have now discovered their significance for tourism. A key aspect in this was the partial, although completely insufficient, legal protection of the animals and highlighting the decimated numbers of these huge sea creatures. While countries such as Japan and Norway have not yet understood what the world stands to lose, and continue to hunt for whales on the flimsiest of pretexts, other regions and countries have recognised that there is much to gain from whale tourism. The travel industry now earns over USD 1 billion every year from whale watching. Just seeing one of these gigantic sea creatures close up or even being able to touch it is surely one of the most unforgettable experiences we can have with regard to coming into contact with nature.

Whale watching (© The Photos, Fotolia.com)

(© Craig Barhorst, shutterstock.com)

Nature's dispensary running low on supplies
"One aspect that many people are unaware of is that over 70% of the species used by humans worldwide are collected from the wild and are not grown commercially."
WWF Deutschland, 2008 a

Without **insects** such as bees, who pollinate all the major crops in the world, we would face massive harvest losses. Around one tenth of the world's food supply would be affected. Of the 115 leading crops in the world, 87 rely on insect pollination, including significant cash crops such as cocoa and coffee (Priess et al. 2007). In 2005, the fruit, nuts and spices reliant on pollination had a global market value of EUR 153 billion. If harvests are affected, prices rise. In the worst-case scenario, farmers have to do the job of insects with the use of a paintbrush, as is already the case in some cocoa plantations today (UFZ, 2009). In order to ensure sufficient harvests, people would have to pollinate the plants themselves – something that would not only be unaffordable but also impossible.

Companies across the world achieve an annual turnover of USD 65 billion with **plant-based natural remedies**. The global plant-based pharmaceuticals trade is worth approximately USD 500 billion per year. Almost half of all medicines taken in Germany are based on plants. The active ingredients in ten of the 25 most successful drugs worldwide originally come from fungi, bacteria, plants and animals living in the wild. Aspirin (acetylsalicylic acid) was originally obtained from willow bark (Salix spec.), for example, while penicillin originally comes from a type of mould (Penicillium notatum).

BIODIVERSITY AND NATURAL CATASTROPHES

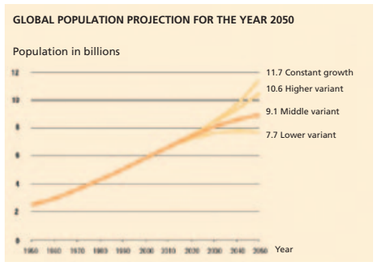
The degree of interaction between the reduction of biodiversity and natural catastrophes can be illustrated with countless examples: if mangrove forests are cleared to make way for shrimp farming, the coasts are more open than ever to tsunamis that may hit the region. The consequences of this became clear in the 2004 Indian Ocean tsunami. Hurricane Katrina caused damage of around USD 150 billion in the USA, which is much more than a sustainable protection plan for the coastal region would have cost.

More than the automotive, steel and IT services sectors
The Earth's surface is covered by approximately 100,000 protected areas of all different categories, around 11% of its total area. They provide humans with ecosystem services and biodiversity worth USD 4.4 to 5.2 trillion per year. This exceeds the amount of turnover achieved by the global automotive, steel and IT services industries put together. The annual costs for maintaining the protected areas amount to around USD 40 to 45 billion, so only around 1% of the value of their yields (BMU, 2008 b).

A VALUE OF ITS OWN

The attempt to boost the significance of protecting biodiversity by giving it an economic value is admirable. Perhaps the economic cost/benefit analysis will even turn out to be the best path to a solution, which would at least mean that the final result would add up.

Having said that, it is all rather sad. After all, nature has a value of its own that cannot be measured in money. Each living thing plays a role and has a right to exist, no matter whether it is large or small, and where it is in the food chain and whether it is perceived as having a use or not. Going beyond purely economic reasons, we also have an ethical and moral duty to protect the Earth's biodiversity.



Projected global population development by 2050

B) THREAT AND LOSS

"Back to nature" in the classic sense will no longer be possible, that's for sure. The number of people with all their requirements in terms of space, food, energy and resources is simply growing too quickly. In 1960, just under three billion people lived on our planet, while in 1999 there were already twice as many, and by 2050 there will be around 9.5 billion people.

For more information, visit www.weltbevoelkerung.de

This inevitably means that there will no longer be space for many species or that the reduction in space will mean they cannot exist in such numbers as before. In most regions, there are no longer any buffer zones available because of the landscape being divided up by human settlements and infrastructure. The survival of the Giant Panda, for example, is not in acute jeopardy because it has been recklessly hunted, but because the bamboo forests where it lives are disappearing. Of the few wolves that have returned to Germany, significant numbers are run over because they have to cross roads when hunting.

WORKING WITH OR AT THE EXPENSE OF THE ENVIRONMENT?

Humans have dominated the Earth in the biblical sense and have developed from a rare, threatened species into the number-one apex predator, which has had a negative impact on nature and the environment as a whole and changed them both massively. The consequences are not just that biodiversity is massively endangered but that humans are removing the basis for their very own survival.

In light of all this, we have to ask ourselves whether we want to live at the expense of nature – and whether this is possible. The threat to the coral reefs and all the species dependent on them would have unforeseeable consequences for the entire marine food chain from which two billion people get most of their protein requirements (IUCN, 2009, and UBA, 2009).

Making use of the environment has turned into overuse, exploitation and eradication. In short: overexploitation. Natural resources are overexploited practically out of existence. Species are eradicated or become extinct without anyone ever knowing of their existence. And where a seemingly tiny link in the food chain or a tiny cog in the material cycle is eradicated, entire ecosystems are put in jeopardy.

Microscopic algae, tiny krill and the magnificent Blue Whale
Measuring up to 33.5 metres in length, the Blue Whale is the largest creature on Earth. Stocks of krill, which is the main food source for the Antarctic Blue Whale, are being severely depleted. These tiny shrimp-like creatures, measuring only about 6 cm in length, live off mircoscopic algae that develop under the polar ice. With the disappearance of the sea ice, under which the Antarctic krill feed and live, they are facing extinction because the ice that is receding as a result of climate change is also affecting the amount of algae. Less algae means less krill and this means less food for the Blue Whale (WWF Deutschland, 2007 a).

HUMAN INFLUENCE

There have always been massive phases of species extinction in the Earth's history, for instance as a result of natural disasters. However, since the 17th century, the decline in biodiversity has had primarily human causes.

The major negative factors with human causes that affect biodiversity are:

- Loss of land and fragmentation of land area
- More intensive farming and increased amount of agricultural land
- Pollution of the water, soil and air
- Unsustainable hunting and fishing
- The illegal animal trade and poaching
- The introduction of non-native, sometimes invasive species
- Tourism
- Climate change

The major emerging markets are trying their hardest to imitate the wasteful consumer habits of the richer states. This combination of growing population and increased use of resources is truly alarming because the Earth's supplies are already meeting their limits in terms of fulfilling human demand.

GLOBAL BIODIVERSITY OUTLOOK: DAMAGE TO NATURE AND HUMANITY

In 2002, heads of state at the World Summit on Sustainable Development (WSSD) in Johannesburg agreed to significantly slow the global loss of biodiversity by 2010. Not a single one of the 21 defined goals has been achieved, according to the results of the Global Biodiversity Outlook 3 (GBO-3), the major UN report on biodiversity. Scientists put this down to the population explosion as much as the predominant economic model and patterns of consumption. The loss of species diversity will soon hit the world's economies hard. Some ecosystems are finding themselves well on the way to being so exploited that humans can no longer benefit from them, e.g. massive encroachments on forested areas, waterways overrun with algae and mass extinction of coral reefs. The livelihood and food security of several million people are in jeopardy.

The UN's Global Biodiversity Outlook 3

One reason for the ongoing loss of biodiversity is that the main causes of the loss (destruction and overexploitation of habitats and species, pollution, invasive species and climate change) are not being seriously countered.

The report also shows that negative consequences can be avoided if the international community takes swift action to protect and ensure the sustainable use of biodiversity. The partial successes achieved so far have demonstrated that, with the careful use of funds and political clout, it is absolutely possible to slow down the loss of biodiversity (CBD Secretariat, 2010 a, b).

For more information, visit www.gbo3.cbd.int

OUR ECOLOGICAL FOOTPRINT IS GROWING

"Homo sapiens is an incredibly young species. We came very late in the calendar year of the Earth. In terms of the Earth calendar as we know, it started on 1 January and now we're on 31 December. We humans just got here 15 minutes before midnight on 31 December and all of recorded history has blinked by in the last 60 seconds."
Janine Benyus (author), from the film "The 11th Hour"

German film poster for "The 11th Hour" (© Warner Bros. Entertainment)

Earth Overshoot Day 2011 was on 27 September. More than three months before the end of the year, humans had used up all the resources available that the Earth provided them with. In theory, this meant that all the Earth's raw materials had been used up and environmental problems such as greenhouse gas emissions and waste production could no longer be absorbed by nature. According to calculations by Global Footprint Network, humans would need 1.4 Earths in order to continue living the way they have been. According to Greenpeace, we have been living beyond our means for the past quarter of a century and have been acting as if we had 1.4 Earths and not just one. If we were speaking of a company, it would be obvious that cutbacks would have to be made in order to avoid going bankrupt – something that we must now apply to the natural capital offered to us by the Earth.

According to the "ecological footprint" calculated by the Global Footprint Network, it is possible to pinpoint the day at which the global community has consumed more than the planet produces every year: this is known as Earth Overshoot Day.

For more information, visit www.footprintnetwork.org

SOON WE WOULD NEED THE EQUIVALENT OF TWO EARTHS

Overfishing, the destruction of the natural environment and declining species diversity: according to the WWF's 2012 Living Planet Report, overexploitation of nature has increased dramatically. Humans now need so many resources that, from 2030, two Earths would be needed to cover our requirements in terms of food, energy and space (WWF International, 2012).

- On average, each person consumes 1.5 times more resources than nature has to offer, although this figure is much higher in industrialised countries.
- If the current trend continues, by 2030 people will consume twice as much as can be provided by the Earth – in effect, we would need a second Earth; by 2050, we would need almost three times as many resources.
- One billion people do not have sufficient access to clean drinking water.
- Since 1970, global species diversity has decreased by 30%, while in tropical regions this figure stands at around 60%.
- 70% of all fish stocks are threatened by overfishing.

LIVING AT THE EXPENSE OF FUTURE GENERATIONS

In 1983, the United Nations founded the World Commission on the Environment and Development, which, in its 1987 Brundtland Report, called upon people to live a responsible lifestyle that is sustainable in its reliance on resources. The Brundtland Report sees sustainability as "development that complies with the requirements of today's generations without jeopardising the opportunities of future generations to satisfy their own requirements."

Sustainability
A tenet held in the forestry industry as far back as 1713 describes that the amount of wood collected from a forest within a specific time period should not exceed the amount of wood that could grow back in the same period. The concept of sustainability became known to a global audience in 1987 when the World Commission on the Environment and Development, known as the Brundtland Commission, published its report entitled "Our Common Future". At the UN's Rio Summit in June 1992, the participating states pledged to promote sustainable economic development that would place equal value on economic as well as environmental and social aspects.

MASSIVE DECLINE IN THE NUMBER OF SPECIES WORLDWIDE

According to the Red List of Threatened Species published by the International Union for Conservation of Nature (IUCN) in June 2011, of the approx. 60,000 known species, around 3,801 are classified as critically endangered, 5,566 as endangered and 9,898 as vulnerable. This means that around one third of all known species are in serious difficulties. The IUCN's Red List is the global yardstick for how endangered a species is. The number one threat is loss of habitat. The list also lists 797 completely extinct species, as well as 64 that have died out in the wild.

Amphibians are the most threatened animals on Earth, with around one third of known species under threat of extinction. In addition, around 20% of known mammals, 12% of birds, 28% of reptiles and 37% of freshwater fish are endangered. Among plants, around 70% are classed as critically endangered.

The decline in the number of species does not just affect wild animals and plants but also domesticated breeds and varieties. Today, only around 15 species of plant and eight breeds of animal form the basis of the food supply for the entire world's population (oekom research, 2008 a).

For more information, visit www.iucn.org

The highest number of species are to be found in the tropics and sub-tropics, with an estimated 70% of all species living here. But unfortunately, our knowledge of the interconnections between species in these regions cannot keep pace with the rapidly progressing destruction of habitats. The period between 1950 and 2000 alone saw the area covered by tropical rainforest halved (BUND, 2008, and BMU, 2010 a). This not only has negative consequences for the immense, often as yet unknown species diversity there and our climate in general, but also for the indigenous peoples who live in and from the forests (Grundmann, 2007).

Among mammals and birds, the natural rate of extinction is now exceeded by a factor of around 100 to 1,000 (BMU, 2008 a). The total number of species declined by around 40% between 1970 and 2000. These kind of estimations assume that 150 species die out every day, never to return.

The false hellebore is just one of the species of plant under threat, not least due to the loss of habitat and overexploitation of stocks for pharmaceutical purposes. (© Axel Gutjahr, Fotolia.com)

EVEN GERMANY CANNOT STOP THE DECLINE IN THE NUMBER OF SPECIES

Even Germany has missed the EU target of halting the decline in the number of species by 2010. The European hamster is critically endangered, while the wolf and greater mouse-eared bat are also fighting for survival in Germany according to the Red List of Endangered Vertebrates published by the German Federal Agency for Nature Conservation (BfN). Although the news is not all bad (the number of European otters has been stabilised, for example), Germany has fallen well short of fulfilling the EU's 2010 aim of halting the decline in biodiversity in the field of species preservation.

The German Federal Agency for Nature Conservation (BfN) counts 478 native species of mammal, resident birds, reptiles, amphibians, freshwater fish and lampreys. Of these, 43% are classed as endangered. Almost 28% (132 species) are actually threatened with extinction. Together with the 32 species that are already extinct, Germany is also facing the loss of one third of its terrestrial vertebrates.

Despite promising regional developments, such as with the wall lizard and aesculapian snake, reptiles are the most endangered group of vertebrates in Germany. Of the 13 native species, over 60% are endangered, including the European pond terrapin and the dice snake. This is mainly due to the lifestyle of the heat-loving reptiles because good resting and nesting places in sunny spots have become hard to find.

The Federal Agency for Nature Conservation (BfN) has described the continued sharp decline in numbers of the European hamster and many bird species such as the aquatic warbler, the woodchat shrike, the great bustard and the northern lapwing as alarming. In order to conserve nature, urgent cooperation is required with the agricultural industry. The destruction of wetlands through drainage and changes in usage has to be stopped once and for all, while oligotrophic dry grasslands and heaths should no longer be sacrificed for ever more intensive farming (BfN, 2009).

European hamster (© allocricetulus, Fotolia.com)

WOLVES: FROM HUNTER TO HUNTED

The wolf was once one of the most common mammals in the world. Today, it has completely disappeared from many regions, including large parts of Europe. Its numbers are only just beginning to recover after 30 years thanks to careful protection. In Germany, the last wolf living in the wild was shot in 1904. However, since 2000 there have once again been families of wolves living in the wild in Germany. After they had died out in the wild 150 years ago, the year 2000 saw the first wolf cubs born to a female wolf in the wild. Immigrating from eastern Europe, they are primarily found in Lusatia and the German state of Brandenburg. According to the Naturschutzbund Deutschland (German Nature and Biodiversity Conservation Union) and the WWF, there are about 50 to 60 wolves in Germany, taking into account seasonal variations.

Wolves in Germany are primarily endangered as a result of the fragmentation of their habitat and due to traffic on the roads. Although there are now more wolves again in their native countries, they are not welcome everywhere they go. Despite being an endangered species and enjoying a special kind of protection, they are frequently the victim of targeted illegal killings. It seems as though the time when there was space for wild animals is over. For this very reason, we have to ask how we should deal with the returnees, and ask ourselves whether we even want them to return.

A native species but not always a welcome species

The fact that wolves are returning to their native hunting grounds does not mean that they are always welcome. While it looks like the wolf could return for good, we need to give it the chance to get established. With the return of the wolf has come the resurgence of old fears and prejudices that are commonplace in fables and fairy tales. The wolf as an evil beast. The killer that ate the grandma in the story and then even the innocent little girl in her red riding hood when all she wanted to do was bring her ill grandmother some food. The tale of the evil wolf stays with us.

The need for education and positive publicity

Nature conservation societies such as the German Nature and Biodiversity Conservation Union and the WWF are opening up a dialogue between citizens, hunters and sheep farmers in order to gain acceptance for the return of the wolf, despite differing interests. In partnership with authorities, institutions and organisations, people's attention will be drawn to the return of these mighty predators and information will be provided about their territories and hunting habits, as well as their social behaviour.

This approach will also take into account the conflicts associated with the return of the wolf. In comparison to earlier more populated areas, the wolf must now share its territory with many more people and their pets and livestock. Their territories are criss-crossed by roads and settlements, so it's little wonder that humans and wolves come into contact more frequently. However, many people are afraid of living near wolves. Sheep farmers fear for their flocks and some hunters fear for their game stocks.

The most important thing, therefore, is not just showing individuals how they can help to re-establish the wolf but also giving tips on how to behave should you have the luck to come face to face with a wolf in the wild. Humans no longer know how to deal with wilderness, and the return of the wolf, bear and lynx, etc. sometimes seems too much, which can result in hysteria. If we think back to the problematic case of Bruno the bear, who migrated north from the Italian province of Trentino in May 2006, stayed in the Bavarian/Austrian border area for quite a while and crossed the border several times. He was the first brown bear in over 170 years to live in the wild in Germany; the last one was shot in 1835 in the Bavarian village of Ruhpolding. Just one month later, at the end of June 2006, Bruno the bear was shot. In April 2012, a wolf that had finally returned to the Westerwald was subject to media scrutiny and a great commotion. It was shot after just three weeks – allegedly by accident.

Prejudice instead of facts

If we really want to see the wolf, lynx and others like them re-established in our forests, it's not just prejudices we need to battle but also problems and conflicts that need solutions. The idea that these animals could pose a danger to humans is simply a fallacy: they are simply much too shy. What is true, however, is that they will not have sufficient space in a habitat that is increasingly densely populated with humans, thus it will inevitably come into contact with sheep and other livestock from time to time. However, it hunts mainly roe deer, red deer and wild boar, as well as smaller animals such as hares. Wolves also primarily hunt the old, young or weak creatures because they are easier to catch. This means it plays an important role in the ecosystem because it controls stock levels of medium-sized ungulates.

If livestock such as sheep or goats are insufficiently protected, the wolf may also attack them. However, research by the German Nature and Biodiversity Conservation Union and the Senckenberg Research Institute has shown how rare this actually is. This research shows that the wolves in the Lusatian region prefer to hunt deer, while livestock makes up less than 1% of their kills. This should be cause for celebration because it completely disproves the widely held, and deep-rooted belief that wolves prefer pets and livestock, not to mention whole flocks of sheep.

However, this also presents us with great opportunities for maintaining our forests. Since the major predators died out in Germany and elsewhere in Europe, red deer numbers have rocketed. Previously the main prey of the wolf, lynx, etc., their enormous numbers have been steadily eating away at the new tree growth. But instead of creating space for these predators and giving them the chance to get re-established, enabling them to regulate wild animal populations in a natural way, we prefer to hunt their prey ourselves. Is it really only to protect our forests?

Financial compensation

Protective fences and herding dogs can help a lot. As long as sheep and other livestock are well protected and there is enough choice in terms of other wild prey, wolves will not take the risk of engaging with electric fences or sheepdogs. So it's little wonder that less than 1% of prey caught in Lusatia were livestock. At the same time, the farmers also have a legitimate claim to appropriate financial compensation for any animals such as sheep and goats taken by wolves. The onus is now on politicians to arrange fair financial compensation in such cases – for both commercial and non-commercial livestock keepers and breeders.

For more information:

www.nabu.de
- (Campaigns and projects – wolf)
- (Animals and plants – mammals – predators – wolf)

www.wwf.de
- (Topics and projects – threatened plant and animal species – wolves)

www.gzsdw.de
- (Society for the protection of wolves)

www.lausitz-wolf.de
- (Friends of wolves in the wild)

www.wolfsregion-lausitz.de
- (Contact point for information about wolves in Lusatia/wolves in the wild office)

www.stiftung-nlb.de
(Foundation for natural landscapes in Brandenburg)

The Lusatian wolf's preferred diet is roe deer
Scientists at the Senckenberg Research Institute have analysed the eating habits of wolves in the first eight years since their reappearance in Germany. The results are reassuring: the proportion of livestock on the menu is under 1%. Wild ungulates make up more than 96% of their diet, mostly comprised of roe deer (55.3%), followed by red deer (20.8%) and wild boar (17.7%). The hare makes up a small amount of their diet at just under 3% (German Nature and Biodiversity Conservation Union, NABU, 2012)

(© B. & C. Promberger)

LOCAL AND GLOBAL EXTINCTION

The wider the area in which a species dies out, the more endangered the overall survival of the species. Examples of species that used to be widespread and are now only present in very small populations in the wild are the European sturgeon or the Northern bald ibis. Species such as the European bison have completely died out in the wild and only exist in captivity.

Even North America's mighty herds of bison …

… nearly died out. In around 1800 there will still about 45 million bisons migrating across the American prairies and the earth shook under the pounding of their hooves. In 1890, not even one hundred years later, there were only about 800 animals remaining. During the population of the country and the push towards the west coast, humans killed so many of them in their bloodlust that the bison stood on the brink of extinction. And at the same time, although it was quite a conscious side effect, the North American Indians lost one of the pillars of their existence. In contrast to the Native Americans, who used almost all parts of the buffalo – from the meat to the hides and bones and even the tendons – the European settlers only wanted the experience of having killed such a mighty beast. With time, people even began hunting them from passing trains, winning a prize for each animal killed. The meat was not even used and the carcasses were left to rot. When bison numbers were so low that it was no longer worth going to hunt them, the bleached bones were collected and used to manufacture soap.

Bison (© Warren Price Photography, shutterstock.com)

The shocking thing about this is that despite all the successes in environmental protection and nature conservation in individual areas and on regional, national and local levels in the past few decades (see Chapter 5.5. c), history is repeating itself. It's just other species that are being driven to the brink of extinction. The most classic example for overexploitation today is occurring in the world's oceans and tropical forests.

The once seemingly inexhaustible fish stocks have been overfished to such an extent that many popular edible fish are now endangered. The parallels with the once widespread whaling industry with its enormous fleets are unmistakable. If current fishing quotas are maintained, the world's key fish stocks are set to collapse by the middle of the century (see also FAO, 2008, and Greenpeace Deutschland, 2008). Although we have been aware of this development for many years, the situation has been allowed to deteriorate because the international community cannot or will not agree on sensible fishing quotas. This applies to Atlantic cod as well as to the Atlantic halibut, Alaska pollack, the European sprat, the gilt-head bream and the rose fish.

Atlantic cod (© davidyoung11111, Fotolia.com)

IRRESPONSIBLE PRACTICES

One in three species of shark is endangered – reason enough, you might think, not to catch them. However, when you consider that most of them are only caught for their fins, which are cut off for use in shark-fin soup before the shark is thrown back into the water alive, where it will often struggle for many hours before dying. This highlights the perversity and irresponsibility of humans' relationship with nature, where everything is fuelled by the desire for profit.

Instead of maintaining the tropical rainforests as unique habitats or, at the very least, using their wood sustainably, vast areas are burned down to make way for pastures to feed the cattle for the global meat industry or for agricultural land that is used for biofuel crops, for example.

Biofuel replacing rainforests

According to the IPCC, the increased use of biofuels has only been made possible because vast areas of rainforest are subject to slash-and-burn in order to clear land for biofuel crops. Slash-and-burn release CO_2 into the atmosphere that had been stored for many years in the rainforest. Even if high-yield plants such as sugar cane and palm oil are cultivated for biofuel, it would take between 40 and 120 years of using biofuels rather than fossil fuels to compensate for the CO_2 emissions produced. If lower-yield crops such as maize or soybeans are used, it would take between 300 and 1,500 years (oekom research, 2008 b, and ÖKO-TEST, 2008).

The German Federal Environment Agency is demanding that renewable raw materials such as wood or plant oils should be used primarily for material purposes – i.e. for the manufacture of products. Only after the raw materials have been used several times should the waste materials be recycled for the purpose of gaining energy, which may include electricity and heat generation as well as producing fuels (UBA, 2010 b).

Overfishing also poses a threat to jobs

The global designation of marine reserves covering 20% of the total area would mean losses of USD 270 million annually for the commercial fishing industry. At the same time, these same marine reserves could secure long-term income for the industry of USD 70 to 80 billion by avoiding overfishing. According to the TEEB study, failure to take action would result in the complete collapse of fish stocks and losses of up to USD 100 billion, and the loss of 27 million jobs.

THE PERVERSITY OF THE MARKET

The perversity of the market is illustrated by the fact that the rarer something is, the better it is for business, because it is more profitable. Atlantic blue-fin tuna, for example, is on the brink of extinction. However, blue-fin tuna fishing lives on because people are prepared to pay tens of thousands of dollars for this fish, which once thrived in the oceans, so that it can be served as a delicacy in high-end restaurants. Dolphins and turtles, which come up to the surface to breathe, are no longer able to once they are also unintentionally caught in the nets and they drown. However, they are just thrown back into the sea without a second thought.

Blue-fin tuna (© holbox, shutterstock.com)

Some tropical woods such as mahagony, rosewood and teak used to be seen as something very special because they came from exotic countries and were not easily and cheaply available. Their specific colour and grain, their hardness and durability also made them valuable due to their resistance to fungus and damp, for example. But here, too, we recognised much too late that these majestic trees are only available in limited numbers. Although we are aware of how many decades it takes for a new tree to grow, systematic forest clearances continue apace.

Felling a tropical tree (© Jose Gil, shutterstock.com)

Just like for the blue-fin tuna and many other species of plant and animal, the market is also prepared to pay high premiums for individuals or even body parts of certain species. After all, there will always be takers – no matter whether it's legal or illegal. The illegal trade in ivory, rhino horn, tropical fish and bird species, reptiles, amphibians and butterflies, tropical woods, orchids, medicinal and agricultural plants is as widespread as ever, despite the best efforts of legislators and law enforcers.

THE DESIRE FOR PROFIT AND VANITY COSTS LIVES

Some endangered species have become so rare that they are subject to armed protection. Gorillas, rhinos and elephants, for example, are protected from poachers by the military. An increasing number of armed troops are also used in the fight against illegal logging in order to protect the Amazon region, for example.

Asian elephant (© Tony Brindley, shutterstock.com)

Mountain gorilla (© PRILL Mediendesign und Fotografie, shutterstock.com)

Rhino (© Albie Venter, shutterstock.com)

Rhino horn has now become so rare and expensive that it is even cut off stuffed exhibits in museums and stolen.

Rhino poaching in South Africa heading for a negative record

Despite the measures implemented so far, South Africa is heading for a negative record in rhino poaching in 2012. According to the Ministry for the Environment, 199 rhinos were killed illegally in the first four months of the year, despite the military being brought in to protect against poachers. Most animals were killed in the Krüger National Park. The number of illegally killed rhinos has been steadily rising over the past few years in South Africa, which is home to around 90% of all Africa's rhinos. The main reason for this is primarily the increase in demand from Asia, where rhino horn is used in traditional medicine as an aphrodisiac. One kilogram of rhino horn can sell for up to EUR 50,000.

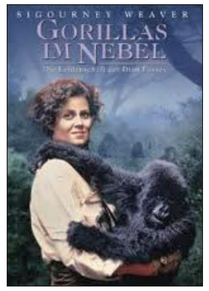
Although it seems hard to believe, it is also true that furs are once again making a comeback. It seems of little consequence to many that the furs of around 40 to 60 mink, twelve wolves, 14 lynx or 120 to 200 chinchillas are needed to make just one fur coat. The terrible conditions in which the animals have to spend their short lives also seem of little importance. And no-one seems to spare a thought for the fact that the fur looks best when worn by the animal itself.

Hummingbirds as fashion accessories

It's not all that long ago that hummingbirds, those tiny, jewel-bright birds that hover motionless in front of flowers, used to feature in catalogues. The species were listed along with the price people had to pay for one individual. A dead individual, of course! Because although these light little birds, which weigh only 2 to 20 grams, inspired so many with the beauty of their metallic feathers that their specific names reflected them (nymph, sylph, dwarf, fairy or elf), it wasn't the living creatures that the people loved. It was the stuffed bodies and feathers, which were worn as accessories on hats and clothing.

Hummingbird (© kiki, Fotolia.com)

German film poster for "Gorillas in the Mist" (© Universal Pictures)



However, it's not just animals and plants that fall victim to poaching and the desire for profit. Conservationists and rangers also pay for what they do with their lives. One of the best-known examples is probably the American zoologist and behavioural researcher, Dian Fossey. Her research and studies focussed on mountain gorillas in modern-day Rwanda. Thanks to her documentaries and articles in National Geographic, she became highly regarded among experts and then found a wider audience when parts of her life were portrayed in the 1988 film "Gorillas in the Mist". Dian Fossey was found dead in her hut in the Karisoke Research Center on the morning of 27 December 1985 with her skull split. To this day, the mystery of her murder has not yet been solved. She was buried according to her wishes at the gorilla graveyard that she established near her research station.

In 2011, eleven rangers were killed in their mission to combat poachers in the Virunga National Park alone. Around 380 of the rare mountain gorillas still live on the slopes of the mist-covered rainforests of the Virunga mountains.

ILL-CONSIDERED AND CRIMINAL ACTIONS

It is all too frequently the rashly bought holiday souvenirs such as pretty shells, molluscs and corals that regulate supply and demand. Whether or not you find a handbag or boots made from crocodile skin beautiful or not is up to you. But by the time you get to customs at the very latest, there will be a nasty surprise in store, which will ensure that you consider the purchase of such items a little more carefully in future.

However, when it comes to keeping certain orchids secret, as it has in Germany regarding the lady's slipper orchid, for example – one of the most beautiful wild orchids in Europe – in order to prevent them from being uprooted in secret by overly keen gardeners for planting in their own garden, then this no longer describes an ill-considered action but is a criminal offence and will be prosecuted.

Lady's slipper orchid

DOUBTFUL USAGE AND TRADITIONS

We may snigger about the fact that tiger testicles and rhino horn are consumed in some parts of the world for their aphrodisiac properties but this means that very high prices can be obtained for the body parts of these critically endangered animals. But before we judge, we should remember that in Europe, up until the Middle Ages, certain plants were ascribed healing properties because their leaves simply looked like one of the human body's organs.

A lot of education work has to be done in order to explain to people that, despite beliefs that have persisted for hundreds or thousands of years, certain plants and animals do not have the healing or strengthening properties that they have been ascribed. It is also necessary to provide alternatives, that is to say, the knowledge of other healing methods and medicines that are easily accessible and affordable for all.

POVERTY HAMPERS ENVIRONMENTAL PROTECTION

It is not just pure greed or traditional medicines that lead to the decimation of animal and plant species. Wood, despite being rare in certain regions, is used simply as a building material or fuel, and entire families have been sustained by consuming endangered species.

The same goes for revenues from poaching and illegal logging. For many people, it is the only way that they can feed their families. However, others are the ones who make the major profits from the industry.

„Poverty is the worst polluter."
Indira Gandhi,
former Indian
Prime Minister (d. 1984), 1972

As in the fight against climate change, individual choices are very important in protecting biodiversity but these depend largely on the income and living conditions of the person concerned. An intact environment, clean drinking water and sufficient food are just as much a part of a human's basic rights as social justice, welfare and education. This means that sustainability is therefore primarily a question of tackling poverty and injustice.

FAST ACTION IS NEEDED

One of the main messages of the TEEB study shows parallels with the Stern Review (see page 54): fast action is needed. We are facing serious loss of biodiversity by 2050 and with it, a loss in value that will see a global drop in consumption of 7% (as compared with 2000). This loss is based on the disappearance of free services provided by nature, such as the provision of drinking water and clean air, or the absorption of greenhouse gases. We will either have to replace or do without these services – and both options will cost us a great deal.

However, nature's capital is continuing to shrink – with particularly dramatic effect in booming economies such as India, China, many states in South and North America, as well in Central Africa. The main indicator for this is the average species diversity. The TEEB study pinpointed the greatest loss of biological resources as affecting the highly diverse tropics.

The study also showed that the current loss of biodiversity will go hand in hand with the loss of ecosystem services and may even accelerate if the correct political action is not rapidly implemented.

Some ecosystems have already sustained irreparable damage. If we continue as we are, we will definitely experience serious consequences before 2050:

- 11% of the natural space remaining in 2000 could be lost, primarily as a result of changes in land use for agricultural purposes, the expansion of infrastructure and climate change.
- Almost 40% of the land that is currently sustainably farmed could be converted into intensive farming land, which would result in further losses for biodiversity.
- 60% of coral reefs may be lost by 2030 as a result of fishing, pollution, disease, invasive non-native species and bleaching caused by climate change.

The current developments on land and in the oceans are proof of the major dangers that a major loss of biodiversity can cause for people's health and well-being. These problems will be further exacerbated by climate change.

Many ecosystems are overwhelmed

Many ecosystems have already been overwhelmed by human influence, such as changes in land use, pollution and overexploitation of natural resources. As a result of the unique combination of these stress factors with climate change, the situation is likely to be exacerbated and lead to countless ecosystems being overwhelmed, even within this century.

CLIMATE CHANGE IS THE MAIN CAUSE OF BIODIVERSITY LOSS

Climate change is set to become the main direct cause of biodiversity loss (WRI, 2005, and BMU, 2008 c). According to the IPCC, the resistance of many ecosystems is set to be pushed beyond its limits in the 21st century because they will have to deal with an as yet unique combination of climate change with related factors such as flooding, droughts, large-scale fires, insect infestations and ocean acidification as well as other stress factors such as changes in land use, pollution and overexploitation of resources.

If the global average temperature increases by more than two to three degrees above pre-industrial levels, the ability of some ecosystems to function properly will be so restricted that we can expect a severe depletion in terms of their products and services (see also WWF International et al., 2012).

"Around 20 to 30% of animal and plant species known to humans are threatened with extnction if the global temperature increases by more than two to three degrees above pre-Industrial Revolution levels. If it increases by more than four degrees, it could affect up to 40% of species." **IPCC, 2007**

NEGATIVE EFFECTS ALREADY CLEARLY EVIDENT

Even now, we can already see the unmistakable influence of climate change on a systematic ecological shift in all habitats and on all continents. As a result of climate change, there are shifts in the geographic distribution of natural ecosystems and many organisms. And even if geography leaves a bit of room for manoeuvre, many ecosystems exist only in certain spots and are fragmented by cities, roads and agricultural land to such an extent that no natural migration corridors exist any longer (IPCC, 2001).

Global climate change affects natural rhythms such as animals' migration patterns, plants' flowering times and insects' lifecycles. In the UK, greenfly are hatching earlier – but too early for the birds that live off them. Canadian caribou are only reaching the regions where they give birth to their young once the best pastures have already dried out. Polar bears are starving on land because no ice has formed over which they are able to travel in order to return to their hunting grounds in the sea. Seals, too, cannot find suitable places to rear their young as a result of the melting ice.

Caribou (© Mayskyphoto, shutterstock.com)

Heat-loving species and generalists with a great degree of tolerance for environmental changes will see an expansion of their territories within Europe to cooler climates. At the same time, species that prefer cooler climates and species that are specialised in certain conditions such as islands, coastal regions or mountains will see their habitats move or shrink (WWF Deutschland, 2007 a). Global studies have shown that the range of distribution of various plant and animal species will change by an average of six kilometres per decade towards the poles, or six metres upwards in mountain areas (WWF Deutschland, 2007 b, and BUND, 2009).

Case study: amphibians and reptiles

Amphibians and reptiles are usually not as mobile as other types of animal and are therefore more susceptible to the effects of climate change. One of the biggest problems for the amphibian population is loss of habitat. Droughts and low rainfall can dry out the wetlands or waters in which amphibians live, which can lead to declines in numbers (WWF Deutschland, 2007 b). Changes in temperature or rainfall do not just affect the behaviour and reproduction of amphibians, but also the pathogens affecting their species (WWF Deutschland, 2007 b).

Case study: insects

For some insect species, climate change facilitates the move further north and to higher altitudes. However, on the southern edge of their distribution range, the same species may die out. Experts have observed that heat-loving species have moved further north in the past few years, while cold-loving species are increasingly under threat. Some species have even traversed the Alps towards south Germany. Many species such as the Admiral butterfly already overwinter in Germany, but now they do this both as caterpillars and as butterflies (Settele et al., 2008). According to the IUCN, 31% of European butterfly species are experiencing a decline in numbers. The disappearance of native insects has far-reaching consequences both for pollination and for the varied species that survive by eating them. The appearance of non-native insect species can also lead to major changes in the ecosystem. The caterpillars of the tropical species known as the cotton bollworm moth cause damage to tomatoes, sweetcorn, peppers and various flowers. Mild winters lead to mass hatching of the bark beetle, sometimes with major economic consequences for forestry. In addition, climate change also leads to the increased distribution of ticks and thus also the diseases they carry.

Admiral butterfly (© shenk1, shutterstock.com)

Case study: birds

In mild winters, many migratory birds cut short their journeys. Cranes, which normally spend the winter in Spain or Portugal, have started staying in Germany, as have starlings, Eurasian skylarks, European golden plovers, lapwings and black redstarts. However, should there suddenly be a hard winter, many of them will not survive. If spring comes earlier than usual, this can have drastic consequences for migratory birds because their main food source may no longer be available once they reach their destination, for example if the insects have developed more quickly as a result of the climate. While intensive farming has been the key factor affecting bird populations since the end of the Second World War, this will soon be outstripped by climate change. The major problem is that species in northern Scandinavia or in the high mountains now have nowhere left to go.

ECOSYSTEMS CANNOT KEEP PACE

Climate change brings with it a wide spectrum of changes for the plant and animal world. Highly mobile species, such as many birds and insects, will be able to react more quickly to the changes in their habitats than less mobile species, such as most amphibians and reptiles. Some of the effects are indirect and will result from changes to habitat and the food chain, as well as the new competition resulting from these changes. Plants will have to adjust to higher temperatures, drier conditions, changing patterns of rainfall and an increased level of carbon dioxide in the atmosphere.

A migration of entire ecosystems on the other hand is unlikely, or would require a much longer time period than anthropogenic climate change will permit, because various species within an ecosystem have different climate requirements and tolerances and different migration opportunities (birds can move on more quickly than trees, for example). The prevalence and dominance of certain species will also change. Many endemic species may become threatened or endangered, while non-native species may frequently affect the balance of the ecosystem.

Another problem is that many valuable ecosystems are in unique locations, such as in the valleys of certain rivers, and could not exist anywhere else. Ecosystems that advance to higher altitudes up a mountain rock face, for example, will meet their limits when they reach the summit.

Invasive plant and animal species

Researchers from the Delivering Alien Invasive Species Inventories for Europe (DAISIE) project have estimated that the damage done by over 11,000 non-native plants, animals and microorganisms that have appeared in Europe in recent years has cost us "at least EUR 10 billion, where the economic impact of 90% of the alien species is not known". Many species affect biodiversity – affecting the environment, individual habitats, native plants, animals and micro-organisms. Humans are also affected: sensitive people are increasingly suffering from allergies as a result of the sudden increase in the amount of the highly allergenic pollen of the common ragweed (see BfN, 2008, and Nentwig, 2009).

For more information, visit www.europe-aliens.org

Polar bear (© Sylvie Bouchard, Fotolia.com)

THE CHANGES WILL BECOME MORE PRONOUNCED

Various changes were observed in the 20th century whose trends will become more pronounced. With the changing ecosystems, the conditions for the survival of many plants and animals will also change. Here are some examples:

- Longer periods of vegetation (where early budding and flowering carries the danger that plant growth may be hampered by late frosts in the spring)
- Shift of many habitats to higher altitudes or towards the poles
- Changes in animal populations (heat-loving plants and animals will be the ones to benefit from increasing temperatures and drier conditions)
- Decimation and extinction of numerous plant and animal populations
- Changing nesting and migration behaviour in birds, for example
- Appearance of non-native, sometimes invasive species (the native species are pushed out and this can impact the economy and health)

SPECIES EXTINCTION IN THE GLOBAL GREENHOUSE

According to the IPCC, sometimes just minor changes to the climate are enough to see endangered species become extinct. Some of these highly endangered species include the mountain gorilla in Africa, the resplendent quetzal in Central America, other forest birds in Tanzania, the spectacle bear of the Andes, the Bengal tiger and many species in the Sundarban mangrove swamps of Bangladesh (the largest mangrove forest in the world) and the unique plant species of the South African Cape. Thousands of African plant species, particularly in the highly diverse mountain regions, may disappear along with the polar bear in the Arctic (see also NABU, 2008).

The polar bear: a symbol of climate change

The polar bear, which has become a symbol of climate change, represents a habitat that faces a greater threat from climate change than almost any other, the Arctic. Although polar bears are really land animals, they are completely dependent on their marine environment. They spend the long winters on the pack ice, primarily hunting seals, which are their main food source. If the ice does not freeze to enable them to return to their hunting grounds on the sea ice, the period in which they can hunt seals they need to survive becomes shorter.

Many ecosystems are highly susceptible to changes in the climate. Some of them are permanently damaged, such as glaciers, coral reefs, mangrove forests, boreal and tropical forests, prairies and wetlands, grasslands, as well as polar and alpine ecosystems. Even biodiversity hotspots will change significantly as a result of climate change and many species will die out (WWF Deutschland, 2007 a, and BMU, 2010 a).

For more information, visit www.biodiversityhotspots.org

"The Limits to Growth"

C) APPROACHES TO CONSERVATION AND ENVIRONMENTAL PROTECTION

Forty years ago, in spring 1972, the publication of the book "The Limits to Growth" provoked strong reactions. In the study commissioned by the Club of Rome, the authors, led by American economist Dennis L. Meadows examined the issue of what will happen if humans continue to do business the way they have until now (Meadows, 1972).

In a computer-aided global model, five major trends were identified that have a global effect: industrialisation, population growth, malnutrition, lack of resources and the destruction of habitats. The results were alarming: the global economy is slowly collapsing, we may well see the Earth reach its absolute growth limit before the year 2100, living standards will decrease massively and the global food supply will no longer be secure. Before the book was even translated into 20 languages, it was damned as nothing more than a pessimistic litany of potential scenarios. However, many people saw it as a wake-up call. At the time of the study, people knew next to nothing about the massive dangers posed by climate change and they were not taken into account in the model.

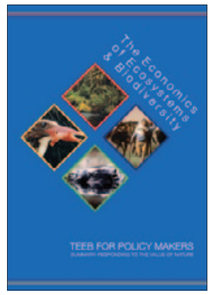
Although a whole host of later studies and publications took into account all the latest findings about remaining resources, increased life expectancy and the production of foodstuffs and industrial goods, as well as the hole in the ozone layer and climate change, the general findings have not changed. Economic growth has to be separated from the exploitation of the environment and, until now, the opposite has been the case.

For more information, visit www.biodiversityhotspots.org

TEEB POLICY RECOMMENDATIONS

The TEEB scientists have recommended the following solutions to politicians (TEEB, 2009 b):

- **Financial stimulus through transactions and markets**
  Payments for ecosystem services may extend from local solutions (e.g. provision of drinking water) to global systems (REDD+ system for preserving the tropical forests).
- **Revise damaging environmental subsidies**
  Globally, subsidies for agriculture, fishing, energy, transport and other areas amount to almost USD 1 trillion every year. Up to one third of these subsidies support the production and consumption of fossil fuels.
- **Consistent application of the polluter pays principle**
  Many threats to biodiversity could be combatted through rigorous legislation. This would be even more effective if it were combined with payment and compensation mechanisms; it is currently society that bears the costs.
- **Increased value thanks to protected areas**
  Currently, 13.9% of the Earth's surface, 5.9% of its internal waters and only 0.5% of its oceans are protected, despite the income of one sixth of the world's population depending on them. Expanding these areas and improving their financing would seem to be the sensible option.
- **Investments in ecological infrastructure**
  Investments in ecological infrastructure are a cost-effective way of achieving countless political goals such as improved resistance to climate change, a lower risk of natural disasters, more secure food and water supply, thus also making a valuable contribution to reducing poverty. Investments in maintaining ecosystems are almost always less expensive than the costs involved in rebuilding ecosystems which have been destroyed.



TEEB policy recommendations

RECOMMENDATIONS FOR BUSINESSES

According to the TEEB study, businesses are increasingly recognising the fact that the planet's natural resources represent economic value, business opportunities and potential profit. The costs of the loss of biodiversity worldwide would come to many trillions of dollars and would increasingly influence markets and consumers (TEEB, 2010 a; see also BMU, 2010 c).

However, not even the TEEB study was able to show that the future of entire branches of industry are dependent on the maintenance of biodiversity. Primarily agriculture and forestry, the paper industry and tourism are reliant on the maintenance of species diversity, as well as intact soil and landscapes. However, in addition to construction and mining, it is these very industries that pose the greatest threat to these systems (Eurosif & oekom research, 2009).

According to predictions by oekom research, loss of species diversity and the limited ability of ecosystems to function properly will result in a wide range of direct and indirect business risks (oekom research, 2008 a):

- **Physical risks**
  - Availability of raw materials originating from plants and animals
  - Availability of business resources such as clean water
  - Infringements on the aesthetic value of nature
- **Regulatory risks**
  - Restrictions on the exploitation of animal raw materials, e.g. fishing quotas
  - Restrictions on the use of environmental media, e.g. tougher emissions limits
- **Market price risks**
  - Price increases for plant and animal raw materials
- **Market risks**
  - Changes in consumer behaviour with greater focus on species protection
- **Legal risks**
  - Legal action with regard the participation of industries or companies in species extinction
  - Liability for environmental damage
- **Reputation risks**
  - Stigmatisation of industries or individual companies as a result of negative impact on species diversity

TEEB recommendations for businesses

INTEGRATING BIODIVERSITY INTO RISK MANAGEMENT

According to PricewaterhouseCoopers (PwC), companies should systematically take potential risks into account, evaluate their possible effects and integrate them into their risk management strategy. The degree to which the loss of biodiversity is an immediate company risk varies depending on the industry and business model in question. It is not just industries from the primary sector that are affected, such as mining, the oil and gas extraction industries, or agriculture and forestry: the consumer goods will also experience risks. Resources will become more scarce and more expensive, which will affect the value chain and make it more susceptible to risks linked to the loss of species diversity and changes to the ecosystem.

The study entitled "Biodiversity and business risk" showed that businesses are not just faced with direct losses from droughts or flooding but also increased costs as a result of government regulation in the form of environmental legislation and expenses or import bans, for instance. Finally, the way a company approaches environmental protection has an effect on its image, which can also have an impact on its brand value, something which is a major risk for consumer-related businesses (PwC, 2010).

Case study: woodlands and forestry

While the common beech tree will remain numerous in the future too, the most commonly planted species of tree in Germany, the spruce, will suffer in higher temperatures and the drier weather. This high-yield tree of the German forestry industry prefers cool, humid areas. In long dry spells, they no longer receive sufficient water and become more susceptible to parasites and storms. As the eggs and larvae of many insects will survive milder winters, whole additional generations may mature within the space of the year. Weakened by drought, higher temperatures and pollutants, the increased numbers of parasites will spell the end for many trees. Experts are calling for far-reaching changes in forestry and are recommending the cultivation of mixed woodlands in order to improve their resistance to other factors in addition to climate change. The cultivation of non-native, heat and drought-resistant species from Canada, Spain, Portugal and Italy could change the face of German forests for ever. Insects, birds and other animals will also have to adapt to cope with these changes. The Douglas fir only reaches maturity after 50 years, but even then it is of hardly any use to native fauna. Their seeds are only eaten by around seven European bird species, while the seeds of the fir and spruce are eaten by up to 39 species.

Monocultures such as Germany's spruce forests are more susceptible to parasites and windthrow.
(© Popova Valeriya, shutterstock.com)

INITIATIVES SUPPORTED BY BUSINESS

At the request of the business community, various initiatives have sprung up that support the protection of biodiversity and the sustainable use of resources. Some such organisations include:

- World Resources Institute (WRI)
  For more information, visit www.wri.org
- Forest Stewardship Council (FSC)
  For more information, visit www.fsc.org
- Marine Stewardship Council (MSC)
  For more information, visit www.msc.org
- Roundtable on Sustainable Palm Oil (RSPO)
  For more information, visit www.rspo.org
- Biodiversity in Good Company-Initiative
  For more information, visit www.business-and-biodiversity.de
- The Economics of Ecosystems and Biodiversity (TEEB)
  For more information, visit www.teebweb.org
- Aquaculture Stewardship Council (ASC)
  For more information, visit www.asc-aqua.org
- Round Table on Responsible Soy (RTRS)
  For more information, visit www.responsiblesoy.org

LEGISLATION ALONE IS NOT ENOUGH

Although there have been isolated but major advances in the fight against pollution, the fight against biodiversity loss, as with the fight against climate change, has seen several major conferences on the issue end with nothing more than non-binding, highly general statements of intent. Passing laws and creating protected areas is not enough to save species and habitats (see also UBA, 2010 a, and NABU, 2012).

An overview of major national and international environmental protection agreements and statements also showed that, despite the many important successes and changes they have been effected, the necessary turnaround in nature conservation and environmental protection has not yet been achieved:

- The United Nations Conference on the Human Environment (UNCHE) in 1972 [the key result from this conference was probably the foundation of the United Nations Environment Programme (UNEP)]
- The World Heritage Convention (WHC) in 1972 [the UNESCO World Heritage Convention enabled the global protection of areas representing exceptional and unique natural and cultural heritage]
- The Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1973 [this agreement was aimed at monitoring the international trade in wild animals and plans to ensure that animal and plant species living in the wild would not be threatened; the convention was named after the place where it was first ratified as the Washington Convention on Endangered Species]
- The Berne Convention in 1979 [an international agreement by the Council of Europe to protect European animals and plants and their natural habitats]
- The Montreal Protocol in 1987 [to prohibit the use of CFCs in order to protect the ozone layer]
- The UN Convention on the Rights of the Child (CRC) in 1989 [according to this convention, every child has the right to grow up in an intact environment and to live a healthy life, including through the provision of sufficient, nutritious food and clean drinking water, where the dangers and risks of pollution are taken into account]
- The United Nations Conference on Environment and Development (UNCED) in 1992 [the conference is often referred to in terms of the place where it was held, and as a result of its comprehensive approach to taking into account economics, ecology and social aspects, popularly known as the Rio Summit or Earth Summit]
- The Habitats Directive in 1992 [a nature conservation guideline that was ratified unanimously by the EU member states and which, along with the Birds Directive, was to enable the implementation of the Berne Convention; one of its major instruments is a network of protected areas called Natura 2000]
- The Convention on Biological Diversity (CBD) in 1993 [in this pivotal international agreement on species protection, the 190 signatories (189 states and the EU) agreed to significantly reduce the loss of biodiversity by 2010; since then, there have been regular UN conferences on nature conservation]
- The World Summit on Sustainable Development (WSSD) in 2002 [the summit is also known by the place where it was held as the Johannesburg Summit, or the Rio+10 Summit]
- The Cartagena Protocol on Biosafety in 2003 [this follow-up agreement to the Biodiversity Convention was the first binding international agreement regarding the cross-border transportation, handling and processing of genetically modified organisms]
- The German National Strategy on Biological Diversity in 2007 [this strategy by the German government consists of 330 aims and around 430 measures]
- The Nagoya Protocol including the Access and Benefit Sharing Protocol (ABS Protocol) in 2010

"[…] The simple fact is that species and habitats cannot be saved by legislation and the designation of conservation areas alone. This can only be done by ensuring that the work to maintain biodiversity is properly financed – otherwise acute species loss is inevitable. […]"
Olaf Tschimpke, President of the German Nature and Biodiversity Conservation Union

THE NAGOYA PROTOCOL

At the 10th UN Convention on Biological Diversity in Nagoya, Japan, in October 2010, the participants agreed on a new global target for biodiversity: by 2020 all states should have adopted effective measures to prevent the loss of biodiversity. This is to be achieved with a new international strategy that compromises of 20 concrete sub-targets.

The topics of climate protection and biodiversity are also to be linked with forest protection. The aim is to develop guidelines with which deforestation and the destructive use of woodlands can be stopped (known as the REDD mechanism).

The conference also underlined the importance of protected areas in the maintenance of global biodiversity, for which sufficient financing must be secured.

The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety's brochure "Deutsche Buchenwälder - Weltnaturerbe der UNESCO" (German Beech Forests - A UNESCO World Heritage Site)

"Ancient Beech Forests of Germany" a UNESCO World Heritage Site

In June 2011, UNESCO added five beech forests in Germany to its list of World Heritage Sites, ensuring global protection for these exceptional and unique areas of natural and cultural heritage. The sites cover certain areas of forest in five conservation areas:

- Jasmund National Park (Mecklenburg-Western Pomerania)
- Serrahn in the Müritz National Park (Mecklenburg-Western Pomerania)
- Grumsin in the Schorfheide-Chorin UNESCO Biosphere Reserve (Brandenburg)
- Hainich National Park (Thuringia)
- Kellerwald-Edersee National Park (Hesse)

These areas represent the most valuable relics of the expansive natural beech forests in Germany and are Germany's third World Heritage Site after the Messel Pit Fossil Site (1995) and the Wadden Sea (2009). The "Ancient Beech Forests of Germany" UNESCO World Heritage Site covers around 4,400 hectares and is an addition to the existing World Heritage Site known as the "Primeval Beech Forests of the Carpathians" in Slovakia and Ukraine (BMU, 2011).

For more information, visit www.weltnaturerbe-buchenwaelder.de

The ABS Protocol agreed in Nagoya

The Access and Benefit Sharing Protocol (ABS Protocol) agreed in Nagoya intends to ensure that access to the genetic resources of a country is protected by law and that the countries of origin of such resources benefit properly from the profits made on the resources. An example of such resources might be medications or cultivars.

ABS Protocol (Access and Benefit Sharing)

This protocol established the rights and obligations of users and providers of genetic resources. States are given sovereign power over their genetic resources and, in turn, they pledge to regulate access to these resources in accordance with mutually agreed, transparent conditions. Users of plant-based raw materials, such as pharmaceutical companies, are then also obliged to provide fair and appropriate tangible or intangible benefits as recompense. Users, mainly companies from countries with strong economies, will also benefit from this regulation because it provides for increased legal security and more transparent processes. The providers will then also finally be able to benefit from a share of the profits. This agreement is a key step on the path to increased environmental and social sustainability and intends to promote the development of poorer countries, which are often rich in biodiversity.

For more information, visit www.cbd.int/abs

UN DECADE OF BIOLOGICAL DIVERSITY

In December 2010, the United Nations named the years between 2011 and 2020 the UN Decade of Biological Diversity. This complied with a recommendation of the signatories of the CBD at the 10th UN Convention on Biological Diversity in Nagoya.

For more information, visit www.un-dekade-biologische-vielfalt.de

In Germany, all political, business and social activities should contribute to the fulfilment of the National Strategy on Biological Diversity. The focus of the 2012 national forum will be "The active involvement of business".

For more information, visit www.biologischevielfalt.de

THE RIO+20 SUMMIT

From 20 to 22 June 2012, the United Nations Conference on Sustainable Development (UNCSD) took place in Rio de Janeiro, 20 years after the groundbreaking Conference on Environment and Development (also held in Rio), where the Framework Convention on Climate Change and the Biodiversity Convention were established. Hopes are high for the Rio+20 Summit, notably that heads of state and government achieve more measurable successes than the sorely lacking agreements reached in the Rio Summit of 1992.

For more information, visit www.uncsd2012.org

After all, even 20 years after the 1992 Rio Summit, and 20 years after the EU member states pledged to do more for nature conservation with the Habitats Directive, there have only been isolated success stories, such as for the otter, beaver, eagle owl, crane or wolf (NABU, 2012).

SO WHAT'S NEXT?

In addition to the causes described in Chapter 5.5 a–b for the lack of appreciation for and biodiversity and its progressive loss, a further reason for the insufficient success thus far could also be that the scientific information has not been understood because it is too complex.

As for climate change, science and education are extremely important as a result of the complexity of the issue, while the media and environmental organisations are required to "translate" the findings in such a way that they are understandable for all (comprises page 67).

It is probably as a result of this that the international community decided in April 2012 to found a global biodiversity council. What the Intergovernmental Panel on Climate Change (IPCC) is to climate change (see Chapter 5.4), the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) intends to be to the protection of biodiversity.

IPBES – Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services

The main remit of the IPBES is to provide political decision makers with independent and credible information about the state of biodiversity and its developments. It will collect and analyse scientific data from around the globe and offer options for action in order to support governments in their work to protect biodiversity. Emerging economies and developing countries will be aided in building up their own capacity to protect biodiversity, for example with the promotion of (young) scientists, creating scientific partnerships and simplifying access to specialist literature and databases. The IPBES will be based at the UN office in Bonn, Germany.

For more information, visit www.ipbes.net

5.5.1 OUR STRATEGY: NATURE CONSERVATION AND ENVIRONMENTAL EDUCATION

JACK WOLFSKIN wants to motivate people to get out and about in the great outdoors, enjoy its beauty and take responsibility for maintaining it. After all, if you, like us, are "AT HOME OUTDOORS" and enjoy being out and about, you not only get to know it in a very special way and become enchanted by it, but you also learn to appreciate the significance and value of its biological diversity.

Bargis valley, Switzerland

NATURE CONSERVATION AND ENVIRONMENTAL EDUCATION

Our mission of combining the experience of nature with nature conservation is the result of our affinity to nature. As it does for climate change, JACK WOLFSKIN sees its duty here, too, as taking responsibility for playing an active role and taking a consistent line in projects related to nature conservation and environmental education.

We have worked on the renaturation and greening of our company grounds and also take ecological aspects into account in tending green areas, as well as in the greening of interior space.

We are currently involved in maintaining and expanding the largest expanse of wild woodland in Europe.

We have been supporting our wolf conservation project in Romania since 1993 and we are also involved in maintaining and expanding the largest expanse of wild woodland in Europe through the Foundation Conservation Carpathia.

We have already planted 500,000 trees on an area of over 2.1 million square metres.

Through the large-scale afforestation project in partnership with PrimaKlima -weltweit- e.V., we are helping to create valuable habitats from which humans and the natural world can benefit.

We are also sponsors of the German Nature Conservation Prize, worth EUR 250,000 per year.

In partnership with the German Federal Agency for Nature Conservation, we have been awarding the German Nature Conservation Prize, worth EUR 250,000, every year since 2011.

In partnership with the Federal Agency for Nature Conservation, we also work towards getting children and young people enthusiastic about nature conservation, for example with the "Kinatschu" booklet.

We also support Arved Fuchs, one of the best-known polar researchers, in educating schoolchildren to become "climate ambassadors" as part of his annual Ice Climate Education programme.

5.5.2 WHAT WE HAVE ACHIEVED SO FAR
(SELECTION)

COMPANY GROUNDS AND OFFICES: RENATURED, GREENED RELAXATION AREAS

AREA USAGE, IDSTEIN

As a result of the growing numbers of employees at our Idstein headquarters from 178 in 2007 to 304 in 2011, it was clear that we needed to significantly expand the amount of land used. The specific area used increased from 45 m^2 per employee in 2007 to 53 m^2 in 2011. As a result of the expansion in premises in 2008, the amount of gross floor space available to our employees increased initially, then decreased to 26 m^2 per employee by the end of 2011.

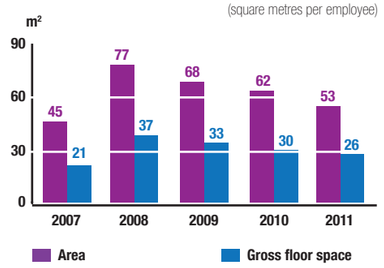
Area usage

Every day, around 80 hectares of land are set aside for housing and transport in Germany alone. Cities, streets and industrial farming are expanding and even renewable energy requires space. What we require are concepts that limit the amount of area used, make them more ecologically and socially sustainable and to maintain European natural and cultural landscapes. When it comes to promote implementing measures to biodiversity, companies must get their own house in order first, starting with their company grounds.

EMPLOYEE GROUNDS

Originally, there was a car park between buildings A and B at our Idstein headquarters. We relandscaped this in 2008, returning it to a natural state so that it could take on a new function as a space where employees can work, relax in their lunch breaks or participate in our wide-ranging occupational sports programme. While the 1,500 m^2 car park used to comprise approx. 800 m^2 paved and approx. 700 m^2 unpaved surface (grass pavers), today it comprises 1,500 m^2 unpaved area, of which approx. 1,360 m^2 green areas.

Area usage Idstein 2007–2011
(square metres per employee)



MAINTAINING GREEN AREAS

Our ecological requirements of maintaining green areas:

- No herbicides are used either on borders or lawns.
- If necessary, weeds are removed using mechanical methods (cut back or pulled out).
- Paths and edges are worked over with a weed brush.
- Only organic fertilisers and soil activators are used.
- If the use of motorised lawnmowers, hedge trimmers and brush cutters cannot be avoided, low-noise machines are preferred.
- By sowing wild flowers, the annual maintenance has decreased. Instead of having to cut it about ten times, it only needs to be cut twice; however more clippings have to be disposed of.

Idstein grounds

Office plants

Plants filter up to 90% of pollutants out of the air, absorb CO_2, which can lead to signs of fatigue, and increase air humidity. Flowers and plants also add a splash of natural greenery to a room and make it a more relaxing place.

INDOOR GREENERY

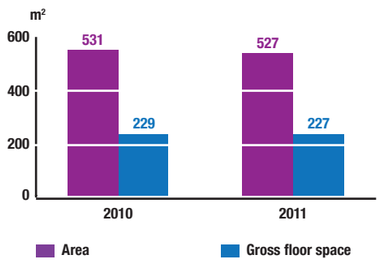
As indoor plants are taken from their natural environment into an artificial one, they require constant care and attention. The plants provided and cared for by our contract partner make an important contribution to environmental protection and to a healthy office environment.

Selecting the correct plants is hugely important. Only if the plant's location requirements are fulfilled in every respect can it grow and thrive. The plants are only put in position after an extensive planning phase; this prevents unnecessary plant protection measures from being implemented.

Further preventative measures include proper use of fertilisers, prior water requirement analysis and ongoing monitoring of damage and harmful organisms. In addition, only plant boosters with homeopathic active complexes and water-based leaf shine are used.

If plant protection measures are necessary, only natural pesticides are used. If required, beneficial species can be used, for example the larvae of green lacewings are used against mealybugs. This enables us to do without sprays and all the extra materials we would need to protect our office equipment.

Area use, Neu Wulmstorf 2010–2011
(square metres per employee)



AREA USE, NEU WULMSTORF

In 2010 and 2011, our Neu Wulmstorf office has not seen any significant changes in terms of specific land use or specific gross floor area. As a result of the construction of an additional warehouse measuring approx. 10,000 m² that was started in late 2011 (see Chapter 5.2.3), there will be changes to come, including in the amount of paved and unpaved space.

AFFORESTED AREAS

The areas used at both Idstein and Neu Wulmstorf are offset with an afforested area measuring over 2.1 million m² (see page 115).

The expansive, continuous forests of the Romanian Carpathians are home to more than one third of Europe's large carnivores. (© B. & C. Promberger)

FOUNDATION CONSERVATION CARPATHIA: PROTECTING WOLVES AND THE ENVIRONMENT SINCE 1993

From an ambitious wolf protection project to one of the biggest nature conservation projects in Europe

A chain of mountains stretches through the centre of eastern Europe that many nature lovers see as one of nature's best insider tips: the Carpathian mountains. Crossing seven countries and stretching a distance of 1,300 kilometres, it boasts breathtaking scenery and wilderness. Often described as a the green backbone of Europe, this mountain chain is one of the last great wildernesses of Europe. The Romanian Carpathians, with their expansive, continuous forests, are home to some of Europe's biggest predators such as the wolf, bear and lynx, and also boast the largest remaining area of primeval forest in Europe. What began with our support for a wolf conservation project in the forests of Transylvania in 1993 has turned into one of the biggest nature conservation projects in Europe, and is supported by the Foundation Conservation Carpathia, an international network of philanthropists, foundations, nature conservation organisations and experts in the field.

THE ROOTS OF THE PROJECT

The roots of the Foundation Conservation Carpathia project lie in the Carpathian Large Carnivore Project, one of the biggest research and conservation projects for large carnivores in Europe, set up by wildlife biologists Barbara and Christoph Promberger and supported by JACK WOLFSKIN since the very start, back in 1993.

As young wildlife biologists, both full of idealism and zest for action, they approached us in the early Nineties to ask whether a brand that used the wolf and its pawprint in its logo might be interested in supporting their project, which involved protecting the highly endangered wolf population in the far reaches of the Transylvanian forests and protecting the wolf as a species.

Barbara Promberger

Christoph Promberger

(© B. & C. Promberger)

THE BACKGROUND

These forests were once an important source of income for mountain farmers: in order to get to his forest area, a farmer needed to travel for a full day on horseback or in an ox-drawn cart, another day was needed to cut down one or two trees, and a further day was needed to transport the wood back to the village. The higher ground and upper valley were too far away and remained as virgin forest. All in all, the impact on the forest ecosystem was very low.

After the Second World War, all the forests became state-owned and the State Forestry Committee started opening up most areas. As a result of the careful maintenance, the wild character of the Carpathian forests was maintained.

Even in the first ten years after the 1989 Revolution, not much changed and the large areas retained their unique beauty. However, with the pre-EU accession process and the associated economic upturn, the pressure on the Carpathian forests mounted. From 2005, there were large-scale retransfers of ownership from the state to the private sector and forests were given back to their previous owners, or rather, their descendents, who frequently no longer had any links to the forests, and often did not even live near them.

URGENT NEED FOR ACTION

This dramatically changed the way the forests were managed. Previous structures were done away with and logging companies came in, wanting to make a quick buck. Anyone getting back five, ten or even twenty hectares wanted to convert it into profit quickly before running the risk of the trees being illegally logged and stolen. As a consequence, thousands of hectares of these wild Carpathian forests have been clear cut within just the past six years. Unfortunately, the Romanian authorities are not doing enough to contain the problem and corruption has also covered up many of these illegal activities in the area.

Wolves (© B. & C. Promberger)

When you add in the fact that wolf conservation is hardly the most pressing issue for many people in the region, illegal logging makes a lot of people rich very quickly. As in much of the rest of the world, there are deep-rooted prejudices here too regarding these creatures, which are so important to the ecosystem. Convincing sheep farmers, who fear for their livelihoods, and sometimes hunters too, of wolves' importance will take vision and a lot of patience.

THE VISION

The original plans of the Carpathian Large Carnivore Project involved establishing a national park covering 14,800 hectares. This was set up in the late 1990s by the Romanian State Forestry Commission with financial support from the World Bank. Barbara and Christoph quickly established, however, that the Romanian Carpathians were one of the most important areas for nature conservation in Europe and that a much larger area required protection. As with many other nature conservation projects that initially focussed on protecting individual species, the area soon focussed on protecting the entire habitat. As a result of this development, wolves and bears can be seen as flagship species that will benefit indirectly from the maintenance of the forest ecosystem.

Brown bear (© B. & C. Promberger)

THE FOUNDATION

Barbara and Christoph have lived in Romania since 1993 and have managed various conservation projects, learning much about the specific conditions in Romania. In addition to the necessity of taking action against the immediate threat to forests, they also had the opportunity to realise one of the most ambitious forestry projects in Europe – a unique opportunity but potentially one that can only be realised for a few years.

Their approach was to acquire large areas of forest for conservation. Since the project was launched in 2007, an international network of philanthropists, foundations, conservation organisations and experts in the field has been developed. In late 2009, the Foundation Conservation Carpathia was finally founded.

(© B. & C. Promberger)

THE AIMS

The aim of the Foundation Conservation Carpathia is nothing less than to establish one of the biggest conservation areas in Europe and to maintain a unique forest wilderness within the Romanian Carpathian mountains. An ecological model area is to be established in and around the Piatra Craiului National Park. The forests of the western Carpathians form one of the largest continuous areas of forest in Europe. They are not just home to bears, lynx and wolves but also many other rare species of plants and animals such as the black stork, golden eagle, western capercaillie, European pine marten and European otter or lady's slipper orchid and leopard's bane and should therefore be protected with the maintenance of the forest. This also provides good conditions for the reintroduction of beavers, marmots and vultures.

Lynx (© B. & C. Promberger)

The region is home to rare species of plant and animals such as the black stork and leopard's bane. (© MartinMaritz, shutterstock.com)

Leopard's bane (© pulen, shutterstock.com)

The aim of the foundation is to re-establish several tens of thousands of hectares of wild forest. The forest areas are bought by the foundation (12,000 hectares to date) and allowed to revert to their natural state. Where necessary, areas will be restored by replacing spruce with alders growing along streams and mixed mountain woodland trees.

At the same time as the land purchases were initiated, the project also worked on developing protected status for the area. The Romanian government had already designated most of the area a Natura 2000 area, which meant it was protected by EU law. The administration of the nature reserve is being developed and so far, it has been possible to take over the administration of several of these Natura 2000 areas.

Hunting rights in the project area have been leased for the long term in order to stop hunting for the large carnivores and their prey.

The local population is set to benefit in particular from the medium-term objective of sustainable tourism. The integration of the local population and their interests are one of the foundation's clear goals.

The project's scientific supervision is seen to by Barbara and Christoph Promberger as well as Romanian experts. With the aid of genetic monitoring, conducted in partnership with Ljubljana University, they aim to gain an overview of game density. Currently, over 50 bears, four or five packs of wolves and around a dozen lynx live in the area.

In the long term, the entire area hopes to be awarded national park status and be given back to the Romanian state at some point when the protection status can be guaranteed over the long term.

PRIMAKLIMA -WELTWEIT- E. V.: FORESTS AS ECOSYSTEMS AND HABITATS

2011: The International Year of Forests

Owing to their extreme significance for life on our planet, the United Nations declared 2011 to be the International Year of Forests. Forests store CO_2, produce oxygen, filter water, restore the soil, offer relaxation, provide jobs and also play a significant role in the economy. However, they are primarily habitats for thousands of species of plants and animals. Four billion hectares of the Earth's surface are covered by forests, which corresponds to around one third of its total land area. With around 1.4 billion hectares, the boreal forests of Russia, Canada and Alaska are the largest forested area on Earth. The five most forested countries are Russia, Brazil, Canada, the US and China, which between them contain over half of the world's forests. About two thirds of all plant and animal species live in the tropical forests.

INTERNATIONALES JAHR DER WÄLDER · 2011

For more information, visit www.wald2011.de

FORESTS, CLIMATE CHANGE AND BIOLOGICAL DIVERSITY

The large-scale afforestation projects managed by PrimaKlima -weltweit- e. V. and described in Chapter 5.4.2 do more than just give JACK WOLFSKIN the opportunity to offset its unavoidable carbon emissions. We also decided to support afforestation projects because we believe that forests provide valuable ecosystems and habitats for a wide range of plants and animals. Many endangered mammals and birds make their homes in the forest, and the same goes for insects too. Just one spadeful of forest soil contains more life than there are humans on Earth!

PrimaKlima WELTWEIT

For more information, visit www.prima-klima-weltweit.de

In addition, forests also filter our drinking water and purify the air we breathe. They prevent erosion, protect against flooding, landslides and avalanches, provide food and sustainable raw materials, along with many, many other services.

We need forests not only in order to protect the climate and maintain biodiversity, but also as a simple place of refuge to help us recharge our batteries, simply by going for a walk, using our ears, noses and eyes to observe all that goes on around us.

OUR AFFORESTATION PROJECTS 2010–2011

Year	Country	Area afforested	Number of trees per ha (in the planting phase)	Total number of trees planted
2010	Germany	34.5 ha	4,700	162,150
2010	Nicaragua	23.1 ha	1,350	31,185
2010	South Africa	42.2 ha	800	33,760
Total 2010		99.8 ha		227,095
2011	Germany	40.6 ha	4,700	190,820
2011	Nicaragua	26.9 ha	1,350	36,315
2011	South Africa	49.4 ha	800	39,520
Total 2011		116.9 ha		266,655
Total		**216.7 ha**		**493,750**

Biodiversity aspects of our afforestation projects in Germany

Were it not for the influence of humans on the landscape, Germany would be almost entirely covered by forest, with the exception of a few special areas. If humans do not constantly intervene, most areas would revert to their original forest ecosystem with their natural vegetation. In the 2010 report by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, forests are the type of land usage that offer the most natural state with regard to species diversity and quality of the landscape.

Since the most natural state is not necessarily the most diverse, checks must always be made as to whether afforestation could be of potential benefit to biodiversity. Additional afforestation of open landscapes can actually cause the loss of biodiversity, particularly in areas that already have a high proportion of forested area, and can also have a negative impact on the profile of the landscape. This means that afforestation projects should ideally be limited to less densely forested regions. The individual German states have defined specific areas that could be of interest for afforestation programmes.

Two of our afforested areas in Mecklenburg-Western Pomerania and Schleswig-Holstein (© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

A major argument against afforestation is that, in some cases, only high-yield coniferous forests are planted that are often less advantageous to biodiversity than the previous type of land use that dominated the area. Thanks to progress in the field, this form of afforestation has become rare in sustainable forestry and is ruled out by PrimaKlima thanks to its company principles. In addition, afforestation must also include a concept for preserving the forest edge, which can have a very high level of biodiversity and offer a generally rather rare type of landscape. This is not only assured by the relevant requirements of public funding but is also one of PrimaKlima's general principles. On behalf of JACK WOLFSKIN, PrimaKlima has planted at least 26 different species of tree and 24 different species of shrub in Germany.

From the points mentioned above, there are several key nature conservation requirements that should be applied to the planning and execution of afforestation projects. As part of the official approval process for all afforestation projects (and thus also those projects managed by PrimaKlima), checks are made as to whether the planned project will have any negative impact on the environment. Should this be the case, the application is generally turned down. In order to ensure that PrimaKlima projects do not just contribute to additional CO_2 storage but also have a positive effect on biodiversity, PrimaKlima has come up with the following checklist:

- Area with low forest density (< 30%)
- Area not defined by historical agricultural usage
- Forest is the potential natural form of vegetation
- Planting mixed woodland or deciduous woodland on the basis of a site review
- Establish a forest-edge habitat of shrubs and second-order trees

If these conditions are taken into account or relevant sensitive areas are excluded from afforestation, then afforestation is to be recommended from a conservation point of view; it represents an important increase in the biodiversity of our country.

Biodiversity aspects of our afforestation projects in South Africa

In the Eastern Cape province of South Africa, the degradation of the bush vegetation due to overgrazing has led to a significant reduction in plant cover and ecosystem services. Following the degradation of the area, it is no longer possible for the natural spekboom thickets to regenerate by themselves. This is due to the extremely high ground temperatures and increased run-off of surface water.

These degraded areas can be renatured by planting more spekboom trees. The method is an acknowledged approach in order to restore the following ecosystem services:

- **Restoration of the ecosystem functions:** by reestablishing the canopy of spekboom, the ground temperatures can be decreased, the soil quality is improved by creating a layer of leaf litter, the severity of ground frosts is tempered and the surface run-off of rainwater is reduced thanks to improved soil permeability. These effects permit the introduction of native shrubs and trees. The areas afforested with spekboom by PrimaKlima in South Africa on behalf of JACK WOLFSKIN will thus enable the integration of further species.
- **Increased biodiversity:** black rhino, buffalo, elephant and other large animals are regular visitors to the spekboom thickets. Renaturing degraded areas will enable these animals to return to the area. Grazing and browsing by these large herbivores is also very important for the development of the thickets, since the partial cut-backs to the plants will encourage other spekboom trees to grow.
- **Erosion control and improvement of the water cycle:** the cuttings bind the soil and stabilise the slopes on which they grow. This increases the amount of rainwater entering the soil and prevents erosion and/or surface run-off. This prevents the silting up of rivers and dams. Aquatic ecosystems are thus ensured a more constant and increased water flow, after which the landscape can function as a sponge again and not like an impenetrable surface.

Typical appearance of a degraded area of land
(© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

Comparison of degraded land (left) and an area renaturated with spekboom trees (right)
(© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

Socioeconomic effects

Planting spekboom thickets is very work-intensive and brings a whole host of direct and indirect positive socioeconomic benefits:

- Creates jobs
- Skills training in the fields of planting, health and job security, first aid, bookkeeping and data processing, planning and project management
- Increasing awareness of climate change and natural ecosystems
- Improved water supply security and lower water costs for many communities
- Increased food production thanks to better reproduction conditions for wild crops because the number of bees and other pollinators will increase
- Increased tourism potential thanks to the increased aesthetic value of the landscape and the higher number of large game

Typical appearance of a spekboom thicket
(© PrimaKlima -weltweit- e. V./AfriCarbon (Pty) Ltd)

Afforestation in Nicaragua
(© PrimaKlima -weltweit- e. V./Taking Root)

White leadtree
(© PrimaKlima -weltweit- e. V./Taking Root)

Mahogany tree
(© PrimaKlima -weltweit- e. V./Taking Root)

Biodiversity aspects of our afforestation projects in Nicaragua

The Limay Community Carbon Project in Nicaragua is an afforestation initiative managed by the local population that aims to renature ecosystems, improve local living conditions and fight climate change with the aid of small-scale farmers and their families. With a better system of land use and more sustainable use of forest resources, the forest area is to be extended to include the water catchment area and thus improve the quality of life of the Limay population.

- **Protecting the ecosystem:** In order to protect the remaining forests from degradation and clearance for agriculture, the participating farmers are afforesting low-yield areas. They plant trees that are specifically suited for use as firewood and building materials, which means they are no longer dependent on existing forests and can prevent the further degradation of the surrounding forest ecosystems.
- **Increased and more secure biodiversity:** The trees planted as part of the project are all locally established species, which increases the populations of these species. Species that have been overexploited in the past have been reintroduced. The new habitats that result from this create new homes for local wildlife. PrimaKlima and Taking Root are currently planting five different native species in the areas sponsored by JACK WOLFSKIN in Nicaragua and are supporting the natural regeneration of a large number of species.
- **Water supply:** Forests provide water in the dry seasons and help prevent flooding and landslides during the rainy season. This helps to regulate the amount of water flowing into the local river, the Estero Real, which is one of the most important estuaries in Central America in terms of biodiversity.

Improving quality of life

In 2012, 136 small-scale farmers in 18 communities afforested their low-yield land. The participants benefit from the project in various ways:

- Interest-free credit for forestry measures, for example, and fences to protect the trees
- Regular, guaranteed payments for ecosystem services
- Trees that are planted specifically for firewood and construction materials create room for other species to grow and can be sold at local markets
- Members of the community receive wood-saving cooking equipment, which reduces the pressure on existing forests, carbon emissions and the health risks associated with smoke

GERMAN NATURE CONSERVATION PRIZE: SUPPORTING INNOVATIVE IDEAS AND PROJECTS

Nature conservation requires lots of ideas, helping hands and financial support

Good ideas and exceptional, often voluntary, dedication are essential to nature conservation in the modern world. Without them, many projects and campaigns both small and large would never have succeeded, and nature would be a lot worse off. Ideas and dedication are not enough, however, to put plans into action. Often, good ideas and projects fail to acquire the necessary financing. This affects kindergartens setting up a small vegetable patch or garden of wildflowers just as much as it affects larger nature conservation projects such as setting up the route for a nature walk or a nature camp for children and young people.

REASONS FOR ESTABLISHING THE GERMAN NATURE CONSERVATION PRIZE

It is often the most natural landscapes that inspire us. Treating them with care and respect and leaving them untouched should be taken as understood by every one of us. But we also want to do something to ensure that nature is preserved for the long term, that it can be restored where it has been destroyed and that people can recognise its value and beauty.

Armed with the knowledge that good ideas and incredible dedication can often meet its limits or fail when it comes to obtaining finance, as well as with the conviction to do something to change this rather unsatisfactory scenario, JACK WOLFSKIN approached the Federal Agency for Nature Conservation (BfN). We consulted the experts at the BfN and together created the German Nature Conservation Prize, a competition of ideas for nature conservation projects, specially for Germany.

With the foundation of Germany's first national nature conservation prize, we want to draw as many people's attention to a sustainable approach to the environment as possible, and to motivate them to get active in environmental protection. Nature conservation is not just the preserve of professionals – it is something that we can all get involved in.

DEUTSCHER NATUR SCHUTZ PREIS

For more information, visit
www.deutscher-naturschutzpreis.de

"As the competition is aimed at all social groups and specifically promotes the multiplier and networking effect, it is very important for society's awareness of nature conservation and for boosting citizens' dedication to nature protection."
Norbert Röttgen, Former Federal Minister for the Environment

THE SEARCH FOR INNOVATIVE IDEAS AND PROJECTS

Nature conservation needs many hands and great ideas. Hands that are happy to get involved and clever ideas about how to get people enthusiastic about protecting and preserving nature through a sustainable approach. The German Nature Conservation Prize is specifically aimed at non-professionals, private initiatives, schools, kindergartens, educational institutes and other non-profit organisations.

We want to take an active role. Project ideas should not only be exceptional but should also be easily implemented. The size of the project plays a less significant role. The most important thing is the idea and whether the idea can implement a change that will benefit the environment. The award is given for particularly innovative, groundbreaking and exemplary ideas concerning the preservation of species and biotopes, the experience of the natural world and nature education. Only original projects or existing projects that have been independently expanded are awarded.

The German Federal Agency for Nature Conservation is the professional sponsor in charge of the prize. The aim is to increase awareness of nature conservation and biodiversity and to motivate people to get involved. It is important to us that projects benefit people beyond the sphere of those directly involved, as well as appealing to others, integrating and inspiring them. The projects should inspire people to get involved and to inspire people to come up with new ideas. JACK WOLFSKIN provides a total of EUR 250,000 per year to help realise the projects.

BfN Bundesamt für Naturschutz

For more information, visit www.bfn.de

AN OVERVIEW OF THE GERMAN NATURE CONSERVATION PRIZE

The German Nature Conservation Prize is an annual award that was launched in 2011. The prize promotes nature awareness and boosts citizens' involvement in nature conservation. There are three categories: the funding prize, the citizens' prize and the award of excellence. The topic of the prize changes every year.

A panel of experts chooses the winners. The funding prize and citizens' prize are awarded as part of a two-stage idea competition. The winning idea will be an innovative, exemplary project that protects nature, promotes nature education and the experience of nature. The prize money awarded by JACK WOLFSKIN, which amounts to a total of EUR 250,000, serves to help with the implementation of the projects.

- **Funding prize**
  The funding prize is awarded EUR 200,000 in prize money and can be divided between several major projects. The amount of prize money awarded depends on the budget of the project.
- **Citizens' prize**
  The citizens' prize goes to 20 small projects, each of which are given EUR 2,000.
- **Award of excellence**
  The award of excellence is decided on the basis of recommendations by experts in the field (nationally recognised nature conservation societies and the panel of the German Nature Conservation Prize) and awarded to an individual who has made an exceptional contribution to nature conservation. The prize money amounts to EUR 10,000.

WHO IS ELIGIBLE TO TAKE PART?

Anyone involved in voluntary nature conservation work, as well as non-governmental and non-profit organisations such as nature conservation societies, associations and foundations, citizen initiatives, schools, kindergartens, other institutes of education, education initiatives and organisations for young people.

For all the information on how to apply and the judging criteria, as well as the deadline for applications, please see the German Nature Conservation Prize website at www.deutscher-naturschutzpreis.de.

The Germans and their forests

There was a time when forest covered almost the entire European continent – from the Atlantic to the Carpathians. There is probably no other nation that had as strong a relationship with the forest as was the case in Germany. For Germans, the forest is the epitome of nature and a symbol of mythology, fears and desires. The German forests take many forms but hardly represents untouched nature. It has long been used as a provider of raw materials and is part of every cultural landscape that we know. It has been a central motif in literature, music and the arts at least since the Romantic era. The forest is a myth, a natural and cultural space with an incalculable treasure of plants and animals and rich in sagas, stories, fairy tales and poetry. Once upon a time, the German forests were the habitat of wolves, wild cats and lynx and formed the backbone of the regulation of the European climate. That was long ago, though, since today there is hardly anything left of the once expansive beech forests – even in Germany. The beech forest now only covers 7% of the area it once did and there are very few remaining ancient trees of 300 to 500 years old: even the beech trees in the German national parks can no longer be classed as primeval forest.

(© Stephan Leyk, Fotolia.com)

Ancient, unexploited and natural forests are extremely important for many species of plants and animals, however, that either require large areas of undisturbed territory or, in the case of countless insects, fungi or mosses, rely on the decay processes of natural forests. Whether they are used for food, as a place for nesting or overwintering, a whole host of animals and plants rely on these microhabitats within our "managed" forests. Wastewood and deadwood offer fungi, mosses and lichens an essential habitat. The ecological significance of fungi as the most important decomposers in the forest should be mentioned here, as should the fact that many species live off the mosses and lichens living on the wood. Whether it's a habitat for beetles, wasps, wild bees, ants or other insects, the significance and necessity of wastewood and deadwood cannot be overstated, since spiders, woodpeckers and other hole-nesting birds and insects, various types of bat, as well as squirrels and weasels also find homes here (see also Arens, 2010).

(© Inga Nielsen, Fotolia.com)

2011 GERMAN NATURE CONSERVATION PRIZE: “THE FUTURE OF THE FOREST – PROTECTION, REVIVAL, USAGE.”

Bergwald Projekt e. V. [Mountain forest project]

“The German Nature Conservation Prize has managed to create additional incentives and to initiate new project ideas, initiatives and partnerships. The fact that two of the prizes went to projects that are concerned with teaching young people about nature and experiencing nature is something that pleases me a great deal.”
Prof. Beate Jessel,
President of the Federal Agency for Nature Conservation

In the context of the International Year of Forests (see page 115) and the special relationship of Germany to her forests, the topic for the 2011 German Nature Conservation Prize was “The future of the forest – protection, revival, usage”.

THE 2011 PRIZE WINNERS

The following projects were awarded the funding prize:

- The “Foundation of the Propsteier Wald Forest Society” project for the mutual sustainable use and maintenance of a unique natural landscape within an area of forest in Eschweiler near Aachen that had previously been used for military purposes (funding: EUR 35,000).
- The “www.wildewaldwelt.de youth work” project, an adventure-based nature conservation and education project organised by the Bundesverband katholischer Einrichtungen und Dienste der Erziehungshilfe e. V. (BVkE) [Federal Association of Catholic Institutions and Education Services] in the Black Forest for socially disadvantaged children and young people from youth welfare institutions from all over Germany (funding: EUR 90,000).
- The “Changing perspectives towards forests through experimental games” project organised by Wissenschaftsladens Bonn e. V. [Bonn Science Workshop] introduces young people to the forest as a habitat and the conflicts arising from various ways of using the forest through an experimental game that aims to stimulate critical discussion (funding: EUR 119,000).

The Award of Excellence went to:

- Dr Georg Sperber – the retired forest director and founding member of the Bavarian Forest National Park was awarded the prize, worth EUR 10,000, in honour of his many years of exceptional and exemplary personal involvement with forest conservation in Germany.

Photo of the prize-giving ceremony on 17 November 2011 in Bonn

“We achieved excellent results right from the start: not just in terms of involvement but also concerning the variety and quality of the entries. There really were a wide range of highly original and innovative ideas for nature conservation projects, ideas that can serve as excellent role models and which will inspire others to think of their own ideas. That doesn’t just go for the winning projects: all the projects in the final round really had the potential to win the prize.”
Christian Brandt, COO of JACK WOLFSKIN

2012 GERMAN NATURE CONSERVATION PRIZE: “CITIES NEED NATURE – PROMOTING VARIETY, THE NATURAL EXPERIENCE AND QUALITY OF LIFE.”

More and more people live in cities or spend the majority of their working day there if they work in cities. Green spaces are exceptionally important to quality of life in cities: they define the city skyline, provide leisure space and perform important functions such as filtering the air, protecting against noise pollution and providing drinking water. This means that people often share their living space with an amazing variety of plants and animals, which have found niches for themselves even in rather surprising places.

(© Photo: Bildagentur Hamburg/Alexander Sommer)

Nature in the city is also incredibly important because it regulates the microclimate and offers space for leisure and relaxation. Whether it’s in a garden, on a sports pitch, in a park, cemetery or on a wide boulevard, there is plenty to discover in nature and plenty of opportunities for supporting it in the city and to increase the amount of green space there. This can take the shape of the following, for example:

- Courtyards
- Roof terraces
- Building facades
- Gardens
- Terraces and balconies
- Balcony and garden ponds
- Window boxes and tubs
- Tree guards
- Urban gardening
- Renaturation
- Vegetable allotments
- Urban beekeeping
- City gardens and parks
- Nesting and brooding opportunities for birds, insects, bats and other mammals
- Nature walk paths in the city
- etc.

Flyer for the 2012 German Nature Conservation Prize

In this context, the topic for the 2012 German Nature Conservation Prize is “Cities need nature – promoting variety, the natural experience and quality of life”.

KINATSCHU: TEACHING CHILDREN ABOUT NATURE CONSERVATION

Pets and the home in children's books, instead of wolves and forests

The increasing distance between humans and the natural world is reflected in children's books too. While older stories and pictures appealed to children with tales of wolves and bears creeping through mysterious woods, these days it is more common to see pictures of houses, street scenes and indoor scenarios. 300 American award-winning picture books from the years 1938 to 2008 were analysed, with the result that natural landscapes, woods and meadows are much less common than they once were. Pictures are dominated by buildings, and wild animals have had to move over to make way for pets. According to the research by Nebraska-Lincoln University, this unfortunately also reflects reality because wild animal populations are being decimated or have died out completely. Lack of contact with the natural world can lead to a lack of interest in preserving it.

WE CAN ONLY PROTECT WHAT WE ARE AWARE OF

We can only protect what we are aware of: while this may sound obvious, it also has a very serious basis in reality. In Germany, over 80% of the population live in cities and conurbations. In such places, contact with nature is much more limited, although there is still an amazing variety of plant and animal life to be found in cities.

Nothing can replace contact with real nature though, for example, a forest, meadow or a stream; and this is particularly important for children. Neither when it comes to using the senses of sight, sound, smell, touch and taste, nor when it comes to becoming familiar with animals, plants and habitats and discovering them in a way that is impossible in the city, or in exciting new ways.

Media such as books, TV and the Internet can only have a limited influence on this. However, they are able to do something to awaken an interest in nature, inform people, sensibilise them to its issues and to make them curious about the natural world. It is precisely this curiosity that often awakens the desire to get to know nature a little better, to experience it with all our senses, to enjoy it, cherish it – and to protect it.

The "Kinatschu" children's booklet, published by the German Federal Agency for Nature Conservation

"KINATSCHU" – CHILDREN AND NATURE CONSERVATION

In this context, JACK WOLFSKIN has been supporting the "Kinatschu" children's booklet, published by the German Federal Agency for Nature Conservation, since 2010. The booklet teaches children about nature in a exciting and fun way, with plenty of photos and drawings, with stories about nature, ideas for games and inspiration for arts and crafts.

FOOTBALLKIDS FOR NATURE: FAIR PLAY AND TEAM SPIRIT FOR NATURE

Fair play and team spirit are essential

The idea behind the "footballkids for nature" project is that fair play and team spirit are necessary in our approach to nature as well as on the football pitch. Fair play because we have to take into account those around us, both on the pitch and in terms of nature and the environment, and team spirit because we are only strong when we combine forces as a successful team. If we all pool our efforts in looking after nature and the environment, then we can really achieve something.

FAIR PLAY AND TEAM SPIRIT IN SPORTS AND FOR NATURE

In 2011, JACK WOLFSKIN teamed up with the Fußball-Verband Mittelrhein [Middle Rhine Football Association] (FVM) to launch the "footballkids for nature" project. With support from the "nature detectives" from the Federal Agency for Nature Conservation, this project promotes both youth work in the clubs and also awareness of the environment and of nature conservation.

The 1,200 or so clubs in the Fußball-Verband Mittelrhein [Middle Rhine Football Association] can apply for annual funding amounting to EUR 50,000 for their youth work. The requirement is that the campaign that they apply with has a clear link to nature conservation.

The winners are decided not just by the sponsors but also by the 350,000 or so members of the association: after a preliminary round of voting, people can vote online for their favourite campaign. The funds are dispatched to the clubs' youth divisions in proportion to the number of votes they receive.

For more information, visit www.footballkids-for-nature.de

2011 MOTTO: FOREST CONSERVATION

In 2011, the International Year of Forests, the clubs and their youth divisions were called upon to come up with creative campaigns and ideas concerning the topic of forest conservation. Possible campaigns could include cleaning up forests, planting trees, renaturation measures or nature adventure days.

Planting chequer trees

The 2011 tree of the year was the chequer tree, an endangered species of fruit-bearing tree that used to be endemic across all of central and southern Europe. In addition to the funds, JACK WOLFSKIN provided the clubs in the association with the seedlings they needed for tree-planting campaigns and also sponsored afforestation projects in the Rheinland Nature Park.

Footballkids for Nature

2012 MOTTO: "NATURE ON OUR DOORSTEPS"

The youth divisions and teams in the association were called upon once again to get active in conservation in 2012 too. This time, the campaign was based on the motto: "Nature on our doorsteps". After all, we can experience and protect nature even in our cities, right on our doorsteps.

ICE CLIMATE EDUCATION: SCHOOLCHILDREN AS CLIMATE AMBASSADORS

Arved Fuchs (© Torsten Heller)

Arved Fuchs

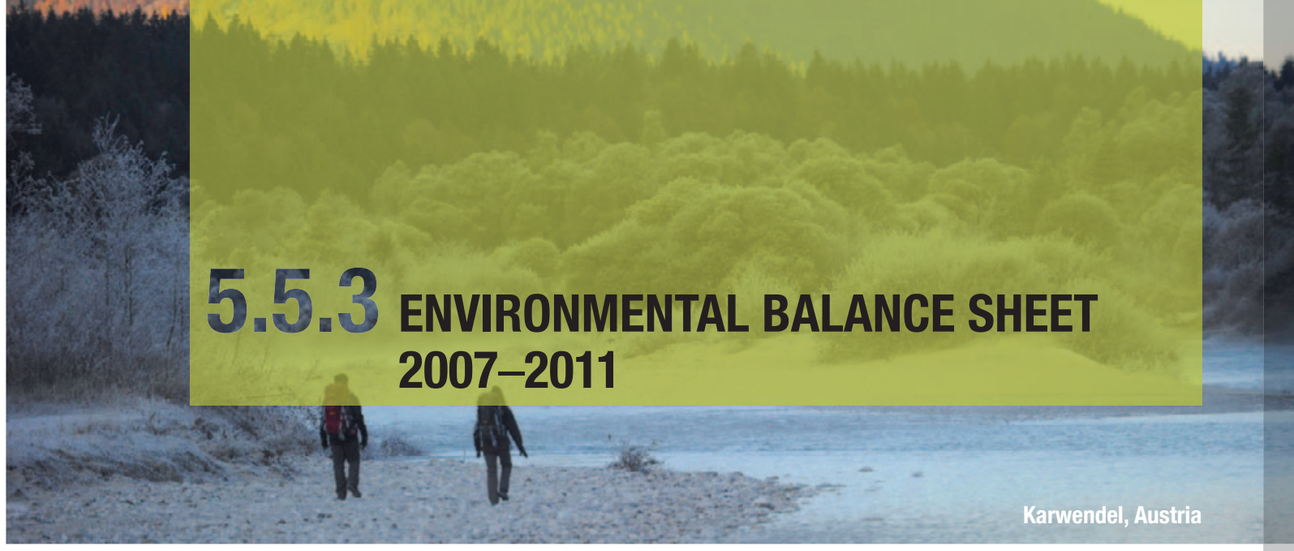
We have had a close partnership with Arved Fuchs since 1996. Using his expeditions, Arved Fuchs wants to document the effects of climate change and the melting ice caps. He sees himself as an ambassador who communicates complex scientific phenomena in an easy-to-understand way in books, exhibitions and talks in order to increase awareness of climate change.

Arved Fuchs and his team travelling aboard their expedition ship, the DAGMAR AAEN (© Torsten Heller)

For more information, visit
www.arved-fuchs.de/af_ice2012.html

JACK WOLFSKIN has been supporting Arved Fuchs' Ice Climate Education (I. C. E.) project since 2007. This project focusses on educating young scientists and the associated knowledge transfer from polar research to schools and the wider public. As part of an annual international competition, schoolchildren can qualify for a one-week youth camp where they can work together with experts to discuss the problem of climate change, specifically in the Arctic. The aim is to enable these young people to return to these schools as climate ambassadors so that they can tell others about global warming and provide inspiration for other climate projects.

Winning team (© Torsten Heller)



5.5.3 ENVIRONMENTAL BALANCE SHEET 2007–2011

Karwendel, Austria

BIOLOGICAL DIVERSITY: ENVIRONMENTAL BALANCE SHEET 2007–2011, IDSTEIN

Reference values	2007	2008	2009	2010	2011
Employees	178	210	238	261	304
Gross turnover (Group)	€148,903 k	€193,579 k	€240,576 k	€289,658 k	€354,853 k
Figures in absolute terms 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
Land usage	7,937 m²	16,125 m²	16,125 m²	16,125 m²	16,125 m²
Proportion of paved surface	n.c.	12,231 m²	11,431 m²	11,431 m²	11,431 m²
Proportion of unpaved surface	n.c.	3,894 m²	4,694 m²	4,694 m²	4,694 m²
Proportion of green space	n.c.	2,321 m²	3,681 m²	3,681 m²	3,681 m²
Gross floor space	3,793 m²	7,782 m²	7,782 m²	7,782 m²	7,782 m²
Environmental indicators 2007–2011	**2007**	**2008**	**2009**	**2010**	**2011**
Land usage per employee	45 m²	77 m²	68 m²	62 m²	53 m²
Proportion of paved surface	n.c.	76%	71%	71%	71%
Proportion of unpaved surface	n.c.	24%	29%	29%	29%
Proportion of green space	n.c.	14%	23%	23%	23%
Gross floor space per employee	21 m²	37 m²	33 m²	30 m²	26 m²
Afforestation areas	-	-	-	see Chapter 5.5.1	see Chapter 5.5.1

n.c. = not calculated

BIOLOGICAL DIVERSITY: ENVIRONMENTAL BALANCE SHEET 2010–2011, NEU WULMSTORF

Reference values	2010	2011
Employees	137	138
Gross turnover (Group)	€289,658 k	€354,853 k
Figures in absolute terms 2010–2011	**2010**	**2011**
Land usage	72,702 m²	72,702 m²
Proportion of paved surface	40,483 m²	40,483 m²
Proportion of unpaved surface	32,219 m²	32,219 m²
Proportion of green space	30,658 m²	30,658 m²
Gross floor space	31,380 m²	31,380 m²
Environmental indicators 2010–2011	**2010**	**2011**
Land usage per employee	531 m²	527 m²
Proportion of paved surface	56%	56%
Proportion of unpaved surface	44%	44%
Proportion of green space	42%	42%
Gross floor space per employee	229 m²	227 m²
Afforestation areas	See Chapter 5.5.1	See Chapter 5.5.1

The land area used at both of our company locations is offset by more than 2.1 million square metres of afforested area (see page 115).

5.5.4 OUR AIMS 2012–2014

AREA OF ACTIVITY: BIODIVERSITY – AIMS 2012–2014

No.	Aim	Measures	Deadline	Responsibility
1	Promoting biodiversity on our company grounds	A part of the grounds will only be mown twice a year	From 01/2012	Environmental Officer, Projects, BUND Idstein, NABU Idstein
2		Converting two areas of the grounds into a colourful meadow of wildflowers (native flowers will attract butterflies and other insects, providing them with food and breeding grounds, which will then benefit birds too)	04/2012	Environmental Officer, Projects, BUND Idstein, NABU Idstein
3		Hanging up bird boxes all over the company grounds: ■ Nesting crevices for redstarts and white wagtails, etc. ■ Nest boxes for blue tits and great tits, greenfinches and robins, etc.	04/2012	Environmental Officer, Projects, BUND Idstein, NABU Idstein
4		Distribution of bird baths and drinking places across the company grounds	04/2012	Environmental Officer, Projects, BUND Idstein, NABU Idstein
5		Distribution of insect hotels across the company grounds	04/2012	Environmental Officer, Projects, BUND Idstein, NABU Idstein
6	Supporting concrete projects from the fields of nature conservation and environmental education	Continuation and expansion of our partnerships, such as: ■ FOUNDATION CONSERVATION CARPATHIA ■ PrimaKlima -weltweit- e. V. ■ German Nature Conservation Prize ■ Ice Climate Education	From 01/2012	Environmental Officer, Management, Sponsorship and events, Communication, Trade Marketing
7		Investigate other potential partnerships	From 01/2012	Environmental Officer, Management, Environmental Representatives
8		Equip our day creche with outdoor clothing and equipment to help ensure a weekly nature day	01/2013	Environmental Officer, Management, Sponsorship and events
9	More active integration of our employees	See "Area of activity: Environmental management system" environmental programme	Regularly	Environmental Officer, Management
10	Improved dialogue with relevant stakeholders	Investigate relevant membership opportunities	From 01/2012	Environmental Officer, Communication, Environmental Representatives, Management
11		Active distribution of our "2011/2012 Environment Audit"	From 07/2012	Communication, Trade Marketing, Environmental Officer,
12		General overhaul of our CR website	06/2013	Environmental Officer, Communication

We started implementing further measures to support biodiversity on our company grounds in spring 2012, converting two areas of the grounds into colourful areas of wildflowers, for example. The thriving native plant species will attract butterflies and other insects, providing them with food and breeding grounds, which birds will then also benefit from. We will also hang up nest boxes for birds in our grounds, for example for redstarts, white wagtails, blue tits, great tits, greenfinches, sparrows and robins. In addition, we will also set up several insect hotels on our grounds, offering nesting opportunities for butterflies, ladybirds, solitary wild bees, bumblebees, hoverflies and other species. The insects nesting here are not aggressive, do not sting and are completely harmless to humans.

In the planning, we sought advice from Friends of the Earth Germany (BUND) and from the Naturschutzbund Deutschland e. V. [German Nature and Biodiversity Conservation Union] (NABU).

Bund für Umwelt und Naturschutz Deutschland
BUND
FREUNDE DER ERDE

For more information, visit www.bund.net
http://idstein-waldems.bund.net/

NABU

For more information, visit www.nabu.de
http://www.nabu-idstein.de/

INTEGRATION OF EMPLOYEES

We inform our employees regularly about nature conservation and environmental topics by distributing brochures and newsletters, as well as via various campaigns that aim to motivate people to take part and are sometimes rewarded with prizes. We want to work on boosting the integration of our employees.

As part of our CR work, we offer employees' children places at creches and kindergartens. We provide the daycare institutions with outdoor clothing and equipment such as jackets, trousers and rucksacks so that they can enjoy their weekly nature day.

6 APPENDIX

6.1 GLOSSARY

Antarctic Region within the Antarctic Circle. The land and sea around the South Pole.

Arctic Region within the Arctic Circle. The land and sea around the North Pole, including the Arctic Ocean, which is largely covered with ice.

Atmosphere The air surrounding the Earth, divided into various levels.

Audit Regular assessment and evaluation of the performance of the management, organisation and environmental protection processes.

Biodiversity See page 85.

Carbon dioxide (CO_2) Carbon dioxide (CO_2) is produced with the burning of fossil fuels such as coal, oil and natural gas, as well as in the decay of biomass and with the natural respiration of humans and animals. See also Greenhouse effect.

Certification (according to DIN EN ISO 14001) Certification to confirm that the environmental management system conforms with DIN EN ISO 14001 by an external, independent certification authority.

Climate Describes the general weather characteristics of a region or climate zone over several years or decades. According to WMO guidelines, the period of observation for determining climate phenomena should not be less than 30 years.

DIN 277 Norm regulating the interior space of buildings.

ECF PAPER Elemental chlorine-free paper. The paper is 100% cellulose, i.e. wood fibres. The bleaching, which follows the *extensive* washing process, uses chlorine dioxide in the bleaching process but no elemental chlorine.

El Niño Global climate phenomenon. Describes the weakening of the cold Humboldt Current in the Pacific due to the shift in wind zones and then comes to a standstill. The warm surface water that normally flows west, flows back to the east. While the eastern Pacific warms, the water temperature around Australia and Indonesia decreases – which can have global consequences for the weather such as extreme droughts or storms (primarily in South America and South-East Asia/Australia).

Emissions The emission of pollutants into the atmosphere.

Environmental audit A management instrument that involves a systematic, documented, regular and objective assessment of the environmental performance of the company, the management system and the environmental protection measures in place.

Environmental balance sheet/Environmental statistics Statistics relating to an employee or gross annual turnover.

Environmental management system This system coordinates the processes and procedures in a company that are relevant to the environment. The individual elements of an environment management system help to systematically improve the environmental performance of a company.

Environmental programme Catalogue of targets and measures. A description of the measures that are affected or planned, with their respective deadlines, that will be implemented in order to achieve enviromental aims and targets.

Fauna The animal species living in a certain region.

Flora The plant species living in a certain region.

Forest Stewardship Council (FSC) System for certifying sustainable forestry. The principles for forest use aim to ensure socially responsible, environmentally friendly and economically viable forest management.

Greenhouse effect/greenhouse gases Greenhouse gases are so called because they work like the panes of a greenhouse: they let the short-wave solar radiation through the atmosphere to the Earth's surface almost unhindered but reflect the longer-wave radiation from the Earth's surface, which heats up the atmosphere. According to the latest findings, carbon dioxide (CO_2) plays the biggest role in the greenhouse effect, with methane (CH_4) and nitrous oxide (N_2O) taking on more prominent roles.

Gulf Stream See page 58.

Hectare Unit of measurement – one hectare equals 100 x 100 metres = 10,000 m².

Intergovernmental Panel on Climate Change (IPCC) See page 54.

Kilowatt-hour (kWh) Unit of measurement for energy consumption.

Kyoto Protocol In 1997, the industrialised nations pledged to reduce their greenhouse gas emissions in the period between 2008 and 2012 by at least 5% compared with 1990. So that the Kyoto Protocol could enter into force, it had to be ratified by at least 55 states, who accounted for at least 55% of greenhouse gas emissions in industrialised countries in 1990. The Protocol became binding in November 2004 when Russia signed, and it came into force on 16 February 2005.

Methane (CH_4) Methane (CH_4) is the second most common greenhouse gas after carbon dioxide (CO_2). However, its greenhouse gas effect – over a period of 100 years – is 23 times higher than carbon dioxide. The methane concentration in the atmosphere has almost tripled in the past 150 years. The increase can be explained by the increase in food requirements since the main sources of methane are rice farming, cattle farming and nitrogen-based fertilisers used in agriculture.

North Atlantic Drift See Gulf Stream.

Operational ecology Term used to describe the environmental effects resulting directly from a company's business operations.

Permafrost Permafrost is an area of the ground that remains frozen to a certain depth all year round. There are large expanses of permafrost in northern Canada, Alaska, Greenland and eastern Sibiria.

Photovoltaics Technology for converting the sun's energy directly into electricity, using solar cells (solar power).

Product ecology Term used to refer to environmental effects that do not result at the company's premises.

Recycled paper Paper that is made from fibres of used paper.

Reinsurance Reinsurance is the type of insurance cover used for insurance companies (insurers or reinsurers). The insurance company can cover some of its risks by using a reinsurer.

Solar heating Technology for converting solar energy into heat using carrier liquids (photothermics).

Styles Information on the number of articles within the JACK WOLFSKIN collection (regardless of the colours that the individual items are available in).

Style colour Information on the number of articles and colours available within the JACK WOLFSKIN collection.

Sustainability See page 92.

TCF paper Totally chlorine-free paper. The paper is 100% cellulose, i.e. wood fibres. The bleaching, which follows the extensive washing process, uses oxygen without any chlorine.

Tipping points See page 62.

TransFair Fairly traded products have been marked with an internationally consistent logo since early 2003. The logo is awarded to products that are manufactured in a socially and ecologically responsible way. The most important criteria are: no child labour, fair prices for the manufacturer and environmentally friendly cultivation methods. The TransFair association from Cologne ensures adherence to these criteria.

United Nations Environment Programme (UNEP) United Nations environmental institution, based in Geneva.

Validation (according to EMAS) Assessment of the environmental management system and declaration of validity by state-approved, external and independent environmental advisors.

Vegetation The plant populations living in a given region.

Weather Describes the condition of the lower atmosphere (troposphere) in a given place at a given time.

6.2 LIST OF ABBREVIATIONS

BfN German Federal Agency for Nature Conservation

BMU German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

BUND Friends of the Earth Germany

CO_2 Carbon dioxide

DWD German Meteorological Service

EMAS Environmental Management and Audit Scheme

EnWG Energy Act

FAO Food and Agriculture Organization of the United Nations

FSC Forest Stewardship Council

g Gram

GHG Protocol Greenhouse Gas Protocol

IEA International Energy Agency

IPCC Intergovernmental Panel on Climate Change

IUCN International Union for Conservation of Nature

kg Kilogram

km Kilometre

kWh Kilowatt-hour

l Litre

m² Square metre

m³ Cubic metre

NABU Naturschutzbund Deutschland e. V. [Nature and Biodiversity Conservation Union]

n.c. Not calculated

NGO Non-governmental organisation

PIK-Potsdam Potsdam Institute for Climate Impact Research

ppm parts per million

REDD Reducing Emissions from Deforestation and Degradation

TEEB The Economics of Ecosystems and Biodiversity

tkm Tonne-kilometre

UBA Federal Environment Agency

UNEP United Nations Environment Programme

WHO World Health Organization

WMO World Meteorological Organization

WRI World Resources Institute

Les Ecrins National Park, France

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