



THE WORLD TAKES SOIL LOSS SERIOUSLY

In the framework of the Rio+20 Conference in 2012, the heads of state and government around the globe for the first time declared their intent to achieve a world without land degradation. An inter-governmental working group then drew up concrete suggestions for formulating a goal to protect soils globally through sustainable management and the restoration of degraded land.

The aim of Land degradation neutrality (LDN) is to maintain and increase the amount and quality of healthy land resources. Land degradation is understood as the loss of the land's ability to contribute to production and to regulate ecological systems.

THE SUSTAINABLE DEVELOPMENT GOALS

The Millennium Development Goals (MDGs) were replaced in 2016 by the Sustainable Development Goals (SDGs), which cover the economic and ecological dimensions of sustainability along with social aspects. It is here that soil is finally explicitly anchored as a core issue. The protection and sustainable use of soil has thereby become a part of the global agenda.

TAKING RESPONSIBILITY

In contrast to the MDGs, the SDGs apply to all countries, both poor and rich. Every country is responsible for developing feasible approaches for protecting soils that are adapted to their own circumstances. Germany is providing support to individual partner countries in implementing these approaches and has also pledged to take action itself. This will require a shift to sustainable means of production wherever our food and its primary products are produced – and through sustainable consumption we can ensure that this shift will get off the ground.

SUSTAINABLE DEVELOPMENT – AN INTERNATIONAL FOCUS



USING SOIL SUSTAINABLY.

Humankind uses so many natural resources that **ONE AND A HALF PLANET EARTHS** are needed, in theory, to sustain our current levels of consumption. Climate change and a growing world population make the problem worse. Sustainable management of soils, water resources and forests is long overdue.

But what does “sustainable” mean in relation to soil? After all, if measured against a human lifespan, soil is clearly a non-renewable resource. Soil must be used in such a way that its fertility benefits the global population and enables future generations to grow food and crops as materials. Development is only possible within the Earth’s ecological limits, known as “planetary boundaries”. Without fertile soil, for example, we cannot guarantee stable living conditions over the long term.



ENVIRONMENTAL

In relation to soil, sustainability means safeguarding soil fertility and natural nutrient cycles and maintaining its special capacities, such as water storage and filtration, carbon sequestration, and accumulation of organic substances.



SOCIAL

From a social perspective, sustainable agriculture must involve all farmers in the development process and utilise their local knowledge. Everyone must have the same rights and opportunities to work and generate income: this includes family members, women and men, and present and future generations.



ECONOMIC

From an economic perspective, agriculture is sustainable if it secures an adequate income for farmers and contributes to long-term food security.

SUSTAINABLE FARMING METHODS.

In order to safeguard long-term global food security, food production must conserve the soil, especially in industrial farming, but also on land cultivated by smallholders, where there is still considerable potential to increase productivity. With the right support, many small farmers can substantially increase their yields while managing the soil sustainably for the benefit of future generations. There is no one-size-fits-all solution for sustainable farming: it must always be adapted to local and regional conditions. Nonetheless, there are methods whose effectiveness in many different contexts is already proven. Whichever strategy is applied, it is essential to adopt a system-wide approach, taking account of people, the environment and political conditions, in order to identify sustainable solutions.

ADVISORY SERVICES AND PRODUCTION INPUTS

Training and advisory services, drawing on traditional knowledge, are the key to rural development, especially in developing countries and emerging economies. Smallholder families also need access to modern machinery and inputs such as seed and fertiliser.

COMBATING EROSION

Fertility and resilience can be improved through soil-conserving management techniques, such as growing crops that provide year-round ground cover, construction of terraces, and minimum tillage in industrial farming. Furthermore, planting forests protects against soil erosion.

PASTURE MANAGEMENT

In areas where animal husbandry is almost the only source of income, grazing lands are often utilised too intensively, which impacts negatively on fertile soil. Sustainable pasture management helps to maintain biodiversity and a good nutrient balance in the soil.

NUTRIENT MANAGEMENT

A good nutrient balance is vital for healthy soil. This can be achieved by applying organic or mineral fertilisers, which replace the soil nutrients lost through harvesting or grazing. A good balance between the nutrients lost and those added is essential. Growing cover crops on fallow land in winter also helps to maintain soil fertility and prevents weeds and pests from taking hold.

PRECISION FARMING

Using modern information technology, variability in soil and potential yields across a field can be measured. With this knowledge, farmers can manage their fields sustainably. Precision farming technology allows farmers to accurately identify areas of a field that need fertiliser or pesticide, thus reducing their use to a minimum. This technology is still extremely cost-intensive and is particularly suitable for large areas, so at present, its use is mainly confined to industrial farming.

As part of the **"ONE WORLD, NO HUNGER"** SPECIAL INITIATIVE, the German Federal Ministry for Economic Cooperation and Development (BMZ) has launched a global programme entitled "Soil Conservation and Rehabilitation for Food Security". It strengthens the policy framework for soil conservation in five countries and assists small farmers with the practical application of sustainable farming methods. Knowledge sharing ensures that everyone benefits from the lessons learned.

NATIONAL – INTERNATIONAL WORKING TOGETHER TO PROTECT THE SOIL.

Besides technical solutions and contributions from everyone, combating land and soil degradation mainly needs **ACTION BY GOVERNMENTS AND THE RIGHT FRAMEWORKS**. Many organisations are working at national and international level to improve the conditions for protecting the soil.



ESTABLISHING RIGHTS

In developing countries, sustainable agriculture can be promoted through legal clarification of land rights, for if farmers know that they have long-term access to land, they have more incentive to invest and manage it sustainably. In other countries, legislation is in place that makes sustainable land management compulsory. One example is the German Federal Building Law. It requires cities and municipalities to use inner-city sites for development. This means that construction projects may only take place outside the local development plan if there is evidence that they cannot be implemented on an inner-city site. The aim is to reduce urban sprawl and construction on greenfield sites.



INVESTMENT PAYS OFF

In order to maintain sufficient arable land while mitigating the impacts on soil, investment in sustainable agriculture is urgently needed. This investment pays off, as an example from India shows. Vandana Shiva, an Indian scientist, set up the Navdanya network in the 1990s. More than 70,000 farmers are primary members of Navdanya. They cultivate their fields without the use of synthetic pesticides and fertilisers and apply mixed cropping, which means they grow cereals, beans and pumpkins on the same fields. With these techniques, they save the costs of chemicals and help to protect the environment. They also improve their food security and incomes, as yields from mixed crops are far higher than from monocultures.



GENERATING KNOWLEDGE, CREATING NETWORKS

Unsustainable agricultural policy is often the result of a lack of knowledge, short-termism and poor stakeholder networking. This is avoidable if policy-makers draft national action plans that involve all stakeholders, raise awareness of the key issues and encourage knowledge sharing. One example is the European Land and Soil Alliance (ELSA). It establishes networks and alliances between local authorities, which bear a major responsibility for soil conservation and management, residential areas, and natural and cultural heritage. The aim is to promote sustainable regional development and knowledge transfer through cooperation.

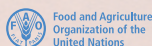


RESEARCH AND TECHNOLOGY FOR SOIL CONSERVATION

Scientific research and technical innovation can do much to support the sustainable use of land and restore degraded land. The World Overview of Conservation Approaches and Technologies (WOCAT) is a global network of specialists, dedicated to sustainable land management (SLM). Its aim is to share knowledge and upscale best practice from all over the world through training and professional development for as many stakeholders as possible, including government decision-makers, national and international organisations, and regional initiatives. Know-how transfer helps to combat soil degradation.

A GLOBAL NETWORK

Key international organisations and initiatives working on soil conservation:



WHAT CAN I DO?

Many of our purchasing decisions have impacts on the condition of the soil. So **WE ALL** have a responsibility. By changing our purchasing and consumption habits, we can help to protect the soil all over the world. For example, if we were all to eat less meat, much more arable land would be available for cereal growing and more people could be fed. And it's not just about our food consumption: we should be more conscious of the environment and sustainability in our choice of clothing and lifestyle products as well.

BE CREATIVE!

Whether it's our clothes, appliances or other consumer goods – as soon as something develops a defect or is no longer in fashion, we throw it away. And yet many items can be repaired or recycled. For example, an old pair of jeans can be converted into a tote bag, left-over food can provide the ingredients for a delicious new dish, and plastic bottles serve very well as flower pots.

There is no limit to our creativity!

FOOD

Which eco-label tells me whether cotton products come from a sustainable, soil-conserving source? And what do the various labels actually mean? For information about the labels and guidance on responsible consumer choices, look here: www.label-online.de, www.siegetklarheit.de, www.kompass-nachhaltigkeit.de, www.zugut fuer die lönne.de



By choosing more local and seasonal produce – perhaps from a farm shop on the edge of our city – we can conserve the soil in other countries and save resources that would otherwise be needed for transport, etc. Our year-round availability of fruit and vegetables is often obtained at the cost of unsustainable farming methods in other countries, such as plantations and artificial irrigation in drylands.

If we do decide in favour of a product from a distant country, how can we tell whether it is from a soil-conserving source? Sustainability labels are a good starting point. Certified fairly traded eco-friendly products are a good choice, as their production follows sustainable land management practices that conserve the soil. Under these schemes, farmers generally also receive decent wages, so they are under less financial pressure to squeeze every last drop of goodness from the soil.

The potatoes harvested on one hectare of farmland will feed 17 people. If animal feed is grown on the same area, the meat produced will only feed two people. The growing demand for animal feed, especially maize and soya, is a key driver of deforestation. Monocultures degrade the soil. So we can help by eating less meat – and savouring every mouthful.

The average German consumer throws away 81.6 kilos of food every year. Worldwide, 45 per cent of the fruit and vegetable harvest goes to waste. By wasting nutritious food, we are also using more arable land than necessary. A respectful attitude to food, avoiding waste, can help.

FASHION

The clothing industry often has a devastating effect on the soil. Conventional cotton growing on plantations, for example, consumes vast amounts of water and relies on fertilisers and pesticides. This contaminates the soil and adversely affects workers' health. The chemicals used in dyeing are often toxic and harmful to human health and the environment. Garment factory workers in developing countries are often poorly paid, suffer health problems, and have no social security.

You can take action by buying fair-trade clothes made from organic cotton. It's a good idea to wear each garment for longer and buy fewer new items. Clothing from charity shops, vintage stores, jumble sales and swap shops are a good alternative.



TECHNOLOGY

The manufacture and disposal of technical devices adversely affect human health, soils and the environment. Cars, tablets and smartphones all contain natural resources which are often extracted under hazardous working conditions using harmful chemicals. Production and disposal sites need large amounts of land. In Europe, 100 million mobile phones are thrown into the garbage every year, although they contain precious materials that can be recycled. Disposal of electric and electronic waste is expensive and hazardous, as these products often contain toxic substances such as mercury.

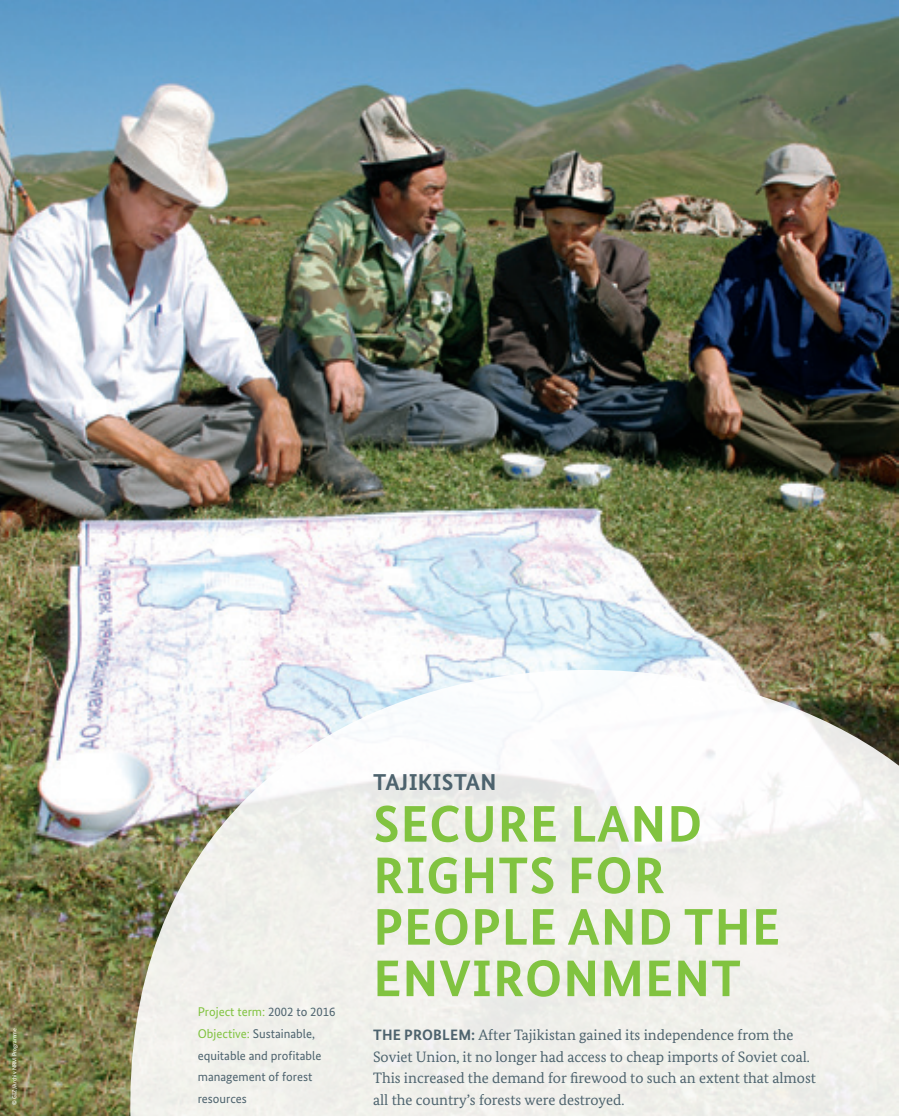
So appliances should not be replaced as soon as a new model comes on to the market. Appliances that no longer work can frequently be repaired at low cost. Repair cafes can often help: they provide guidance on how to fix faulty items – a good option that protects the soil!





When you're at home at the weekend, go out into the garden, a field or a forest. Pick up a handful of soil and smell the rich aroma of the earth.

You're holding **YOUR OWN FUTURE** in your hands.



TAJIKISTAN

SECURE LAND RIGHTS FOR PEOPLE AND THE ENVIRONMENT

Project term: 2002 to 2016

Objective: Sustainable, equitable and profitable management of forest resources

THE PROBLEM: After Tajikistan gained its independence from the Soviet Union, it no longer had access to cheap imports of Soviet coal. This increased the demand for firewood to such an extent that almost all the country's forests were destroyed.

SOLUTION: On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH worked with local forestry authorities and forest users to develop a new model of joint forest management. The state forestry authority transfers the long-term rights to use specific areas of the forest to private tenants, who must manage the forest sustainably and protect it from illegal logging and overgrazing. It's a win-win situation: the tenants have access to a regular wood supply and higher incomes; the authorities receive one third of the revenue and can focus on their core tasks; and the forest is regenerating. This makes an important contribution to combating desertification and protecting the climate, as long-term land tenure and user rights promote sustainable soil management.

Sustainable forest management is now established in law and is being rolled out across the country, so that forest stocks and forest users' living conditions improve elsewhere, not only in the Pamir region. A similar initiative is being prepared in neighbouring Kyrgyzstan and is benefiting from Tajikistan's experience.



BOLIVIA

EMPOWERING WOMEN – FOR PEOPLE AND THE ENVIRONMENT

Project term: 2005 to 2014

Objective: To build smallholders' knowledge of improved water resources management and thus achieve sustainable increases in their agricultural productivity.

THE PROBLEM: Many people in Bolivia's rural drylands live in extreme poverty. Their livelihoods depend largely on irrigated farming. However, water scarcity and a lack of knowledge of appropriate farming techniques limit the development potential of agricultural production.

THE SOLUTION: With the "Sustainable Agricultural Development in the Bolivian Lowlands" project, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is building local farmers' knowledge of sustainable farming methods. In all, 778 people – 73 per cent of them women – have learned how to conserve their resources and improve their productivity. With efficient water storage techniques, the fields no longer dry out, and coffee plants, chestnuts, yucca, pineapple and many other crops are flourishing on the smallholders' plots. The families involved in the project have increased their incomes by as much as 22 per cent. They have also broadened their range of crops and now have access to nutritious foods all year round. The role of women in particular has changed. Housewives and casual labourers have now become independent producers, not only feeding their families but also generating an income through the sale of their produce. And with better education and health, there is a genuine opportunity for families to lift themselves permanently out of poverty.



MADAGASCAR

REFORESTING THE COUNTRY

Project term: Since 2005

Objective: To protect natural forests from logging, to ensure a sustainable fuelwood supply chain, from production to marketing and consumption, and to boost rural incomes.

THE PROBLEM: Logging, regular burning and the resulting erosion have turned large areas of Madagascar into a wasteland. Population growth and urbanisation are driving up demand for charcoal, increasing the pressure on the remaining forests. Wood will continue to be an important energy source in future, so it is vital to ensure that it comes from sustainable sources. This helps to preserve natural resources – and offers great potential for economic development in rural areas.

THE SOLUTION: On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is implementing a programme to break this vicious circle. In the region of Diana in the north of the country, around 3,000 households, including many headed by women and landless people, have planted 9,000 hectares with fast-growing trees, creating new productive forests. Together with the transfer of individual property rights to these households, the new forests reduce erosion and the risk of bush fires and allow the degraded land to regenerate. The entire fuelwood supply chain has also been modernised: from sustainable production to efficient conversion into charcoal, marketing, and burning of charcoal in efficient stoves in urban areas. The project has protected around 50,000 hectares of natural forest from degradation.

Proof of origin informs consumers that the fuelwood comes from sustainable sources. In the regional capital Antsiranana, 30,000 people are now using sustainably produced charcoal, increasing producers' incomes by 40 per cent compared with other rural regions. The government has adopted rules and standards to establish this sustainable supply chain on a firm footing and to regulate producers' rights and responsibilities.



SUB-SAHARAN AFRICA

A MORE SUSTAINABLE ROLE IN WORLD MARKETS

Project term: since 2005

Objective: To safeguard the incomes of small African cotton growers through stable access to markets, and to increase productivity through improved soil fertility.

THE PROBLEM: Around 20 million people in sub-Saharan Africa depend, directly or indirectly, on cotton growing for their livelihoods. However, small farmers often lack the knowledge, modern machinery and inputs they need to grow cotton sustainably. As a result, they are unable to increase their productivity and lift themselves out of poverty.



THE SOLUTION: The Aid by Trade Foundation was established with support from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Deutsche Investitions- und Entwicklungsgesellschaft (DEG) mbH, with funding from the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Bill & Melinda Gates Foundation. The Foundation's Cotton made in Africa (CmiA) initiative aims to make African cotton more sustainable and competitive and give growers access to the mass market. This will meet the growing global demand for sustainably produced clothing and give cotton farmers a stable income over the long term. At regular training sessions, experts teach African smallholders about efficient and environmentally sound cultivation methods that meet the CmiA standards of sustainability. The Foundation is also building an international alliance of textile companies which use CmiA cotton as a sustainable resource in their products and pay a licence fee for the use of the quality label. Revenue from the licence fee is reinvested in the project regions in sub-Saharan Africa and directly benefits farmers and their families. At present, CmiA is working with 650,000 farmers in 10 African countries. Productivity, competitiveness and sustainability in cotton growing have substantially increased.





One World – No Hunger Initiative

PROTECTING LAND AND SECURING FOOD

Project duration: 2014 to 2021

Objective: Soil protection in five countries using tried and tested approaches and rehabilitating degraded soil for a significant yield increase. Reinforce strategies and incentives for sustainable land use.

PROBLEM: Across the world, there are a growing number of mouths to feed.

At the same time, the area available for agricultural use is decreasing. Overuse or inappropriate use of soil results in nutrient depletion, erosion and other forms of degradation. In particular poorer population groups in developing countries are affected, with most of them relying directly on the output of their small farms for their livelihood. Despite this, too little attention is paid to soil protection in many of the countries affected. Small farmers often lack the requisite knowledge and financial capital to farm in a sustainable way. In addition, the political framework to promote sustainable soil use is often insufficient.

SOLUTION: On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is implementing a global programme that aims to achieve a sustainable approach to land use as well as the active participation and involvement of affected small-scale farmers. Activities are planned together with them. The programme's partner countries are Benin, Burkina Faso, India and Kenya, as well as Ethiopia. Here, work is ongoing in the lowlands as well as the highlands, where more than 9,000 small farmers set up about 4,900 demonstration fields in 2016. Some of the fields were farmed in the traditional manner, while on the others various methods were combined to boost soil fertility. The methods included the use of lime, organic and mineral fertilisers, better seeds and special soil cultivation practices. Initial results show that those fields produce significantly higher yields. In the 2016 growing season, chickpea yields were increased by 90 per cent when compared with conventional agricultural practices. True to the motto 'seeing is believing', this serves to motivate farmers to work with new technologies. Parallel to these activities, on a political level, the programme advises partner governments on how to improve the legal and political framework conditions for sustainable land use. Experts from science also contribute with their know-how.