

InFocus

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Climate change

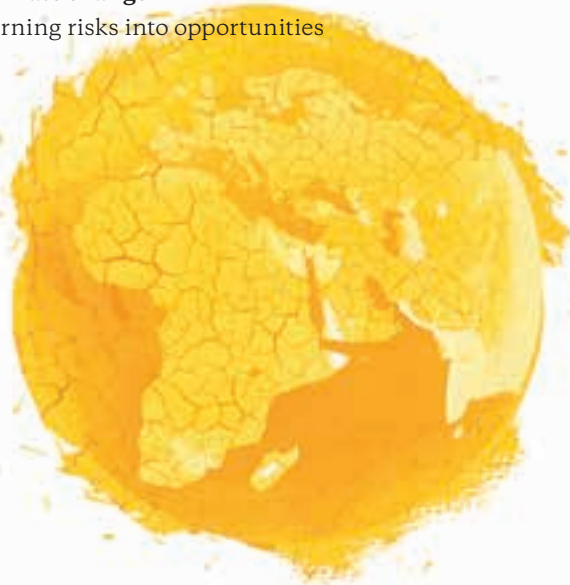
Turning risks into opportunities

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Turning risks into opportunities



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Dear readers,

Climate change is turning into one of the biggest obstacles to overcoming hunger and poverty. It is threatening the already precarious livelihoods of people, who are poor and particularly vulnerable to crises, and threatening to destroy development progress.

Throughout the world, climate change is presenting our partner organisations with new complex challenges. In many regions, people are increasingly exposed to extreme weather events. Agriculture has to adapt in the long term to rising temperatures and changing rainfall patterns. Simultaneously, conflicts over natural resources, especially water and land, are intensifying.

Where climate change is increasing the frequency and intensity of disasters, it is proving necessary to combine the diverse competences of Diakonie Katastrophenhilfe and Bread for the World. Together we can help people in the most affected regions in the long term to adapt to the impacts of climate change and to prepare for the disasters it entails.

With our “Climate Lighthouse Projects”, we want to improve the link between disaster risk reduction and climate change adaptation. Together with our partners, we are developing strategies that not only focus on such immediate risks as droughts, floods or hurricanes. But we are also looking at the risk scenario for the next ten or twenty years as well as the long-term consequences in terms of food security, soil conditions or access to drinking water. This integrated approach is in keeping with the emergency situations on the ground and makes development “climate-proof”.

However, disaster risk reduction and climate change adaptation have limitations. An increase in global temperatures of more than 2 degrees Celsius means that climate-related damage in many parts of the world would be irreparable, according to the prognosis of the International Panel on Climate Change (IPCC). Many people would have no other option but to flee!

Whether people in poorer countries can succeed in adapting to climate change mainly depends, therefore, on a serious commitment to climate policies and reducing global greenhouse gas emissions. Industrialised countries such as Germany have a particular responsibility: it is ultimately a matter of limiting and compensating for the damage, to which our lifestyle has significantly contributed.

As church aid organisations, Diakonie Katastrophenhilfe and Bread for the World feel especially challenged to face up to this responsibility together. In close co-operation with the international church network ACT Alliance, we support our partner organisations not only in their local project work but also politically in the context of climate negotiations. Together, we are committed to working for more climate justice.

Pastor Cornelia Füllkrug-Weitzel

President of Bread for the World and Diakonie Katastrophenhilfe



FOCUS

Climate change

Turning risks into opportunities More and more people throughout the world are having to struggle with unpredictable weather. This is partly a result of the increasing number of extreme natural events. But also of the growing number of people, who have nowhere else to go except places on the margins, where disaster risk is particularly high. Extreme weather conditions are so often a real threat to livelihoods and require humanitarian aid interventions. Or they jeopardise development co-operation goals such as food security and poverty reduction.

T

he trend is clear: climate-related natural disasters are increasing. While not every tropical cyclone or drought can be explained by climate change, the United Nations Office for Disaster Risk Reduction (UNISDR) report a distinct statistical increase in such damaging events. Millions of people are already suffering as a result. In the highlands of Ethiopia, for example, sudden frosts and hail destroy the crops in entire regions. In Guatemala, even after the start of the rainy season, not a drop of rain falls for weeks. Plants wither in the fields. The consequences are hunger and growing impoverishment, particularly of the rural population. They need protection against disasters and support to adapt to changing climate conditions. For smallholders and pastoralists in the affected countries this specifically means having access to suitable seeds and developing ways to maintain soil fertility and stabilise the natural water supply.

It is also important to prepare for gradual changes such as rising sea levels, spreading pathogens or poorer harvests resulting from higher temperatures. Anyone failing to invest now in disaster risk reduction and climate change adaptation, is taking a much greater risk in terms of damage and enormous human suffering. This is precisely what the lighthouse projects on climate change, jointly developed by Bread for the World and Diakonie Katastrophenhilfe, seek to address.

Linking disaster risk reduction and development co-operation

The lighthouse projects are joint pilot projects run by Diakonie Katastrophenhilfe and Bread for the World. They are planned and implemented in close co-operation with local partners in Indonesia, Bangladesh, Ethiopia and Guate-

mala. Their goal is to reduce the risks of climate change for particularly vulnerable population groups and, thus, provide them with prospects for sustainable development. The projects, designed to run for ten to twelve years, are intended to demonstrate how climate change adaptation can be facilitated by a combination of humanitarian aid and development co-operation. A wide range of measures is available for each country, ranging from disaster risk reduction to longer term adaptation to changing environmental conditions and to climate protection and involvement in the development of policy frameworks.

The lighthouse projects are putting the often demanded approach of Linking Relief, Rehabilitation and Development (LRRD) into practice. Through this, Diakonie Katastrophenhilfe and Bread for the World can contribute their respective core competencies and work together in a complementary and effective way. The aim of such integrated approaches is to improve the resilience of the most vulnerable population groups. Resilience is generally understood as people's ability to respond appropriately and through their own resources to adversity, such as extreme weather events.

Combating climate change with quality and diversity

The support provided cannot follow a stereotypical pattern. The threats in the different regions are too different, but so, too, are the potential solutions. Nevertheless, the lighthouse projects seek to introduce and comply with specific global quality standards. This includes the risk analysis carried out among the affected population at the beginning of a project, the method of identifying assistance in accordance with the degree of risk as well as showing respect for, and extending, the self-responsibility and competence of aid recipients. Thus, alongside innovations, for example in treating drinking water, there is specific focus on strengthening people's traditional coping mechanisms.

All four lighthouse projects have their own profile of measures with very specific features: >



Indonesia

Two partners, that could not be more different, are implementing the oldest lighthouse project on the islands of Java and Sulawesi. With IPPHTI, a smallholders' organisation is involved, which has dedicated itself for many years to sustainable agricultural production. Its projects help farming families to adapt their agricultural practices to climate change. One other objective is to provide coastal communities with better protection against tropical cyclones and to address problems of salinization, which, because of storms and the rise in sea level, is threatening other coastal areas. In the mountainous Toraja region of Sulawesi, on the other hand, climate change is a major threat to coffee growing and, hence, to the population's main source of income. For many years, the church partner here, Gereja Toraja (GT), has been providing agricultural consultancy services and maintaining its own experimental and demonstration farm.

Bangladesh

The lighthouse project launched in Bangladesh in 2009, includes a wide range of project activities. They range from supplying drinking water in coastal areas endangered by salinization to environmentally friendly irrigation techniques in the north of the country. Because of their long-standing work, CCDB (Christian Commission for Development in Bangladesh) is well rooted in the communities, and can be influential in highlighting the needs of the population to local authorities. Bangladesh is under particular threat from rising sea levels. The frequent floods and cyclones are the predominant source of tragic headlines in the media. With no help to adapt to climate change, the survival for millions of people is at stake.

Ethiopia

Anyone walking along the hills north of the provincial capital Dessie, will understand the vision of the project managers of the Mekane Yesus Church (EECMY). In the next 20 years, much of the bare land, scarred by erosion, that covers the hillsides throughout Legambo District will be reforested and the region will provide sustainable grazing and improved smallholder cereal production. The church is held in high regard not only by the villagers, but also by the local government. The EECMY has been invited on several occasions to present the lighthouse concept and provide risk analysis training. Ethiopia experiences all the different facets of climate-related disasters - everything from extreme drought to flooding, landslides, frost, hail and pest infestation; all this in a situation where a large proportion of the population is extremely poor and vulnerable.

Guatemala

The lighthouse project launched in April 2011 with the partner organisation ASECSA in Guatemala combines longer-term protection against climate change with economic benefits. Additional vegetables from their own garden, for example, can significantly improve poor families' incomes and help them survive food shortages in disaster situations. Through tiered cultivation in the form of stacked wooden frames and using kitchen waste and compost, astonishing yields can be achieved even in the smallest space. Guatemala is situated in a part of Central America and the United States regularly afflicted by tropical cyclones that cause serious damage and claim human lives. Drought, however, is just as big a threat, exacerbating the situation for a rural population dependent on subsistence farming.



The key criteria used to select these countries were vulnerability to disasters in the past and projected climate change impacts. All four regions are hotspots for climate-related natural disasters, both in terms of their frequency and the number of people affected. Climatologists predict that they will bear the full brunt of climate change, also in the future. Another selection criterion was the presence of a reliable partner willing to help implement the lighthouse projects. Consideration was given only to organisations that, on their own initiative, had previously worked intensely on climate change and had relevant experience either in working with local communities or in national and international lobbying activities.

Projects that are showing the way

Six years after the launch, the lighthouse projects' first successes are clearly evident. One impressive example is the scale of what are sometimes called "eyebrow terraces", created on barely accessible mountain ridges in the highlands of Ethiopia to protect the slopes against erosion and prevent flooding. In Indonesia, the government awarded the partner organisation a prize for innovation for the development of floating rice beds. These enable rice to be also grown in flooded areas. In Bangladesh, for example, the sea-water desalination plant in Shyamnagar is proving a success. Local people report not only that their lives have improved, but also that migration has stopped. The woman leading the project in Guatemala received an invitation from neighbouring El Salvador to present the risk analysis method that has become well-known beyond national borders. In addition to disaster risk reduction and climate change adaptation, all four lighthouse partners are working with undiminished enthusiasm to increase their political influence and support the expansion of renewable energies, with the aim of reducing greenhouse gas emissions in the region.

“It’s not as if we have a choice”

Bread for the World supports partner organisations not only in concrete project work in the struggle against climate change, but also attempts to give them more of a voice in international climate negotiations, so that the perspective of the poorest of the poor and those particularly affected by climate change can be incorporated into the negotiations.

An interview with climate expert Maria Theresa Nera-Lauron

According to the Global Climate Risk Index, the Philippines are one of the most vulnerable countries in the world and one of those most affected by climate change. How has climate change noticeably affected your country?

The Philippines, especially in the past decade, have experienced extreme weather events nearly every year – droughts, flooding, storm surges and super typhoons. The increasing frequency and severity of these events, mean that millions of people, especially the most vulnerable, are increasingly threatened by poverty, lose their homes, their livelihoods and infrastructure. The impacts of climate change have greatly intensified the suffering of the Filipino people, who have no access to basic social services and who suffer as a consequence of government corruption and corporate exploitation.

Is there a climate-related experience that has left a particular impression on you?

The destruction caused by super typhoon Haiyan (Yolanda) is still strongly felt in the country, even though it happened nearly two years ago. It highlighted the vulnerability of the country and the people, especially those from poor communities whose livelihoods depend on natural resources. It is appalling that our government is incapable of responding efficiently and competently to typhoons, through disaster risk reduction and management: millions of people in the Visayas provinces and the adjoining provinces of Bicol, Mindoro und Palawan are still desperately waiting for support and reconstruction – two years later!

The typhoons, which are increasing in ferocity, also leave psychological scars: we are living through a period of collective trauma. Every time the skies turn dark, we start worrying about how much rain and floods there will be, how much damage they will cause and how many lives will be lost.

Are the people in your country prepared to face up to climate change and its impacts?

Day labourers, smallholders and fishermen, women and children, who make up 90 percent of the population, are the most vulnerable to the impacts of climate change. Climate change exacerbates the poverty that most Filipinos are already experiencing. It is a day-to-day struggle just to survive – many of us have to live a hand-to-mouth existence. Extreme weather events resulting from climate change are just one more burden for us. No, we are not prepared for climate change. The government provides too little information and their measures do not do enough for the people, especially for those living in coastal regions. Above all, though, there is a lack of desperately needed community-based climate adaptation initiatives.

What, in your opinion, is more important now: reducing emissions or adapting to a changing climate?

It is not as if we have a choice. Climate change makes both reductions in emissions and climate change adaptation essential. Everyone has a responsibility for the emissions he or she produces. But I believe that developing countries such as the Philippines must, in particular, tackle these challenges – and increase relief, rehabilitation and reconstruction.

Maria Theresa Nera-Lauron

Climate expert with the Philippine organisation IBON She has been a participant in UN climate negotiations for many years.

“I’d be glad to invite anyone, who still thinks that climate change is a fictional future scenario, to Manila for the next typhoon season”



Is that what climate justice means to you, and what does it imply for the international climate negotiations?

Climate justice means going to the roots of climate change and addressing these decisively. While it is true that climate change is a global problem and that we, as an international community are all called upon to act on climate change, we should not lose sight of the fact that some – for historical reasons – are more responsible than others, and are, therefore, in a better position to provide support. The biggest emitters should have to pay most of the costs of their unsustainable production and consumption patterns. Climate justice means creating a new, alternative system that veers away from the profit-oriented mode of production and promotes a more sustainable path.

What do you expect from the new climate agreement negotiated in December in Paris?

For the new agreement to make a meaningful difference to the lives of the people and our planet, it has to ensure, above all, that the planet does not warm up any more. There is so much scientific evidence that proves that the world is headed for up to four degrees Celsius warming if current production, distribution and consumption patterns continue.

An effective climate agreement must address the necessity of climate change adaptation. Climate change is already here, and while it affects everyone – people from the Global South have less chance of protecting themselves against the impacts of more severe storms, prolonged drought, earthquakes and other weather anomalies. While one can never really “adapt” to climate change, concrete measures and assistance give us at least a fighting chance of survival. Concrete mechanisms are also required to address the long-term effects of climate change especially on poor communities of the South.

Such as the Loss and Damage Mechanism and the Green Climate Fund. This is something we’ve said already in Doha, Warsaw and Lima: while we appreciate the outpouring of sympathy every time a typhoon hits the Philippines, sympathy alone is no longer enough. We need genuine international solidarity. This begins with the recognition of the North’s historical responsibility for climate change, as well as support for the poorest and most vulnerable population groups to tackle climate-related loss and damage. ●

Outwitting drought and frost

Ethiopia For farmers in the Ethiopian highlands, climate change is increasingly turning the rainy seasons into a matter of luck. Sometimes there is no rain at all, sometimes it comes later than expected or stops far too early. Or, alternatively, a sharp frost destroys an entire harvest. For the local population, climate change adaptation is a matter of survival. The Mekane Yesus Church helps farmers and their families in the Legambo District to safeguard their livelihoods.

O

nly her head is still visible. Evidence of how far into the well Seye Ahmed has had to climb to fill her watering can. Climate change is certainly making its presence felt in the Ethiopian highlands. Although it is well into the rainy season, the level of water in the groundwater-fed well is low. Just enough to water the vegetable garden created a year ago by Seye and her husband She Ali Abebe. Cabbage, spinach, onions and carrots grow in the neat flower beds behind the wooden fence. The well was dug and shored up by her husband with support from the local partners, who also provided the vegetable seeds. “What we as a family do not eat ourselves, we sell at the market,” says Seye. – A vital source of income for the family of five.

More than
60
percent

of the population in the district experience **food shortages** for four to six months each year.

Vicious circle of drought and poverty

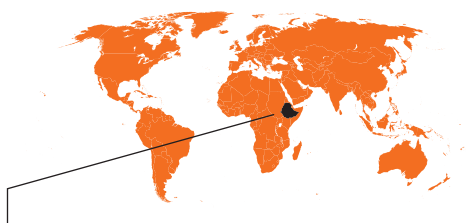
“The people here in the highlands are entirely dependent on their harvests and their livestock,” explains Endeshaw Kassa, programme officer from the Mekane Yesus Church. “If there is no rain, they have nothing to harvest or are forced to sell off livestock to survive.” Most farmers only have small plots of land that are often degraded and scattered across the hillsides, up to 3,000 metres above sea level, where not much grows. Few of them have an ox or a donkey to work in their fields. For the majority, the harvest provides just enough to feed the family for a few months. Nearly two-thirds of the population in the region experience food shortages for four to six months a year. “We used to have two rainy seasons per year,” Kassa says. “The small rainy season from February to June and the big rainy season from July to the end of September.” But for several years now, the rainfall has become increasingly unpredictable and the periods of drought longer. The increase in average temperatures is also causing more and more plant pests. Frost is another threat. As early as October, temperatures can drop below freezing point and destroy crops. As a result, many families are unable to adequately feed their children or livestock. In order to see them through, they may have to sell some livestock or lease their farmland to enable them to buy food or new seeds. For many, the first step in the vicious circle of debt and poverty.



The shallow well makes it possible: in their garden, Seye Ahmed and her husband can now grow vegetables - for themselves and for sale.

Therefore, one of the lighthouse project's major concerns is to diversify production and adapt to changing climate conditions and to create alternative sources of income. The shallow wells and vegetable growing are just two of many different approaches. "You cannot tackle climate change with one single form of support," Endeshaw Kassa explains. "We, therefore, offer the most vulnerable families a range of activities." These include growing an old local wheat variety, which other varieties had supplanted over the years. This local variety can not only survive frost and drought, but also produces high yields. Seed distribution is carried out on a loan basis. After harvesting, seeds are returned by the recipients, so that other families can then benefit. One of them is the 18 year old Seid Abebe. Like many young people, he has no land of his own, but along with his brother cultivates their ageing father's field. Of the 50 kilos of wheat they sowed, they expect a yield of around 800 kilos. Even after paying back the seed they borrowed, they still have a handsome surplus which they can sell and enough left over for the next season. >

In brief



Project region Communities of Chulke, Dereba, Chinchu and Dellel in Legambo District

Started in 2011

Partner Ethiopian Evangelical Church Mekane Yesus (EECMY)

Focus / Goals Drought and frost make it difficult to produce enough food for the local people, who live mainly from crop production and livestock farming. Climate change also has a negative impact on the distribution and intensity of rainfall. Through a wide range of activities, the project helps to make the people in four communities in Legambo District more resilient to climate change impacts. These include climate change adaptation measures in agriculture, access to alternative sources of income, improving watershed management and the rehabilitation of degraded land as well as initiatives to reduce emissions.



Fighting erosion together. In a few years the bare slopes will turn again into a blooming landscape

1
percent
forest
cover



Less than 1 percent of land in the project region in Legambo District is covered by forest.

Focus on the most vulnerable

At the beginning of the project, staff from the Mekane Yesus Church interviewed more than 4,200 households in four communities in Legambo District. Of these, 905 were classified as particularly vulnerable. “The risk analysis enables us to specifically assist the families who are most vulnerable and have the least resources,” the programme co-ordinator explains. In a second phase, the team then analysed the resources and capacities at each family’s disposal – e.g. whether they have arable land or pasture for livestock, or how many family members are fit to work. Appropriate measures were then selected in consultation with the people affected and professional experts.

Some measures specifically target women, many of whom have to look after the children, household and fields single-handedly. In more than 60 local self-help groups, up to 20 women come together every week to jointly develop solutions for the day-to-day challenges they face. As well as discussing issues such as

health, family planning and climate change, the groups function primarily as savings associations. All of them have set up joint savings accounts, into which the members regularly deposit small amounts. When required, members can borrow money, for example to buy livestock or seeds or to see them through emergencies. But they also save for joint purchases such as an ox for ploughing.

One of the group’s main accomplishments is the increased use of energy-saving ovens. In workshops, ten women learn how to make these ovens from clay, straw and sand and, subsequently, pass on this knowledge to the rest of the group. “The oven produces much less smoke,” says Lubaba Ebre from Chulke, proudly showing off her own home-made oven. A pipe channels the smoke outside. The 40-year-old bakes 30-40 pita-breads every day for her family. But the ovens do not only help protect health. They also only require about half the amount of wood or cow dung as fuel. With the rest of the cow dung, families can now fertilise their soil. Some women with school-age children

have also received solar panels, which they use to charge lamps and mobile phones. The light means that children can do their homework in the evening. "About six hours of sunshine a day is enough to charge the lamp," Lubaba says. They used to have to buy kerosene if they wanted light. Thanks to solar power she now saves about 20 birr per week, approximately one euro.

The whole village joins in

Alongside drought and torrential rain, the main causes of the ever-increasing degradation and erosion of land in the Ethiopian highlands are over-cultivation and deforestation. "The hillside here was completely dead," says Mussa Yimer from Chulke, pointing at the ground now covered by a soft green carpet of grass and colourful flowers, with a slope of several hundred metres down into the valley. "Nothing grew here any longer," Mussa says. For years, the local people had used the land for grazing and cut down trees to use as firewood and for building. Every time it rained, further layers of earth were washed away until only bare rock remained. The precious rainwater swept unconstrained and unused down into the valley.

Then, a year ago, the local people in Chulke, with hard, sweaty work, started to create terraces and dry-stone walls to protect the ground from further degradation. The soil was piled up behind the low walls, and Lucerne seedlings planted. The trees not only store nitrogen but also provide nutrients for the soil. Their leaves, like the newly planted Festuca grass, also provide valuable fodder. More than 95 percent of the seedlings have survived and prospered, Mussa reports proudly. When it rains, the trenches behind the walls collect the water, allowing it to seep slowly into the ground. All villagers have also pledged to keep their livestock away from the rehabilitation zone. In return, once the vegetation has grown again sufficiently, they are permitted to cut twigs and grass to feed their livestock. In a few years, those actively involved hope that the brown slope will be green again. "The vegetation has recovered noticeably even within the first year," says programme co-ordinator Kassa. The trained forester is now even seeking government support for the approach. "Representatives from the Ministry of Agriculture have visited the rehabilitation areas to see what they can learn," Kassa adds. - Entirely in keeping with the Lighthouse idea. ●

Ansha Seid (10 years old)
School girl, living in Chulke



"Our house has two floors. Downstairs is the kitchen and the sheep pen. Upstairs is where my parents, my three brothers and I sleep. Mama made the stove using clay. She learned that in her women's group. Since then, I haven't had to collect as much wood and cow dung for the fire. After the school holidays I'll be starting fourth grade. In grade three I was the best in a class of 48 children! When I leave school, I want to be a teacher. Since we've had a solar lamp at home, I've been able to do my homework, even when it's dark. You just put the solar module in the sunshine during the day, and this provides enough light for the whole night."

Mohammed Assen (40 years old)
Smallholder, living in Dereba



"A few years ago, I'd nearly given up hope. We'd lost everything in the drought. When my wife and I woke up every morning, our first thought was, 'What can we give the children to eat today?' Now, my first thought is, 'What shall I do first? Should I water the vegetables or feed the animals?' The Mekane Yesus Church helped us to create the vegetable garden and the shallow well. They gave us seeds and saplings and showed us how to make compost. My wife found work in the tree nursery. And I was able to do a course in masonry. Not so long ago, we nearly starved to death. But now we have a future again!"

Floating rice fields and lettuces in oil canisters

Indonesia Either it is not raining at all or it is raining too much – for rice farmers on Java, seasonal changes are becoming increasingly unpredictable. Many simply do not know how to adapt to these changing climatic conditions. Along with the rain-fall and flooding, the number of pests is also increasing. Consequently, more and more farmers are migrating to the cities to work as day-labourers. The ones that carry on often have no choice but to buy expensive seeds and pesticides from large concerns and often fall into the debt trap.

T

he first thing Ciurpi does every morning is go out to her plants, although it is still dark when she gets up at 4 o'clock in the morning. "Seeing so much green in my garden and watching the plants thrive is something that really motivates me to get up in the morning," she declares, examining the crops in her small front yard for caterpillars and garden pests. On various wooden frames stacked on top of one another, she is growing dozens of plants in used coffee bags, oil canisters and linen sacks. In the past, only flowers grew here. But because the rainy and dry seasons, as a result of global warming, have become increasingly unpredictable in her village of Ciganjeng, the 1,500 peasant families need another source of income alongside their

1
China

2
India

3
USA

4
Indonesia

Indonesia has the fourth largest population in the world

rice fields. With the support of the lighthouse project's Indonesian partner, IPPHTI, they have been learning since 2012, how organic vegetables can be grown simply in a confined space. "We no longer have to buy lettuces, cabbages and tomatoes," Ciurpi says.

She picks two tomatoes and chillies she wants to use for breakfast today. She sells whatever she and her family cannot consume themselves: depending on what season it is, she can make about 5,000 Indonesian rupiah (ca. 50 cents) per kilo of cauliflower or cabbage and up to one euro for each lettuce sold. She can harvest every few weeks. In Ciganjeng, it is usually the women who tend the gardens. They are proud to make a vital contribution to the family income in addition to helping to plant and harvest the rice. Customers even now come from the city, a good half hour away. From this income, the villagers can buy whatever they do not have, e.g. chicken, fish or salt. "And if anything is still left over, sometimes cosmetics or new clothes," Ciurpi says. "We are now doing what our grandparents used to do: growing what we can eat ourselves. Somehow over the years, we



For the last three years, Ciurpi has grown vegetables in front of her house. With success, earning up to 20 euros per month.

stopped doing this because people preferred to grow flowers,” explains Tahmo Cahyono, head of the local farmers’ organisation.

In a climate field school run by IPPHTI, Ciurpi, along with 25 other women learned how to make small pouches from banana leaves, in which they can germinate seeds before planting them in soil. And they also learn how to combat pests naturally instead of using chemicals: now, if she finds any kind of pest in her lettuce, she treats them with a compound of garlic, basil and wild papaya leaves. All very ecological. “Up to now, organic farming has not been particularly widespread in Indonesia,” Tahmo Cahyono says. “But people here are slowly realising why it’s so important: toxins from the chemical fertilisers pollute the soil, the air and the water. These toxins then find their way into our food chain - and that is frightening!” The first participants’ house gardens, filled with vegetables, now have many imitators. Throughout the village, other families have copied the methods and, with advice from the climate field school students, are now setting up their own vegetable gardens.

Learning (to cope) with climate change

The people of Ciganjeng could actually harvest up to three times a year - rice twice, and vegetables once. However, the unpredictable weather makes this rarely possible. “Although we are kind of accustomed to it, it hurts every time to lose an entire harvest, as we did last year, because the rain comes far too early,” Ciurpi says. With her husband, Darwin, and her mother, she can earn up to 15 million Indonesian rupiah (about 970 euros) per year with their rice. Half of the harvest goes to the owners of the fields they have to rent. They need eleven million rupiah alone for food in addition to what they grow. After this, not much is left over. “What’s so remarkable about our village,” explains Tahmo Cahyono, who is also village chief, “is that during the rainy season, the fields are completely flooded. In the dry season, though, they are unbelievably dry.” It has been like this for over 50 years but, in recent years, it has become more and more difficult to predict the rainy and dry seasons. “In the past, for example, all months ending >

Flooding and drought

The IPCC predicts that global warming of two degrees Celsius will lead to decreasing rainfall in southern Indonesia and increasing rainfall in the north, as well as extreme weather events and devastating climate anomalies such as droughts.



At the age of 70, Darwin is too old to work on building sites if the harvest fails. Instead, he seeks alternatives and helps to construct floating rice fields.

Datem (44 years old),
Farmer



“My husband used to be a fisherman, but the river became so silted up and the water so salty that there was hardly any fish left. We are now farmers. Since the beginning of the year, someone from IPPHTI comes to us every week and, in the climate field school, we learn, for example, how to grow vegetables on a small bit of land beside our house. We recently had our first harvest in the community garden! I can hardly wait, now, to start growing vegetables in our own little garden.”

in B-E-R - October, November, December - were months of rainfall. However, last year at that time we didn't have a drop of rain,” the village chief says. IPPHTI advises farmers on how they can use the System of Rice Intensification (SRI) to increase yields in their rice and stabilise them in the face of extreme weather: fewer rice plants in each hole in the ground saves seeds; early transplanting from the seed bed increases the number of rice stalks per plant; a greater distance between planting holes acts as protection against greedy rats and improves the underground root network. In the climate field schools, IPPHTI recommends ecological methods: the seeds are GM-free, while families can make their own fertilisers and natural insecticides from whatever they find in their fields and gardens. These farming methods have two advantages: the farmers save money since they do not have to buy seeds, fertilisers or pesticides from large concerns. At the same time, their income increases - instead of 15 rice stalks from several seeds, 37 stalks with good quality rice can grow from one seed, selected after a shorter germination period. “The farmers can produce between ten and eleven tonnes per hectare in the long-term, instead of an average of six tonnes with conventional farming,” Tahmo

says. Initially, many people in the village were sceptical, but they have been won over by the subsequent successes. About 15 percent of families in Ciganjeng have already switched entirely to organic farming, while a further 30 percent are using a combination of methods.

Rice: the new form of wet cultivation

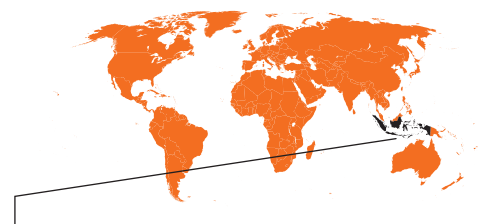
Especially, when using conventional farming methods, families often have to borrow large amounts to buy new seeds and pesticides. Interest rates on loans are about 20 percent. To pay off debts, the men go to the city to work on building sites. “I am far too old for that, though,” says Darwin, Cieurpi's 70 year old husband. In an attempt to reduce harvest failures, the IPPHTI co-ordinators came up with the idea of growing rice on bamboo rafts floating on the water. They experimented for several months in the tiny pool behind IPPHTI's office building.

Cieurpi's husband Darwin and other farmers from Ciganjeng built 120 rafts during the last rainy season. The 2 x 5 metre rafts are made within half an hour, usually from bamboo trunks held together with netting. “Initially, we

were ridiculed for thinking this up”, Feri Rianto says. “But by the end of the season, the results we achieved were persuasive.” Building the rice rafts, however, is still very expensive: 3,80 euros – double the amount a family of five in the village needs each day for food. “But, over a three year period, the rafts save us a lot of money! We don’t have to do much weeding and the people don’t need any state food aid as they can grow enough rice”, says Kustiwa Adinata, the IPPHTI project manager.

If a raft can be stored in the water, it can last up to five years, since bamboo splits more easily when it is dry. Because of the high cost, the people of Ciganjeng have so far needed IPPHTI support to build the floating rice fields. They store the rice they harvest after 90 days in the communal store next door to Cuirpi’s house. This is primarily kept for emergency situations. “It is very important for us to improve our yields. Not just for ourselves, but, above all, for future generations. We don’t want them to inherit air mata (tears), but mata air (spring water),” says Tahmo Cahyono. ◉

In brief



Project region West-Java

Started in 2009

Partner IPPHTI - Ikatan Petani Pangendalian Hama Terpadu Indonesia (and GT - Gereja Toraja - not shown here)

Focus / Goals On the one hand, implementing concrete disaster risk reduction measures in co-operation with the people affected (erosion protection, drainage rehabilitation etc.), and on the other, establishing concrete steps for long-term adaptation to changing production patterns (adapting to ecological farming, protection of plant varieties and species, sustainable water shed management, reforestation etc.).

The lighthouse project in West-Java has been running since 2009. IPPHTI project manager Kustiwa Adinata has been involved from the beginning.

Interview

How do you choose who will participate in the project?

We only select smallholders with less than one hectare of land to grow rice. They must also work on the land themselves and are not allowed to lease it out to anyone else. Of course, the village communities must also show an interest in participating. Through risk analysis, we can accurately establish which households are most vulnerable to climate change, in other words, those with lots of children and -elderly, who would need to be helped in the event of a disaster.

80 percent of participants are rice farmers, 20 percent grow vegetables including manioc. We deliberately target women, since they suffer particularly as a result of climate change: in times of drought, they often have to walk several kilometres to the nearest water point. The women usually have the responsibility of dealing with the family’s money. When failed harvests mean they have less, they have to budget accordingly! Borrowing money is also their responsibility.

How much are smallholders aware of the connection between failed harvests and the impacts of global warming?

Obviously, the people here have already heard the term climate change. But many of them are unaware of the fact that it has an impact on weather conditions and, thus, on their lives. Many think that disasters such as flooding are simply divine punishment for something they’ve done wrong. In our climate field schools, we attempt to show them how things are inter-related. For example, why climate is changed by greenhouse gas emissions. Yet, in terms of disaster risk reduction and climate change adaptation, we still have a long way to go in Indonesia. Everyone has to be convinced that

Kustiwa Adinata knows, as a farmer himself, how dependent we are on nature. This gives him the motivation to do what he can, through his work, to raise international awareness for the problems of Indonesian farmers.

we can actually do something and not become resigned and believe there’s nothing they can do.

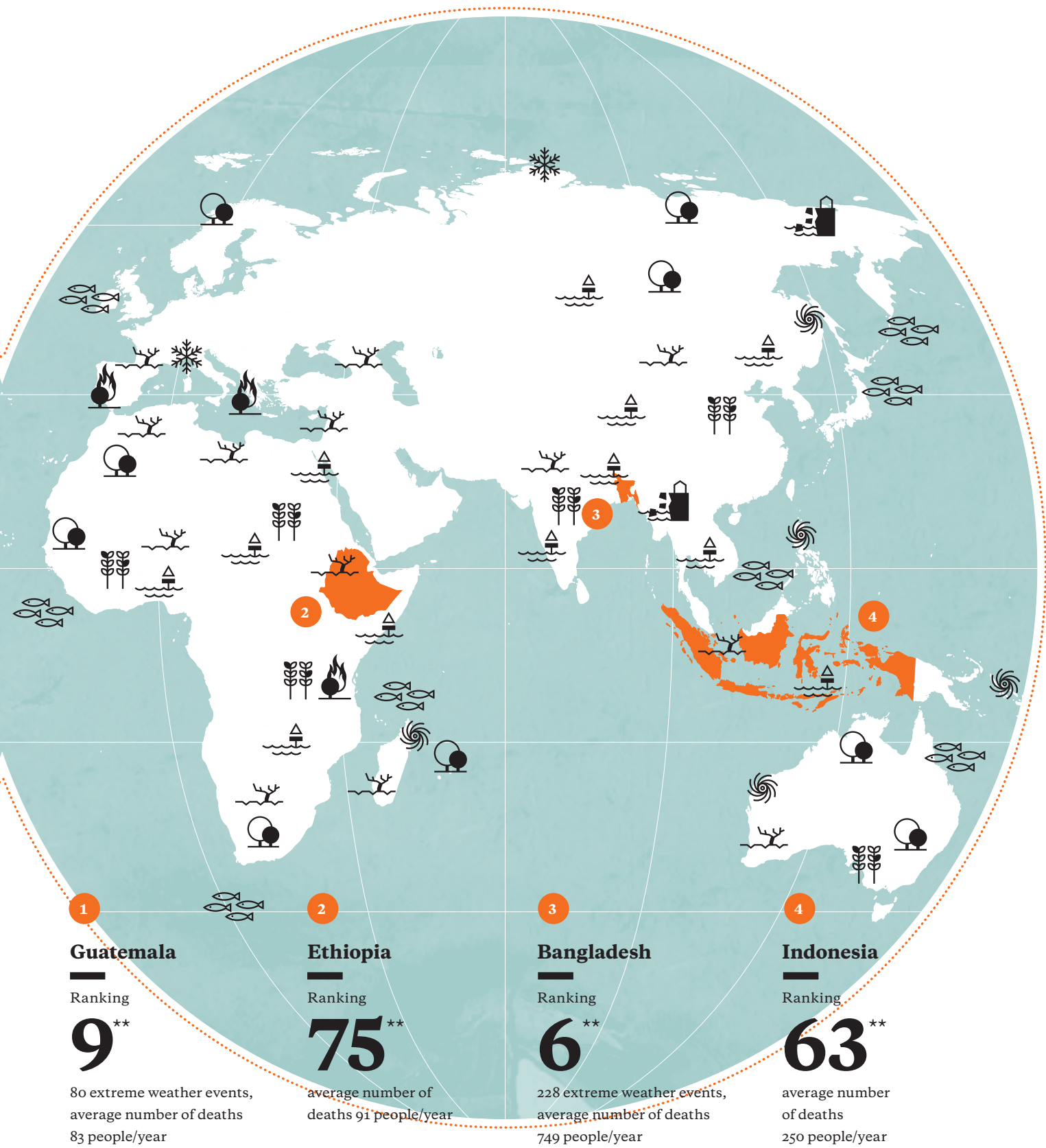
If you were to take stock of the lighthouse project after six years, would you say it is a success?

Success is, of course, relative. Global warming has not been stopped and hundreds of thousands of farmers are still losing their harvest and, thus, their livelihoods. But I have the feeling that the attitudes of people, who have attended the climate field schools, have definitely changed. For us, one of the key components is carrying out advocacy work with the government, in the attempt to work together to find solutions. Up to now, that has worked out well! We don’t just complain, but through our lighthouse projects we can provide, for example, floating rice fields for regions that experience frequent flooding. We are invited as representatives to various committees and receive regular visits from interested members of the government. Other farmers’ organisations also want us to show them our methods.



Climate change worldwide *





According to the Global Hunger Index 2015, the situation with regard to hunger in all four countries presented here is serious.

** in the Climate Risk Index for 1994 - 2013

* Simplified presentation. Source: IPCC 2007 and 2014, Climate Risk Index 2015, Le Monde diplomatique 2013, World Hunger Index 2015

Risk analysis: the first step towards climate change adaptation and disaster risk reduction

Disaster risk reduction and climate change adaptation are only likely to succeed if they are initiated in the right place. Therefore, before starting concrete projects there must be careful analysis of the hazards associated with climate change, and of who is likely to be hardest hit. A vital role, here, is played by risk analysis.

An interview with Peter Rottach, climate advisor



Why is risk analysis such an important component of the lighthouse projects?

On the one hand, because there simply aren't sufficient resources to help all the people affected by disasters or climate change. And on the other, because not everyone requires the same level of support. Some people have sufficient resources to protect themselves. To establish not only which people are most at risk in a specific region but also have the least means of protecting themselves and their families – and, therefore, require particular support, we carry out the risk analyses. The method itself has been in use for some time. But disaster risk reduction and, hence, risk analysis only really took off as a result of the climate change debate. However, we have further developed risk analysis, for example, by quantifying risk. At the end, this provides us with a list of households and their corresponding numerical risk scores. This enables our partners to accurately plan who is most in need of support.

Which methods are used to determine risk?

Risk analysis has two key components: the analysis of hazards and of vulnerability. In the analysis of hazards one looks initially at how often a particular hazard arises in a region. If, in a particular region, cyclones have been an annual occurrence, it is highly likely that a cyclone will strike again the following year. The other parameter is intensity. In the case of a cyclone, for example, this is the wind speed, and in the case of flooding it is the high-water level. In using risk analysis, therefore, you are practically looking to the past in order to predict the future.

And how is vulnerability determined?

To begin with, vulnerability analysis assesses the extent to which a family is exposed to these hazards. The level of exposure is measured by whether, and to what extent a family's assets, such as their land, house, barn or well are located in the danger zones.



Risk analysis can help communities make a better assessment of the threats climate change entails and show them how to protect themselves.

A further parameter is fragility. It refers to the probability that a family will suffer physical or mental damage as a result of a disaster. For example, a family with a large number of young children and/or old people, who need help when disaster strikes, is more fragile than a family consisting solely of healthy, mobile adults.

The final parameter is resilience. By resilience, we mean the families' capabilities and resources that enable them to get back on their feet after a disaster: whether they own land for crops or pasture, for instance, or whether other sources of income or support are available. In Guatemala, for example, more than 50 percent of all families have relatives in the USA, who can support them in an emergency.

What conclusions can be drawn from the various indicators?

At the end of the process, risk is calculated in accordance with a formula that is widely recognised internationally. >



Peter Rottach

Geographer and tropical agronomist, has worked for Bread for the World as officer for agriculture and food security for 20 years. For the last ten years, he has worked on a self-employed basis on disaster risk reduction and climate change adaptation projects for Diakonie Katastrophenhilfe and other aid agencies. He is also a lecturer at the Berlin Humboldt University.

The formula is: risk equals danger times vulnerability. Thanks to this quantitative method, our partners receive a numerical risk score at the end - for each household analysed in the region.

How does this exactly work in practice?

By using questionnaires, in which the individual indicators are listed. The interviewer only has to tick these. The risk score is then calculated by computer. Our partners in Ethiopia, for example, used this to assess nearly 5,000 households within a few weeks.

But is that not quite laborious?

Whether all the effort is worthwhile or not depends on what you want to achieve with your project. If I plan to provide support at overall community level - such as a cyclone shelter or an early warning system, from which everyone benefits - I don't need to carry out a household analysis. In this case, risk analysis at community level is sufficient to establish which communities in the region are most at risk.

But as soon as I want to offer individual support to families particularly vulnerable to disasters, which, in many cases, is sensible, I then require household-related surveys. It is often the poorest who are most at risk. In Bangladesh, for example, the poorest of the poor don't live behind the dike, but right at the water's edge. Their homes are inundated every time there is a flood. They are most in need of protection and support. The wealthier people can afford to live on the protected side of the dike. That is why our partners often provide a combination of community-based and individual support.

Were the partners already familiar with risk analysis as a tool?

For all of them, risk analysis was entirely new and, therefore, a challenge both conceptually and methodologically. But after initial difficulties, all our partners are now most impressed by the method and have, themselves, become experts, to whom others now turn. Other institutions, including the government, now invite them to give presentations on quantitative risk analysis. Our partner in Guatemala was so convinced by the method that they translated it into the local language.

Can risk analysis also measure risks related to climate change?

In many regions, climate change makes a linear extrapolation of past disasters impossible. A reliable forecast as to what extent natural disasters will occur in a given location is currently unrealistic. Partly because it is impossible to accurately predict the scale of climate change, since it also depends on future policy decisions. But partly because the impact of increased greenhouse gas emissions can vary from place to place. This makes risk analysis complicated and, in most cases, a matter for highly skilled experts.

“It is often the poorest who are most at risk. [...] They are most in need of protection and support.”

Thus, in Indonesia, we co-operate with a university, which provides risk-mapping on the coast with respect to the rise in sea level. This map can show how the coastline will change if the sea level rises by 30 centimetres or more over the next 50 years. It can also predict what this means for the salinization of groundwater or how much land would be submerged. But predicting other hazards such as cyclones is more complicated.

What concrete measures emerge from the risk analysis?

At the end of the analysis, you have a list of all families and their calculated risk scores, with a map showing each household and its corresponding colour-coded risk score. This data is then used to identify the most vulnerable families with the highest risk scores. We attempt to provide tailor-made risk reduction programmes according to their needs. For example, helping a 15-year-old girl living in a high risk area, who has to look after her younger siblings following the death of their parents.



Risk analysis identifies households that are particularly vulnerable to weather extremes caused by climate change. They are given better protection and support.

The concrete measures are normally developed in co-operation with the people affected. This includes finding out about traditional local coping strategies to deal with disasters such as droughts or floods. For example, this often means selling livestock. If their house is destroyed, a family will sell a cow to pay for its rebuilding. However, the most vulnerable and susceptible families usually do not have any livestock. But municipal grazing land is often available that is not privately owned. In such a case, the families concerned can be given goats or sheep, for example, to build up their resilience.

In other words, risk analysis is primarily a project planning aid?

No, risk analysis is also an important monitoring tool to measure project success. The aim is to reduce risk. This is reflected in the term “disaster risk reduction”. Therefore, at the end of a project another risk analysis is carried out. If the project objective has been achieved, the risk I calculated at the beginning must, to some extent, be lower at the end. The impact can, therefore, also be exactly expressed in figures. ●

Hazard
 ×
Vulnerability
 =
Risk

Hazard A natural physical phenomenon which can lead to a loss of life or damage to objects, buildings and the environment.

Vulnerability People’s susceptibility and predisposition to be affected, suffer injury or incur damage as a result of natural phenomena as well as their ability to protect themselves against

and recover from the consequences without outside help.

Risk The probability of an encounter between a specific hazard and an element vulnerable to this is interpreted as the probability of occurrence of loss of life or damage as the result of an extreme natural phenomenon with a specific strength or intensity.

Guidelines Risk Analysis - a Basis for Disaster Risk management. GTZ. June 2004

Sweet, not salty - climate change resilient villages building a future

Bangladesh Climate change arrived in Bangladesh long ago: the dike in Posurbunia, as in so many other places in the last few years, had been destroyed some years previously, fields and houses were flooded, yet no-one from the government came to repair it. And so, the village took matters into its own hands with support from the lighthouse project partner, CCDB. Just as in Vamia, where, thanks to new filter technology, the people finally have clean drinking water again.

Only a few months ago, it took Jasomoti Biswas three hours a day to get a few litres of clear water. The 50 year old lives with her family in Vamia, a village in Sathkira District in southern Bangladesh. She had to walk three kilometres to the neighbouring village to collect clean water for drinking and cooking. The queues at the well are long. Jasomoti often had to wait an hour or two to fill her bucket with the help of

40
percent
less
productive land

According to World Bank estimates, productive land in the coastal regions of Bangladesh will decrease by 40 percent in the next ten years.



her daughter before carrying it all the way back. Vamia also used to have plenty of drinking water but now salinity levels are too high. A consequence of the sea-water's steady advance, which is a result of valuable farmland being flooded for shrimp farming, dams and dikes not being properly maintained and the increasing frequency of cyclones pushing salt-water onto the land. Moreover, dams in neighbouring India are reducing the flow in the upper and middle stretches of rivers, which means that more salt-water can force its way land inwards.

The salinization of water and the long distances to the wells have fatal consequences, particularly for women and children, who often have to fetch the water. "They try to use as little water as possible, so they don't have to go and fetch it so often. They, then, drink far too little or, instead, drink salty water and often end up with serious health problems", says Foezullah Talukder from the CCDB.

Strengthening the weak

A large proportion of the population in Bangladesh is particularly vulnerable to climate



Up to 5,000 litres per day is distributed every day by Hossain Mollah at the drinking water plant in Vamia.

change and its impacts: more than 50 million people live in poverty. The people in the north of the country are increasingly experiencing drought in the winter months. In contrast, the flat coastal regions in the south are exposed to cyclones, which, along with the flooding they produce, are a huge threat to human life. Three quarters of the population live in rural areas, agriculture being their main source of income. “The droughts and the heavy rainfall destroy our harvests. There is a lack of infrastructure, technology, money and know-how, which would make it possible to respond to the constant natural disasters and the creeping negative changes resulting from climate change”, says Talukder.

In collaboration with the affected population, the CCDB, the lighthouse project partner of Diakonie Katastrophenhilfe and Bread for the World, has, therefore, developed Community Climate Resilience Centres (CCRC) - individual programmes to increase the resilience of village communities. People from different professional and social backgrounds participate in these climate change resilient villages, discussing the challenges of climate change and developing practical solutions for long-term adaptation and

disaster risk reduction. By sharing experiences, the model villages could also send a signal to other villages and could even do so at national level through campaigning and lobbying.

A total of thirteen villages have already successfully implemented the approach: in the last eight months, Jasomoti’s walk to collect clean water has been much shorter. With help from the CCDB, the men and women of Vamia built a desalination plant, which treats water in a reverse osmosis process: using pressure to remove the salt from the water. This kind of water preparation is required when the salt levels of the water from the wells in Vamia are too high for it to be used by households, especially for cooking. The new desalination plant is a great relief for everyone. “My wife and I used to spend so much time just fetching water. Since I’m the only breadwinner, we were always losing income because I wasn’t able to work while I was doing this”, says Kanuram Mondol, a young father from the village. The fisherman can now concentrate fully on his job. More and more men are leaving home in the coastal regions to seek work. In rural areas, the women are left behind to look after their families single-handedly, while in the cities the slums expand.

“As a result of the joint [...] disaster risk reduction measures, many people here are now much more aware of climate change.”

Foezullah Talukder
from CCDB

>



Social mobility is also part of the project: instead of waiting for government help, some villagers dig ditches themselves or repair dikes to protect their land from flooding.

New opportunities instead of gloomy prospects

Polluted drinking water is one of the main causes of diarrhoea and the subsequent malnutrition. Each family is allowed to collect 30 litres of water per day from the drinking water point in Vamia. “The water is cleaner than from any other water sources in the area. My children and the others from our village can tell the difference. They are much less likely now to suffer from diarrhoea, cholera or dysentery”, Jasomoti Biswas explains.

The residents of Vamia have to pay 100 Taka (1.13 euros) a month to collect drinking water from the filter plant. Drinking water from wells in Bangladesh is usually free. But the filter is driven by power supplied by solar panels, since Vamia has no mains electricity. This costs money, as does the maintenance of the plant. This is the responsibility of 33 year old Mohabbat Hossain Mollah, chosen for this task by the village community. Mollah now maintains the plant, distributes water for six hours a day and deposits the money he receives for the water in the bank to cover future repairs. Every three months, a technician from the building company pays a visit and gives him maintenance ad-

vice. “I am so pleased to have been given this responsibility”, he says. The people in Vamia now call him the “water angel”.

Self-help instead of waiting for help!

In the village of Posurbunia in Bagerhat District, the smallholders, both men and women, have decided to meet the challenges of climate change head on: heavy rainfall, high tides and flooding have broken through the dike surrounding the village, depriving them of their livelihoods. More than 264,000 hectares of land in the coastal regions of Bangladesh are already salinized because the dikes have not been properly maintained. The farming families lose their harvests and possessions in the floods. CCDB had many discussions with the local government, trying to persuade them to do something about the situation of the people in Posurbunia - without success.

The villagers, therefore, with CCDB support, decided to raise money to buy the material required to repair the dike. Everyone contributed what he or she could: the 75 year old Md. Abdur Rahman, for example, raised 1,250



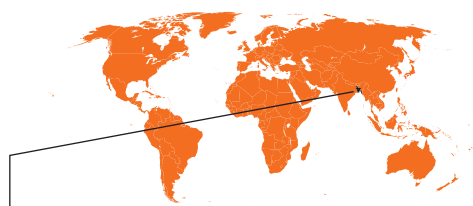
**1,000
children
are dying**

Worldwide, around 1,000 children die every day as a result of diarrhoea-related illnesses that could be prevented by clean drinking water and toilets.

Taka (BDT), about 14.18 euros, to pay for materials for the repairs. He has a small piece of land, 0.3 hectares in size, immediately next to the dike. He has not been able to use his land for the last three years. "It didn't use to be the case that flooding and heavy rain would produce so much water that it came into our village", Rahman says. In the floods during the monsoon, cows and turkeys were killed, houses destroyed, household objects were floating around and the children were unable to go to school. "We weren't able to cook and couldn't use our toilet - the water was everywhere!" says 70 year old Rowsonara Begum.

Together, the villagers repaired the dike. More than 200 families are now protected from flooding. "As a result of the joint repairs to the dike and other disaster risk reduction measures, many people here are now much more aware of climate change and its impacts", declares Foezullah Taludker. Government interest has also been stimulated: Posurbunia now receives frequent visitors and is presented as a model village. The participants are delighted to show what they have achieved. "That was the first time in our village that we villagers actually saved ourselves", Rahman says proudly. ●

In brief



Project region Districts of Shyamnagar, Partorgatha and Morelganj

Started in 2010

Partner Christian Commission for Development in Bangladesh (CCDB)

Focus / Goals All project regions are particularly badly affected by the impacts of climate change, although they differ from one another in terms of actual hazards. The measures include raising awareness, social mobilisation and advocacy, climate change adaptation in agricultural contexts, improving livelihoods, and clean water provision, measures for disaster risk reduction as well as emissions' reductions and energy saving.

Rowsonara Begum (70 years old)

housewife, lives in Posurbunia in Bagerhat District



"I live with my daughter and earn a little money by leasing out some land. As soon as I heard about the repair of the dike, I immediately wanted to help! At the end of the day, my family needs my contribution to the family income. And that means that the land has to be productive. Because I'm too old to actively participate, I donated 700 Taka (seven euros) for the purchase of building material. In the last three years, we've been cut off entirely during the monsoon when the water breaks through the dike. Everything is under water, and I can't go to the toilet or into the kitchen. The children also can't go to school. That's why it's so important that the dike is repaired!"

Awal Munshi smallholder,

lives in Posurbunia in Bagerhat District



"My main source of income is agriculture. I lease a small piece of communal farming land. I wasn't able to give any money, but I contributed by giving up three working days to help with the repairs. For me the dike is crucial for survival, since it protects our farmland. Because of the damage to the dike we had even less to eat and no clean water. It was clear to me that if we all lent a helping hand we could manage to do it and I could save my family. And we succeeded because everyone in the village joined in."

From triumph to nightmare - surviving climate change

Guatemala Full of hope - that is how the Maya felt returning to Guatemala from Mexico after 30 years of civil war. But, back home, a new enemy was waiting: climate change. Drought, hurricanes and flooding threaten the very existence of the smallholder families. Adapted farming methods and disaster risk reduction are intended to help the Maya secure their livelihoods

T

hey have simply taken over the name. El Triunfo - the triumph, was the name of the town in which they were settled 17 years ago. At the time, many of the Maya returning from Mexico did indeed feel triumphant. The peace agreement between the Guatemalan government and the rebels, after 30 years of civil war, appeared to promise a happy new beginning. However, the euphoria was quickly followed by the sobering truth. On the 1.4 hectares of land allocated to each family, they could not even grow enough to satisfy their own needs. Decades of cotton farming had robbed the soil of all its nutrients. But the settlers did not have enough money for fertiliser or for the machines that would enable them to farm the difficult ground. Climate change, with its rising temperatures and ever-lengthening dry periods, are another threat to smallholders' harvests. In total, ten communities are supported by the lighthouse project run by the partner organisation, ASECSA, in the struggle for survival in times of climate change.

Agrarian deserts and drought belts

Anyone approaching El Triunfo by car understands the meaning of the term "agrarian desert". One single type of plant as far as the eye can see: sugar-cane. Recently, this has been joined by palm oil trees. However, in contrast to how things were in the past, these plantations are primarily owned by foreign concerns. Their aim is not to supply the local people with sugar or palm oil, but to make a high profit as quickly as possible through exports. To achieve this, the owners use large quantities of fertiliser and pesticides - to the detriment of the people and the environment.

Even without this, life in El Triunfo is hard: bone-dry, dusty ground in the middle of town, dried out river-beds, grass and bushes without a hint of green. Above all, though, the fields used to grow maize and beans appear to have lost all ground moisture. It is hardly surprising that the people here look enviously at the neighbouring plantations, where huge irrigation stanchions move, almost supernaturally, over the rows of crops. And it is the settler families, who have to pick up the tab: the local wells provide so little water, that the valuable liquid only flows from the pipes for one hour

only
20
percent
of land

70 percent of agricultural land in Guatemala is in the hands of large-scale agrarian concerns.

The majority (96 percent) of Guatemalan smallholders, together, are left with only 20 percent of the land.



Every drop counts: partners show smallholders in San Domingo how to build an irrigation system.

per day. Yet, when asked about disasters, the people don't put drought in first place. Instead, they mention the severe hurricanes that sweep across the Atlantic at increasingly frequent intervals, and which, even here in their village more than 500 kilometres from the coast, wreak devastation. Or the flooding that regularly destroys their homes, livestock and crops. The fact that flooding occurs despite such arid conditions, is down to the clay-like ground. Even the least amount of precipitation turns it into a sea of mud, which means that the rainwater cannot permeate the surface.

Climate change exacerbates the situation. "The heat is becoming more and more unbearable every year", says village chief, Alejandro Atilio. "Just before the rainy season, in particular, when we're preparing the fields for sowing. If it does rain, then sometimes after that first rainfall we don't see another drop for weeks on end. The germinated seeds wither. It was so bad last year that we harvested hardly any maize at all."

Anyone, who can, emigrates to the USA or tries to find work in the plantations. For young people like Francisco Chavec Bernal, in particular, there are virtually no prospects. The 17 year old has to look after his little sister at home. His father is away looking for work and his mother works for a small company in town.

Francisco only went to school for three years. There was not enough money for any more. The family only have about 600 square metres, on which to grow maize for their own consumption. Extreme deprivation is evident throughout the whole house: there are holes in the walls and the roof is provisionally patched up with plastic sheets.

"We have to reach the people where they are"

Against such a background, implementing a project focusing on climate change adaptation is not easy. "We have to reach the people where they are: in their daily struggle to get enough to eat, to remain healthy and have future prospects. Everything we do, must, above all, reduce the immediate suffering and deprivation of the people", says Edy Rolando Siritit Quisquina, project manager with ASECSA. "Unfortunately, we do not have sufficient financial resources to provide support to all the villagers, who actually need it", he explains. "That's why we have to concentrate on the very worst cases". Families, who are particularly exposed to natural disaster and climate change and, who, simultaneously are among the poorest. >



Preparing for disaster: the risk map shows where hazards can be expected and which households are most in need of support.

For example, mothers in the project communities each received ten hens and a cockerel, to help them start up egg production on a modest level. The eggs not only provide the family with a vital source of protein, but also give them an additional income. In the event of a disaster, poultry and livestock are the best insurance, since they can be sold to see the family through difficult times. The vegetable garden programme to improve a diet that is primarily based on maize and beans deliberately targets women, since they are usually responsible for their family's diet.

Alongside individual support for high-risk households, ASECSA also supports communities. Along with nine other women and two men, Teresita Isabel Aguilar Miranda is active in the local disaster risk reduction committee, COLRED. In ASECSA-run courses, the 31 year old has learned what to do in response to disasters such as flooding, how to administer first aid or set up emergency shelters. A risk map, drawn up with the help of ASECSA, shows which areas are particularly at risk. "When it rains heavily", Teresita says, "many of the paths

"Unfortunately, we do not have sufficient financial resources to provide support to all the villagers, who actually need it."

Edy Rolando Siritit Quisquina,
Project manager with ASECSA

are impassable within a few hours". Committee members closely observe rainfall and water levels in the rivers and streams, so that they can warn and evacuate the people living in their communities in plenty of time.

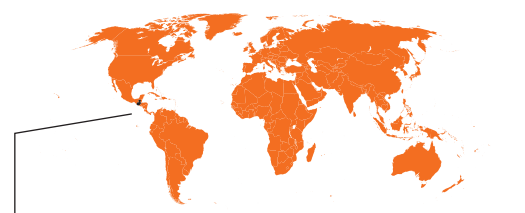
Models for climate change adapted agriculture

However, disaster risk reduction alone is not enough. "The people living in communities like El Triunfo are in most urgent need of a reorientation of their agricultural production", says Edy Rolando. "If, in the future, climate change leads to even more drought and flooding, there will be less maize and beans". Even now, many families can only serve up these staple foods twice per day instead of the usual three times. Without new varieties, economically-friendly and adapted farming methods, achieving food security will be extremely difficult in the future. ASECSA applies the approach of farmers' field schools. Local knowledge, innovative ideas and experiments on farmers' plots of land should be

expanded through sharing and exchange, field visits and training courses.

In the community of La Concepción, for example, Marcelina Perez Galate runs a small farm that could serve as a model for climate change-adapted smallholder agriculture. This farm, at an altitude of 1,400 metres, has no trace of monoculture. A wide variety of plants – vegetables, maize and beans as well as coffee plants and fruit trees – are mixed together in a series of tiers. Livestock farming is integrated into the system: grass and bushes are grown for fodder and the animals produce dung. The nutrient cycle is largely self-contained. The yields are correspondingly high and profitable. “When I started, there were hardly any trees here”, Marcelina explains. “The ground was easily washed away by water and the yields were not worth speaking about. But with a lot of hard work, I eventually managed to get the first maize plants to grow on the slope. And bit by bit, we were able to increase production.” She is glad to pass on her knowledge – in the struggle against the common enemy: climate change. ●

In brief



Project region Ten communities: Mercedes, La Concepción, Lo de Reyes, Zaragoza, Pachay las Lomas, Paya, Carreché Sechina, Santo Domingo, La Esmeralda and El Triunfo

Started in 2010

Partner Asociación de Servicios Comunitarios de Salud (ASECSA)

Focus / Goals The ten communities, as a result of socio-economic factors including a lack of infrastructure and low literacy rates together with difficult, geographically-related climate conditions, are exposed to many kinds of risk such as tropical storms, flooding and drought. The project supports vulnerable households to adapt to climate change and improves the capacities of local actors in risk management. Measures to reduce emissions and improve disaster risk reduction were already carried out during the initial phase of the project.

GIS - New technology makes the struggle against climate change easier

As a result of the risk analysis interviews, as, for example, in the case of ASECSA in Guatemala, risk maps are created showing every household interviewed and its climate risk. This can be done in a way that is almost playful, quick, precise and graphically clear with GIS (Geographic Information System). During the interviews with the individual households, the GPS co-ordinates are entered into the system. On the basis of these co-ordinates, the households can then be precisely shown on maps downloaded free from the internet, put into a certain category on the basis of their risk score and marked in a specific colour. The assessment of hazards from natural disasters is made easier by GIS, by using topographical maps and satellite pictures to collect and evaluate information on topography and vegetation, which makes it possible to forecast the intensity and course of extreme natural events.

Finally, the method can also show disaster risk reduction interventions cartographically. That is very helpful, for example to locate and show escape routes and places of refuge, or categorise households on the basis of the type and amount of relief items provided to them. GIS is, thereby, also an effective planning tool for the implementation of projects. “Risk analysis using GIS is a very useful method”, says Edy Rolando Siritit Quisquina, project manager with ASECSA. “Communities can use the results to plan in the middle and long-term for prevention, preparation, mitigation and adaptation measures to respond to the impacts of climate change. This procedure makes the project different and unique!”

Lessons learned

Looking back at the early years of the lighthouse projects



“Reconstructing the infrastructure as a way of adapting to climate change is something, in which the population at community level is glad to participate.”

Foez Taludker Programme co-ordinator,
CCDB, Bangladesh



“Programmes in the lighthouse projects that promote disaster risk reduction (for example building overflow channels), have a more sustainable impact among the population, if they are linked to economic incentives, for instance if the new channels can also help irrigate rice fields or be used as fish ponds.”

Kustiwa Adinata Project manager with
IPPHTI, Indonesia



“Linking humanitarian aid and development co-operation is frequently called for but still not commonly implemented in practice. The lighthouse projects are showing the way forward. Risk analysis as a tool for selecting population groups in particular need of support has proved successful, and is now used in many development programmes.”

Peter Rottach Climate advisor



“The lighthouse projects harmonise technical-scientific perspectives with local practices. This guarantees that subsequent activities are self-governed and sustainable and also benefit future generations.”

Hugo Icu National director,
ASECSA, Guatemala



“The risk analyses reveal that women, who are their families’ sole breadwinners, are often particularly vulnerable. The projects address this through appropriate measures and, hence, contribute to gender equality and the empowerment of women.”

Carsta Neuenroth Policy Advisor Gender,
Bread for the World



“We have brought about a lot of improvements in the lives of these particularly vulnerable families, who, at the beginning of the project, seemed entirely helpless. Our participatory approach has given them new courage. They are making the most of the support available and doing all they can to adapt to changing climate conditions.”

Endeshaw Kassa Programme officer,
EECMY, Ethiopia

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