Changing weather patterns in recent years are having a detrimental impact on food security; farmers are finding they can no longer plant or harvest their crops as they used to for centuries as rainfall is late or erratic.

Communities are vulnerable to unfamiliar hazards and cannot cope with even minor shocks – leading to a constant rise in the numbers of people needing humanitarian assistance. The average number of food emergencies in Africa per year has almost tripled since the mid-1980s, and in the last year alone 25 million people faced a food crisis.

Agricultural production will be severely impacted by climate change – the area suitable for agriculture, growing seasons and yield are all expected to decrease. This would further adversely affect food security and exacerbate malnutrition in some countries.

The yield from rain-fed agriculture could be reduced by up to 50% by 2020, according to scientists on the Intergovernmental Panel on Climate Change (IPCC). Many parts of Africa are already considered “water stressed” – something that will be exacerbated by climate change.

Any significant rise in temperature could also seriously affect cash crops such as tea or coffee. Arid and semi-arid areas all over Africa are becoming yet drier. On average the continent is 0.5 °C warmer than it was 100 years ago, in some parts even more.

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Acute Watery Diarrhoea cases were recorded for the first time in ten years. And there is clearly interaction between malnutrition, malaria and HIV/AIDS.

Rwanda

Despite a decade of rapid economic growth, poverty remains widespread in Rwanda. Known as the “land of a thousand hills”, Rwanda is a small landlocked country surrounded by Burundi, Tanzania, Uganda and the Democratic Republic of the Congo. But despite its size, it has very diverse ecosystems.

Rwanda forms part of the Great East African Plateau, which rises from the lowlands in the west that are characterized by swamps and lakes to the highlands of the east. This divides the country between the Nile basin and the Congo basin. The climate is moderate and tropical, with a short dry season from January to February and a long dry season from June to September.

Parts of Rwanda have been hit by persistent drought over the last few years, rainfall patterns have been erratic with the result that, again, farmers are confused as to when to plant and harvest. Musoni Didace, director of the country’s meteorological service says climate change is “clearly visible” from the rise in minimum temperatures in the last 30 years of up to two degrees.

Indeed 2005, was the hottest year for many years in Rwanda. Temperatures in the capital, Kigali, soared to 35 °C. Higher temperatures also mean the spread of diseases such as malaria, already the principal cause of morbidity and mortality in every province.

The interaction between diseases is also of concern: someone with malaria, for example, will be more prone to catching HIV, and vice versa. Malnutrition also means diseases spread more rapidly. It is a vicious circle. And diseases thought to have died out, like cholera, are reappearing. New cholera cases were recorded for the first time in Kigali in 2006 and in the north-east in 2007.

The agricultural sector is central to Rwandan environment. It dominates the economy in terms of contribution to the GDP and it also accounts for over 90% of employment. Agricultural exports represent over 70% of the total; coffee and tea are the two main export crops. Climate change could have serious consequences for agricultural production.

In 2006, there were a number of deaths as a result of heavy rain and floods, and crops and livestock were destroyed. Patricia Hakajabikira, the environment minister, said this affected the national budget as money intended for economic development was used for emergency measures such as buying food relief.

At the same time water levels have gone down and hydroelectric stations, particularly in Ntaruka and Mukungwa, have been affected. Electricity generation has declined and there has been an energy crisis in the last few years; to produce electricity the government has had to buy generators costing millions of dollars. This had an impact on the population – with the price of electricity tripling.

Migration

Bugusera, in southern Rwanda, is an area that has persistently been hit by drought and here around 40% of people lack secure sources of food. Many farmers in this area have suffered from bad harvests due to late or erratic rainfall.

Mary Jane Nzabamwita is a farmer in Gashora with five children to feed. Since 1998 rain has become erratic with the result that, again, farmers are confused as to when to plant and harvest. Musoni Didace, director of the country’s meteorological service says climate change is “clearly visible” from the rise in minimum temperatures in the last 30 years of up to two degrees.

According to Marie-Antoinette Uwimana, RRCS head of programmes: “The government has started talking about climate change this year, and as we are a member of the disaster management task force, we discussed this with them.” There is now a realisation that disaster response is no longer enough and that risk reduction is important and has to be scaled up.

Eric Njibwami, head of volunteers. “The eastern and southern regions suffer from lack of food because the impacts from climate change are there and have been problems in the last years,” according to Eric Njibwami, head of volunteers. “The eastern and southern regions suffer from lack of food because...”

“I feel like I am going backwards,” she says. “The children are not doing so well. When you see a child of ten, you think he is five.”

A Rwandan Red Cross Society (RRCS) volunteer in Bugusera explains that you can now see more erratic climate patterns and drought is making people migrate to other areas of Rwanda where they can work. People might also go to a nearby town, earn some cash there by petty trade and buy some food to sell in their own villages.

Many families are separated. Mimi and Josephine are looking after their children and their farms while their husbands have gone elsewhere to earn some cash. This year their maize crops have failed due to lack of rainfall and they are still hoping for rain for their bean harvest. If they fail or come late, they do not know how they are going to get their food.

Migration became such as serious problem that almost 80% of the people in the area left their farms to look for work in other regions between 2003–5. However, the local government has tried to stockpile maize, sorghum and beans and migration has now decreased, according to Viateur Ndaxisabuye, executive secretary of the Gashora regional government.

“Climate change is a big problem,” says Apolinaire Karamagga, RRCS secretary general. “We need to train volunteers with basic skills, like being able to advise farmers when to sow seeds, dig the swamp, and so on. We need to help them think, ‘What can I do according to my realities to cope?’”

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of the long season without rain." The result is that communities can no longer plan harvests or planting because of erratic rains.

The RRCS tries to address this by informing people when they are going to have a drought, getting weather information and warning people to keep a stock of food. But in the long term, says Eric Njibwami, people have to "diversify through business activities or generating other incomes".

A major problem is that farmers are very traditional and hesitant to change, says Karamaga. "We may need to change our crops or diets in the future, but people change only very slowly." He believes it's important to train volunteers to train farmers to move away from their traditional methods of producing crops, which may not be the most efficient in today's circumstances.

Clearly water management and environmental protection of land is going to be key. Due to population pressure much of Rwanda has been deforested – with resulting soil degradation and erosion which worsens the impact of drought. Almost 90% of the population use wood as cooking fuel. Mobilising the community to plant trees is, therefore, an important objective for the Rwanda Red Cross. The eventual aim is for every district to have a nursery with 10,000 seedlings.

Swamps

Rwanda not only has numerous hills but also numerous swamps at the bottom of the hills. In the past many of these were not cultivated because of the expense of drainage and managing the swamp. However, given the pressure on land and more erratic climactic conditions that affect crops traditionally grown on the hillsides, developing swamps would provide new arable space, for beans, rice or cassava.

Underground water also means that agricultural production is less dependent on rainfall and can survive periods of drought.

The RRCS has one such project which began several years ago – some 10 hectares of the Agatenga swamp are now successfully cultivated, providing beans, cassava and rice to nearby communities. This part of Rwanda has been hit by drought in the last five years and up to 30% of the people are food-insecure. Developing projects such as this is part of the RRCS strategy to promote the capacity of local communities to cope.

Emmanuel Munyentwari is one farmer who works there. He has his own plot of land on the hillsides but there he is more dependent on rain. "Last year rain was expected in September but it came only in November," he says, "so we couldn't plant until November and people had little to eat – there were food shortages." But the extra crops that he grows in the swamp project are useful. His own harvest is low and he is really not growing enough food to eat. His dream, he says, is that one day he will be able to afford school fees to send his wife back to school. "The Red Cross did a good job here," he adds, "and I hope it can expand."

Training volunteers and mobilising the community is key to dealing with climate-change impacts. Yvonne Kabagire is a communications officer at the RRCS and is also a radio presenter with her own 15-minute programme, Rwanda Red Cross Humanitarian Action. Every week she covers subjects such as HIV/AIDS, the environment, drought, floods and disasters, and commands an audience of no less than 70% of the entire population of Rwanda.

Kabagire sees radio as an important tool in disseminating information on climate change. "People need to know about it because our country is not an island," she explains. "They need to understand the phenomenon and how they can have a role in building coping strategies."