

Biovision

Newsletter March 2017

Protect and use

Retain biodiversity in the Kakamega Rainforest



A future for all, naturally

Dr Wilber Lwande

Project Manager, icipe, Nairobi



“This project not only helps protect biodiversity and the environment but also generates an income for local people; both are essential for sustainable development”.

Project “Protecting Biodiversity” (started 2004)

Raising awareness for a sustainable use of eco-systems to increase income.

- **Aims of current project phase:**
 - Support the development of small businesses processing medicinal and aromatic plants
 - Support the cultivation of medicinal and aromatic plants outside the forest reserve
 - Raise awareness, particularly amongst the young, of the need to retain forests and protect the environment

- **Project budget until the end of 2017:** CHF 200 000

- **Account for donations:** PC 87-193093-4

- **Sustainable Development Goals:** Biovision is involved in the process to change to more sustainable development as specified in the UN Agenda 2030. The project in Kakamega is making a tangible contribution to two of the 17 Sustainable Development Goals (SDGs):



Live and let live

Kakamega is a Biodiversity hotspot. It is also under enormous pressure and is the last remaining area of lowland rainforest in Kenya. Supported by Biovision, local people are working to counter the loss of trees. The project focusses on environmental education and the generation of income that does not damage the forest.

Theresa Ackermann and Peter Lüthi, Biovision

Kakamega Forest is a protected forest reserve covering an area of 23 000 hectares. The wealth of fauna is impressive and just in terms of bird life, there are more than 340 different species living in and beneath its multi-layered leaf canopy. The forest is also an important retreat for numerous reptiles, insects and medicinal plants. It was once much larger and since 1900 has shrunk to less than 10% of its original size because of timber production and land take for farming. If the remaining forest disappears, this will have a serious impact not only on nature but also food security, incomes and human health. Its loss would also trigger major changes in the local climate and water resources and would have serious repercussions, including for agriculture.

We protect what we love

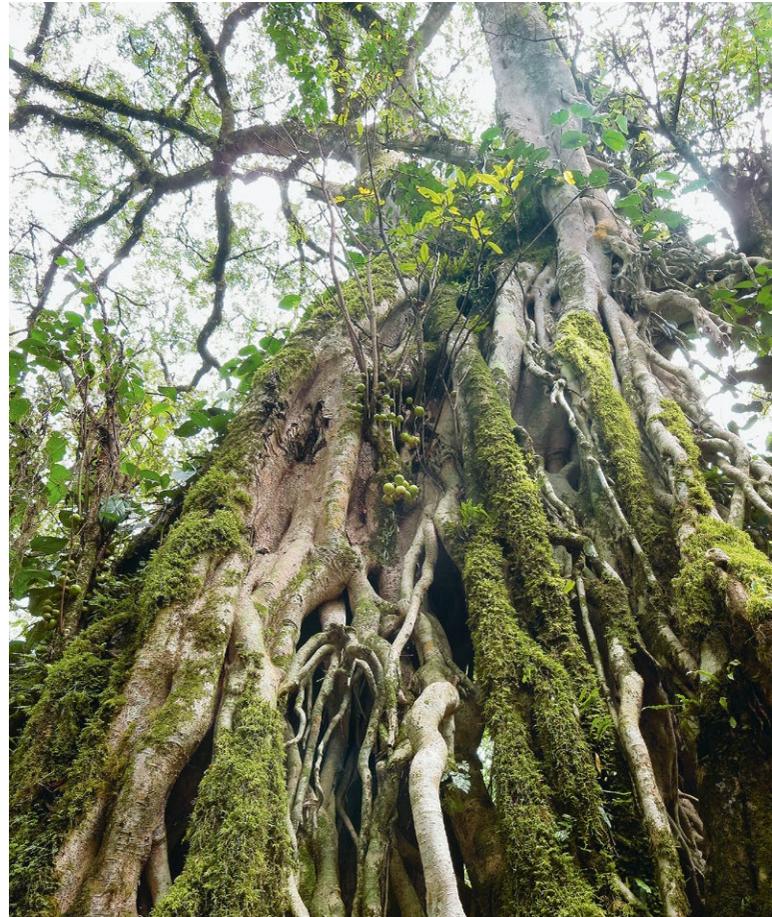
More and more people in Kakamega are now aware of its value. Many visit the forest when young or at school; they experience its magic and learn to love it. Some youngsters are now collecting water samples under the watchful eye of an experienced environmental teacher and testing the water for purity and quality. The 30-year old Cecilia Mourine Chibwayi teaches the children how

to identify the insect larvae in the water samples and determine the quality of the water based on the number and type of species. She teaches them the value of the forest and the role it plays in storing and filtering drinking water. “I love working with children,” says Mrs Chibwayi, as she keeps an eye on them as they identify the larvae in their test tubes under the shade of the trees. “They learn to observe nature and protect it”.

Earn an income without destroying the forest

Cecilia is a single mother; ten years ago she started growing the medicinal plant *Ocimum kilimandscharicum* (African blue basil) on a small plot of land outside the perimeter of the forest reserve. She now sells it to the Muliru Farmers Conservation Group (MFCG). “This allows me to pay for my 14-year old son’s schooling as well as look after my parents,” she explains. MFCG distils the herb and produces a balm that is marketed under the name “Naturub”. It has a similar effect to Tiger balm and is used to treat colds, respiratory problems and muscle pain. “Naturub” sells well in the Kenyan supermarkets and chemists. Thanks to an effective supply chain, including cultivation, processing and sales, some 467 farmers last year earned a good income without damaging the forest. With the support of icipe, the International Centre of Insect Physiology and Ecology in Nairobi and Biovision, farmers also grow and process the aromatic plant *Mondia whitei* in addition to *Ocimum*. Working with researchers from icipe, new products are being developed, such as a natural mosquito repellent and a preparation to protect honey bees against the *Varroa* mite.

More information and photos:
www.biovision.ch/kakamega-en



Cecilia Mourine Chibwayi, an environmental teacher raises awareness amongst local schoolchildren of the importance of biodiversity in the Kakamega Forest. She is also one of more than 467 farmers who make money from cultivating the medicinal plants without damaging the forest.

Diversity as strategy

Food production requires arable land; often this land is created by clearing rainforests that are rich in species. This need not be the case; sustainable methods of land cultivation do exist. Biovision is working with partners on their development and implementation. Agro-ecological methods maximise the productivity of existing farmland and so slow down the loss of forest cover. In addition, these methods specifically focus on agricultural diversity.

Biodiversity is more than just the number of species. It includes gene pools and extends right up to ecosystems. Crop and livestock diversity reduces the pressure on farmers from pests and diseases. In addition, a rich accompanying flora supports ecosystem services such as flower pollination or the presence of a wide range of beneficial insects. Diversity as a holistic strategy also encourages a healthy, balanced diet as for this you need a wide range of different foods.

Diversity in agriculture also means that systems are adapted to local conditions, making them more resistant to extreme weather conditions and environmental changes. The process of encouraging, maintaining and exploiting diversity rests with farmers – something that applies equally in East Africa and Switzerland. However, it is the responsibility of all of us to support farmers by ensuring that our consumption is sustainable and fair.



Loredana Sorg
Programme Officer at Biovision



Rainforests: Treasure trove of biodiversity

At one time, tropical rainforests covered a global area of 16 million sq. km. Now, primary forests account for only 7 million sq. km. The survival of the Earth's biodiversity depends upon them.

Claude Martin

Edward O. Wilson, probably the most important biodiversity scientist of our time once collected 43 different species of ants from a single tree in the Peruvian rainforest, almost as many as the total ant diversity of Great Britain. It was also he who expressed the “reasonable assumption” that the tropical rainforests were probably home to more than half of the world's species of plants and animals. However, it is now assumed that scientists have so far only discovered and described about one-fifth of all species (not including bacteria). Most of the species that are as yet unknown are tropical arthropods – that group of animals alone is reckoned to include three million species, including the beetles that are particularly numerous in tropical rainforests.

In contrast, one may think that it would be a fairly easy task to record the number of tree

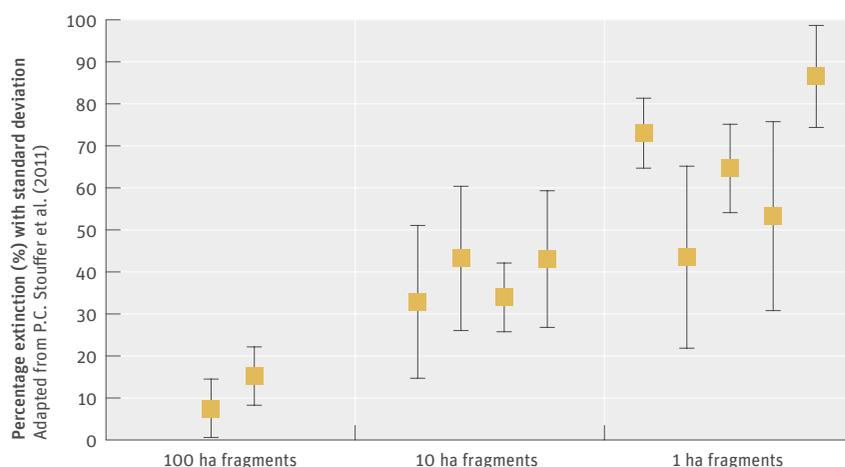
species in our rainforests. About four years ago, the results of a monumental study on tree diversity in the Amazon Basin and the Guiana Shield involving 122 researchers were published: They recorded the number of different tree species on 1170 sample plots of what is the world's largest area of rainforest and came to a surprising conclusion: With each additional plot of land, the number of different tree species continued to rise. Only by using computer simulations were they able to conclude that the region was probably home to 15 000–16 000 different species of trees.

Many tree species are very rare and site-specific

The most remarkable fact to come out of this enormous study was that about half of all trees belong to just 227 species. The most common species was the *Euterpe precatoria* palm and it is estimated that there are more than five billion of them. In sharp contrast, this huge area probably contained fewer than 1000 specimens of more than one-third of all species: In other words, 6000 tree species are extremely rare and are only found in quite specific locations.

The study also concluded that many animal species have a symbiotic relationship with specific tree species. Often, they share a common evolutionary history and live in mutual dependence – as we know this from

EXTINCTION OF BIRD SPECIES IN AMAZONIAN FOREST FRAGMENTS (PERIOD: 25 YEARS)



The diversity of bird species in two forest fragments each of 100 hectares, four fragments each of 10 hectares and five fragments each of one hectare was analysed over a period of 25 years.

The study showed that the probability of extinction increases if rainforest areas are fragmented into ever smaller pieces of forest. In fragments of just one hectare, more than 50% of all bird species disappeared during this period.

certain flowering plants, which have their own specialised pollinating insects. As a consequence, the patchwork distribution of rainforest trees is mirrored by an equally patchy distribution of rainforest animals.

On the one hand, we find a huge diversity of species in one small area of a rainforest – one single hectare in the Ecuadorian Yasuní Reserve harbours 644 different tree species, approximately the same number as in North America as a whole! Similarly, in certain African and South East Asian rainforests one can find up to 500 tree species in a single hectare. On the other hand, however, the assemblage of species in certain locations is unique – just 100 kilometres away but

still in the same rainforest region, the “potpourri” of species is likely to be quite different. Thus, if you were to map the presence of all species of monkey in the Congo or Amazonian Basin (Brazil alone has more than 100 different monkey species!), this would produce a patchwork quilt of partly overlapping distribution ranges, some small and some large and with differing communities of species in the various locations.

Stop the fragmentation of intact forests

It will be a major challenge to retain the enormous diversity of species and ecosystems present in tropical rainforests. If certain rainforest areas are destroyed, we cannot simply expect the affected species to occur

in another area as well, as this may be the case in temperate woodlands. Wherever possible, we also need to avoid the progressive fragmentation of intact rainforests – the smaller the fragment of remaining rainforest the higher the risk that rainforest species will become extinct (see diagram).

Roughly a quarter of the tropical rainforests that existed 150 years ago has been converted to agricultural land or sacrificed for urban development and infrastructure. At least a further quarter has been degraded to a greater or lesser extent and has lost a part of its biodiversity. Nevertheless, we still have an opportunity to preserve the remaining 7 million sq. km of primary forest – an area approximately the size of Australia. This must become a major focus of international efforts to protect biodiversity; if not we shall soon lose millions of animal and plant species.



Kapok tree (*Ceiba pentandra*), Congo Basin – one of the few species that is also present on other continents.
Epiphytes in the Gunung Halimun National Park, West Java (photo top left).



Dr. Claude Martin
Director General of WWF International
1993–2005 and author of “On the Edge:
The State and Fate of the World’s Tropical
Rainforests” (published by Greystone Books)

Partnership with SDC

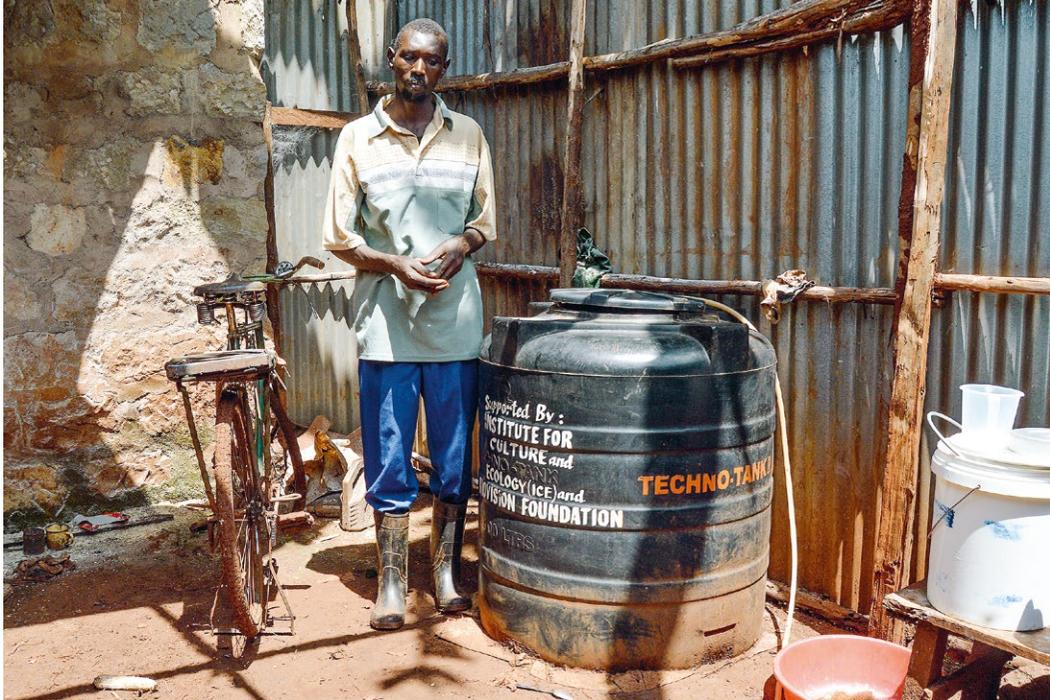
“No one country can solve current global problems alone. What is needed is a global partnership that creates ONE WORLD”; this was the sentiment expressed in support of SDG 17 (Partnerships) in the UN Agenda 2030. It applies equally to stakeholders in the individual countries that have signed up to the agreement.

To further that goal, the SDC, the Swiss Agency for Development and Cooperation is expressly encouraging cooperation with selected stakeholders involved in development and cooperation in Switzerland. It is not just about money but rather the cooperation is designed to develop expertise and exchange experience.

At the start of this year, Biovision entered into an institutional partnership with SDC. It is based on Biovision’s 4-year programme for which SDC will provide financial support. As part of its partnership programme, SDC is working with NGOs with a proven track record, specific expertise and a solid knowledge-base. The ratification of this partnership lends further credence to our longstanding approach to development and cooperation through which we have contributed to ecological development and the fight against hunger. The SDC funding will feed in full into the implementation of our sustainable projects and programmes and will strengthen the work of Biovision. | as



Biovision joint founder and CEO Andreas Schriber (l.) at the official signing of the partnership on 12 January 2017 in Berne with SDC Director Manuel Sager.



12 becomes 20

As part of the project “Reviving traditional knowledge”, Biovision is funding 12 water tanks for each of the farmer groups involved. This is not naïve generosity on our part but part of a calculated strategy. The sums work – for all participants.

*Loredana Sorg, Programme Officer
“Health of the Environment” at Biovision*

A full water canister weighs more than 20 kg. Traditionally, women and children in the Muranga District of Kenya had to fetch water several times a day so that they had enough at home and for use in the fields. That required much time and effort. For the Ngugi family from Gikindu, that is now a thing of the past. Their water comes from a 600 litre tank filled by connecting a pipe to the mains water supply twice a week. The scheme is part of a joint project between the Institute for Culture and Ecology (ICE), Biovision and local farmer groups. Group members used a democratic process to select who receives the tanks.

ICE promotes the cultivation of traditional cereal and vegetable varieties and combines this existing knowledge with modern methods. In addition to new techniques for ecological farming, it includes the use of the water tanks.

“For us, the main attraction of working with ICE and Biovision has been the sustainable increase in yields,” explains Mark Ngugi Ngigi, a member of the Gikindu Farmer Group. “The new tank contributes much to that aim”.

Mark’s group has now set up a savings scheme, which will allow each member to have a tank. Inspiration for the scheme came from a neighbouring group of farmers, who have already managed to fund a further eight water tanks from the community fund in addition to the 12 funded by the project.



Mark Ngugi Ngigi (top) and his family and animals (bottom) are benefiting from a new 600 litre water tank.

Biovision in Berne on 24 May

Biovision's Spring Event offers members and the public an opportunity to discover more about our projects at first hand.

The event is being held this year on 24 May 2017 from 19.30 – 20.45 hrs in the Fabrikhalle 12, Fabrikstrasse 12 in Berne.

Dr Claude Martin, former Director General of WWF International, Dr Barbara Frei Haller, a Biovision trustee and Loredana Sorg, a member of the Biovision team will talk about the importance of rainforests, the risks to them and how to protect them.

More information and registration:
www.biovision.ch/bern-en or **044/512 58**



Biovision events offer an opportunity to meet interesting people and obtain the latest information at first hand.

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In 2016, the project "Camels for drought areas" purchased 50 camels in calf; they were supplied to particularly disadvantaged people in the project area for breeding purposes.

How much does a camel cost?

"A herder family pays 720 Swiss Francs for a camel in calf; 35 Swiss Francs buys five starter packs for the control of fruit flies". Both are examples of donations suggested by Biovision but are they good value for money?

Every January, the Biovision Foundation sends members and donors written confirmation of their donations for tax purposes. In addition, they receive 5 Newsletters per year. This keeps them up-to-date with our project work and at the same time helps discharge Biovision's information remit as per its statutes. We attach a payment slip to ensure that Biovision obtains the funds it needs to finance its projects.

When we ask for donations, we suggest specific measures together with information on how much they cost. The suggested donations are derived from the latest project reports. If the income received exceeds what is needed for a particular project, we use our best judgement to decide where it should be spent on other Biovision work.

For example, in June 2015, we indicated that 35 Swiss Francs would pay for five starter

packs for the control of fruit flies; this suggestion was a firm cost. A starter pack costs 7 Swiss Francs. It contains five fruit-fly traps costing 5 Swiss Francs, the attractant to lure the male fruit flies costs 1.50 Swiss Francs and 0.50 Swiss Francs is for printing the instructions on how to use them.

In December 2015, we said that we needed 50 camels, each costing 720 Swiss Francs. This was our most expensive suggestion. We purchased the camels in 2016 for the project "Camels for drought areas" so that the participants could start breeding them. Several camels have since given birth and the new owners now have milk for their own consumption and to sell. This is improving their food security and income.

The price we actually paid for each camel was fortunately only 690 Swiss Francs per camel (including transport) and so slightly less than suggested. The funds saved were immediately used to train instructors in camel rearing and animal health. | pl



Story from the life of Josephine Ithiru, Chuka (Kenya)

Young people want quick, digital solutions

Peter Lüthi, Biovision Project Report

Did you know that in Kenya Toggenburgs are famous and extremely popular? We are not talking about champion wrestlers or ski jumpers but the variety with a beard, horns and four legs: Toggenburg goats are highly sought after by small-scale farmers in Kenya, who value their high milk yield. Josephine Ithiru, a 70-year old grandmother from Chuka is proud of her small herd. The nine goats live in a carefully constructed timber shed, which scores highly in terms of hygiene, animal health, manure and a clean environment for milking. Josephine uses the goats' milk for her family, and sells the young bucks for a good price at market. Recently, she has been investing more time in the daily collection of goat manure. She adds it to the compost or makes liquid manure. "This is something new for me," she says and stresses that her maize and bean harvests are much better than before. Previously, she used artificial fertilisers but they were expensive and the yields

"Organic agriculture is analogue"

remained modest. For the last few years, Mrs Ithiru has been one of 60 small-scale farmers participating in the project "Long-term system comparison" run by the Swiss Research Institute of Organic Agriculture (FiBL) and supported by the Biovision Foundation, the Swiss Agency for Development and Cooperation (SDC), the Liechtenstein Development Service (LED) and the COOP Fund for Sustainability. This long-term, scientific study is systematically comparing ecological and conventional methods of cultivation in the tropics under similar conditions.

Josephine Ithiru has tested the inputs and outputs of various fertiliser mixes with varying compositions. By the end of the first phase of the project, she had concluded that organic cultivation was the better way. The assessment by the research scientists was slightly more nuanced. They concluded that

organic cultivation in the tropics produced yields similar to those with conventional methods but in the longer term, organic farming produced higher incomes for farmers.

Josephine receives regular visits from others in the neighbourhood. She shows them her trial fields and tells them about the benefits of organic methods. "The people are always very impressed," she says. However, she believes that for some, particularly young people, organic methods appear cumbersome. "It is difficult to reach young people. Organic farming is analogue," muses the farmer. "Young people want quick, digital solutions". As she says this, she waves the bundle of greenery in her hand in front of the Toggenburg goat. He needs no second invitation and immediately starts to nibble the leaves. "Truly analogue," smiles Josephine. "He knows what it's all about ..."

Further photos:
www.biovision.ch/josephine-en

