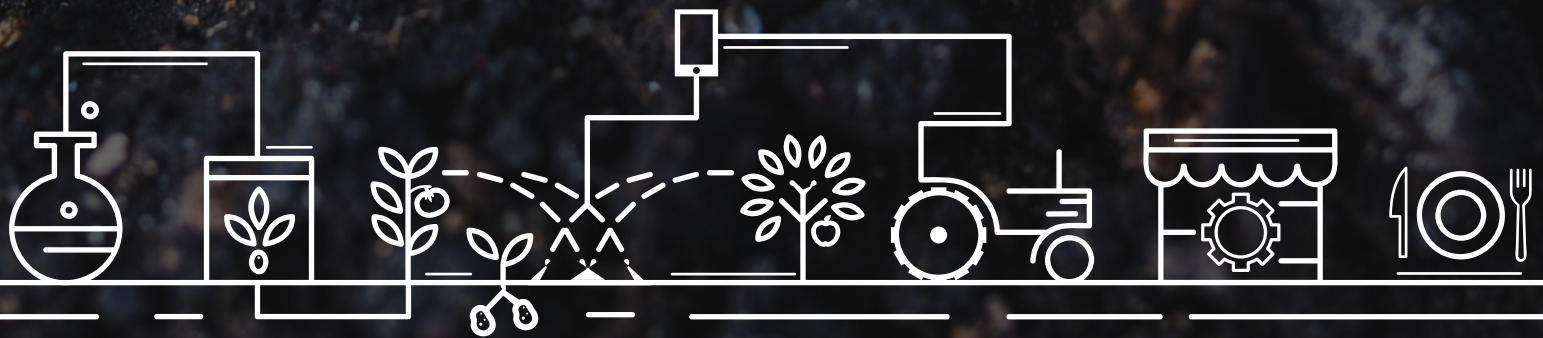




**GREEN
INNOVATION
CENTRE
INDIA**

NEWSLETTER #2



कृषि मिशन
Horticulture Mission

Ministry of Agriculture and Farmers' Welfare
Government of India



National Centre for Cold
Chain Development



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EDITORIAL

Dear Reader,

The development of the value chains for the perishable crops like tomato, onion and potato (TOP) is a key thrust area of the Government of India. 2018 was an exciting year for agriculture and farming in India and also for the Green Innovation Centre project implemented by the State Horticulture Departments of Maharashtra, Karnataka and Andhra Pradesh in bilateral cooperation with GIZ for the potato and tomato value chain.

Together, the project introduced an innovative package of practices for its two main crops tomato and potato. The tomato seedling production was improved with the establishment of model nurseries. A semi-automatic potato planter was developed together with farmers and local manufacturers. The *Fast Track Programme* started for high potential rural youth in the *Green Colleges*. Collaborations with private processors and retail chains were established for the creation of value along the whole supply chain. Another highlight was the piloting of the *Smart Farming App* to deliver real-time advice to farmers on potato cultivation.

All along the project's activities, a close collaboration and cooperation with the partners is of crucial relevance. The project activities were aligned with the programmes of Mission for Integrated Development of Horticulture (MIDH). Joint field trials with government agencies such as KVKs, joint field visits to farming enterprises with senior officers of the MIDH in Maharashtra, joint steering committees and joint exposures with Indian government officials to Benin and Germany are only a few examples. Apart from that, the project is in line with the Government of India's priorities of 'Doubling Farmers Income by 2022'.

For the upcoming year, the project aims to keep thinking outside the box for the tomato and potato value chain – added by a full-fledged apple value chain approach. To continue the innovative, technology-driven and government-aligned spirit is not only a resolution but a commitment for 2019.



Mr Dinesh Kumar, IAS
(Joint Secretary, Mission for
Integrated Development of
Horticulture, MoAFW)



Mr Jonathan Ziebula
(Project Director, Green
Innovation Centre, GIZ)

DID YOU KNOW?

We are a global project:
There are in total

15
Green Innovation
Centres

worldwide. So far, India is
the only country in Asia. The latest
member of the
family is Côte d'Ivoire
who joined in 2018.



The German Minister for
Economic Cooperation
and Development (BMZ)
GERD MÜLLER
was the former agriculture
minister in Germany, from
where he brought the
initial idea of the Green
Innovation Centres.



Paws in our Path

Our team once
found a baby
leopard in one
of the fields.

Our project is in line with India's
mission to double
farmers' income by
2022.
Our project aims to increase the
income of at least 75,000 small-scale
farmers by 25%.



Two of the three crops we are working with are
POTATOES AND TOMATOES
– both belong to the Solanaceae family and
originate from South America. The potato
is considered a staple food in Germany
and Germans are sometimes even called
"Kartoffeln"
(the German word for potato).

In 1997, the working women population in India was at 37%.
This reduced to 25% in 2017 in the formal sector. In the informal
and agricultural sector, the contribution remains up to 47%.
Women empowerment is crucial to all our activities.

India is the **SECOND LARGEST** potato producing
country – after China. The demand in India is growing year by year.

Tomato is actually by categorization a **FRUIT**, not a vegetable. It is an
excellent source of antioxidants, dietary fibre, minerals, and vitamins.

India and Germany celebrated

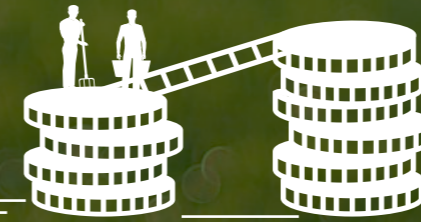
60

years of Indo-German Development Cooperation in 2018.
Germany is India's second-largest bilateral development partner.
Find out more on page 19.



We tried to count the number of Indian
dishes which include potatoes or tomatoes.
But there were just too many.

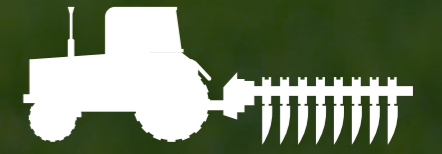
WHAT DO WE DO?



Aim to boost the income of
75,000
farming enterprises by
25%
with innovative practices
in agriculture



Create
1,000
new jobs especially for youth
and women and provide
training and education for over
90,000
farmers



Advise on
**GOOD AGRICULTURAL
PRACTICES (GAP)**
and support
the setting up of
farmers organisations.

OUR PRESENCE



GENESIS OF THE PROJECT

• First appraisal missions and discussions on state level

2014

• First pilot activities in the field in Karnataka and Maharashtra
• First innovation farms

2016

• Healthy seedlings for tomato cultivation through model nurseries
• Support of setting-up a cold storage for seed potato with a capacity of 5,000 tons
• Large-scale introduction of healthy seed potatoes from Technituber

2018

• *Model Nursery* manual published
• *Smart Farming App* for potato cultivation piloted
• Potato planter, harvester and boom sprayer developed
• Partnership with private companies such as SunSip and Orbi Seeds to test processing tomato varieties
• Continuous field trials with WorldVeg on dual purpose tomato varieties
• Exposure visit on cooperatives with government officials from Karnataka and Maharashtra to Germany
• Exposure visit for apple farmers from Himachal Pradesh to New Zealand
• Regional conference in Benin, West Africa
• First producer companies for nursery owners established

2015

• Commission of the Green Innovation Centre India
• First pilot activities in Chittoor (Andhra Pradesh) with APMAS
• First *Green College* with Welthungerhilfe (WHH)

2017

• Implementation agreement with MoAFW in Delhi
• First project steering meeting chaired by Shri Dinesh Kumar, IAS, Joint Secretary, Mission for Integrated Development of Horticulture, MoAFW
• Inauguration of the Bengaluru office
• Public-private partnership with the German machine manufacturers Grimme and Lemken
• First South-South exchange between the project in India and Kenya and Tunisia
• Memorandum of Understanding with NABFINS, the NABARD Financial Services Limited
• Regional conference with all 15 Green Innovation Centres in Kenya

2019

• Find out what is to come next on page 28

SOME FACTS AND FIGURES



Over **240** Farmer Study Groups with more than **10,000** farmers formed



Over **650** new jobs created through training in the *Green Colleges*. Out of over **28,000** trainees, **61%** increased their income by **25%**



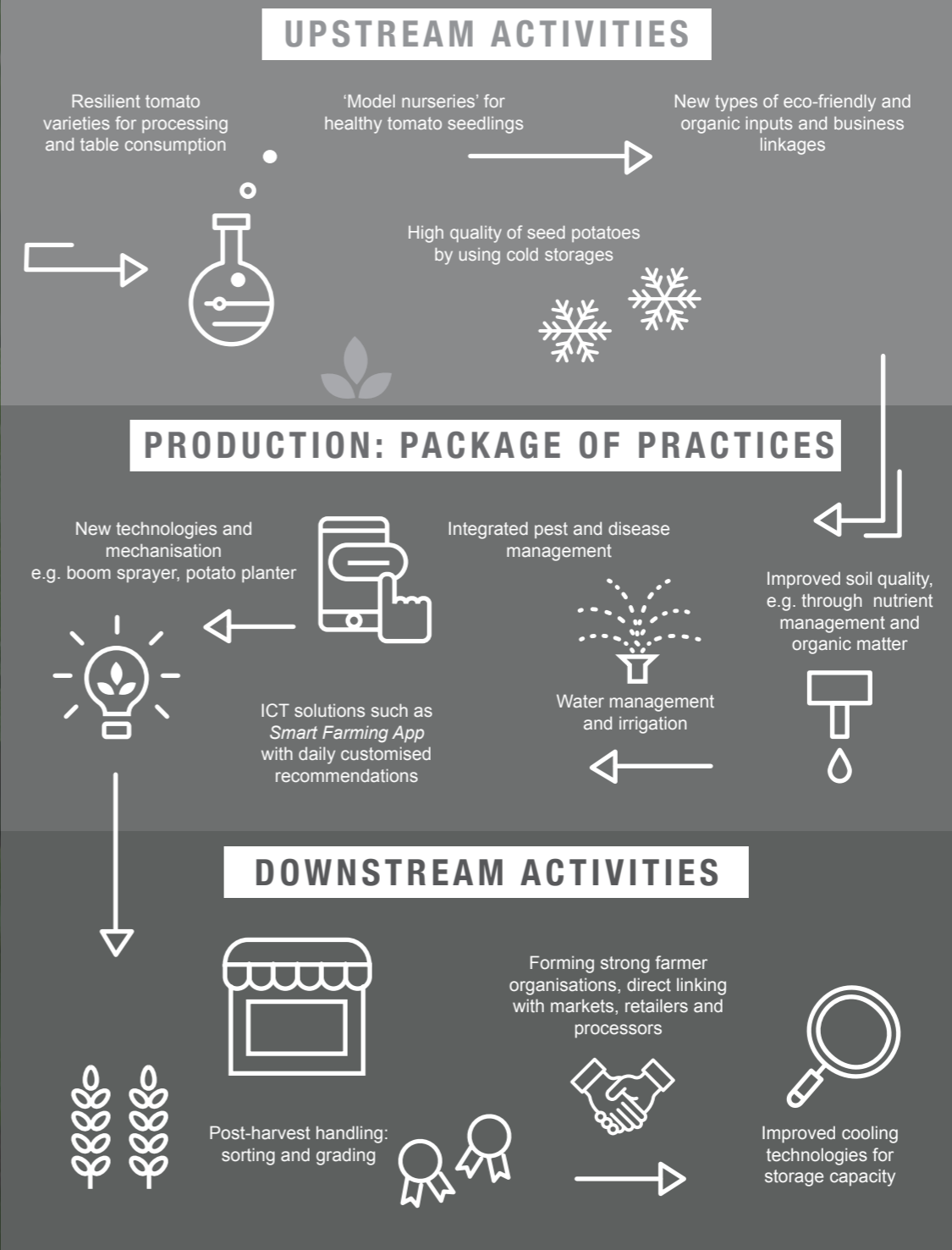
Over **58,000** small-holder farmers and **2,300** entrepreneurs farm managers participated in training field days courses, advisory services and vocational training



Increase of productivity and yield through innovations: 15 t/ha for potato, over 56 t/ha for tomatoes and 27 t/ha for apples

Image source : unsplash

OUR APPROACH



ACROSS ALL STAGES



Partnerships with and direct links between research institutes, private players, government institutions and farmers



Training and education through *Green Colleges* and *Farmer Field Schools*



Promotion of value chain platforms, farmer groups and Farmer Producer Organisations



Linking to government schemes, improvement of the framework conditions by Ministry of Agriculture and Farmers' Welfare

What is an "innovation"?

In our definition, everything that is new, unknown to a farmer or entrepreneur is considered as an innovation in his or her field or company. This can be anything from technical, organisational or knowledge-based innovation.



01 INNOVATIONS

FROM OX POWER TO POWERFUL YIELDS

New potato planter developed

Planting potatoes made easy: This applies to potato growers in the Southern Indian districts of Pune and Hassan. What used to be done with manual work and ox power now happens semi-automatically.

Pulled from a tractor, the potatoes are put into the field from a seat construction and are automatically planted up.

This planter was newly developed in the Green Innovation Centre together with the Indian company Rohit Agro Pvt. Ltd and farmers. The new semi-automatic helpers not only considerably facilitate and accelerate the work, but also increase crop yields and thus farmers' incomes: The higher ridges (in combination with deep ploughing and power harrowing) improve the water drainage in the field, lead to less weeding and the seedlings are less susceptible to diseases and damages. The harvest is overall higher and of better quality thanks to the uniform depths and spacing of the seed potato. At the moment, the machines are still in the testing phase and the farmers are planning a large-scale application for next year. More than 160 farmers in both districts showed interest in purchasing the machinery. For business and ownership models, different options are being discussed such as individual or group ownership as well as rental services through contractors.



DIGITAL SOLUTIONS DIRECTLY TO THE FIELD

Smart Farming App

Last year, we have developed a *Smart Farming App* for potato cultivation in cooperation with farmers from our project villages and a start-up from the Netherlands. The prototype is currently being tested by farmers in the Indian states of Maharashtra and Karnataka.

What is so smart about this app?

Customized advices on potato cultivation pop up daily. They are based on individual information provided by the farmer (size of the field, type of variety, season, irrigation method etc.) and real-time weather data. All recommendations were prior tested and approved through participatory technology development with farmers.

- **Pest and disease management:** Based on pictures provided by the farmer, pests and diseases in the field can be identified. However, compared to similar products or apps, the *Smart Farming App* focuses on preventing diseases before they break out instead of acting when it is too late. This is done – based on weather data and planting date – through guidance on effective, preventative and sustainable pesticide use.
- **Irrigation:** No more wasting of water – the app calculates individual irrigation needs, based on the farmer's input and on hourly weather forecasts for the upcoming five days.
- **Pre-sowing:** Which varieties are suitable for my field? How can I determine the correct spacing for my sowing? Ask the app!
- **Fertilisation:** Based on calculations of nutrient requirements of the crop at the targeted yield, an individual fertilizer schedule will be provided.

The app will be available in English, Marathi, Hindi and Kannada and can be downloaded in South India via GooglePlay.



HEALTHY TOMATO SEEDLINGS

Model Nurseries

Procuring quality tomato seedlings is of utmost importance. It is one of the crucial inputs which will affect the crop health and productivity. The better the seedling quality, the better the crop.



While analysing the causes for high production costs of tomatoes, we found that farmers were buying seedlings already infected with leaf-curl virus, Tospo and leaf-miners. This made farmers spend a substantial amount of money on ineffective pesticides as plants were already diseased. Many plant diseases can be prevented by adopting a few best practices at the young age of the crop.

The Green Innovation Centre India is promoting nursery management techniques that ensure completely healthy seedlings. The result is substantial less dying of transplanted seedlings and higher yields as viral diseases are controlled for long periods of time.

The project introduced scientific best practices for model nurseries (see illustration) and supports managerial and business skills of the owners.

What is a Model Nursery? A plant nursery is a managed site designed to produce seedlings grown under favourable conditions until they are ready for planting.

This bears fruits as the story of Vasudeva Reddy and Kalavathi shows:

"We had no previous experience in nursery management but purchased two acres of land in Miniki, Chittoor, Karnataka, to start our nursery business. The Green Innovation Centre gave us technical guidance, inputs and provided working capital. One highlight during the learning was an exposure visit to the Indian Institute of Horticultural Research, Bengaluru (IIHR) to learn about best practices for nurseries.

The turnover of our nursery has increased considerably by over 55 percent between 2017 and May 2018. Of course, there are also challenges, for example sudden drops of vegetable prices in the market or irregular supply of high quality coco peat for seedlings. But the huge demand from farmers all around for high quality and healthy seedlings motivated us to start our second nursery in early 2018. We are now a successful family enterprise and we employ one permanent labour and six female labourers on regular basis. As wife and husband, we share the labour in the nursery between us equally.

Previously, we were rearing sheep to earn supplementary income to agriculture. But it was not enough to pay school fees of our eldest daughter who was a topper in her high school. We had to marry her off at an early age. Now, with our nursery business we can support our younger daughter to continue her Masters in Business Administration. Our aim is to become the best-known nursery in the area."



Currently
79
model nurseries
in our project areas

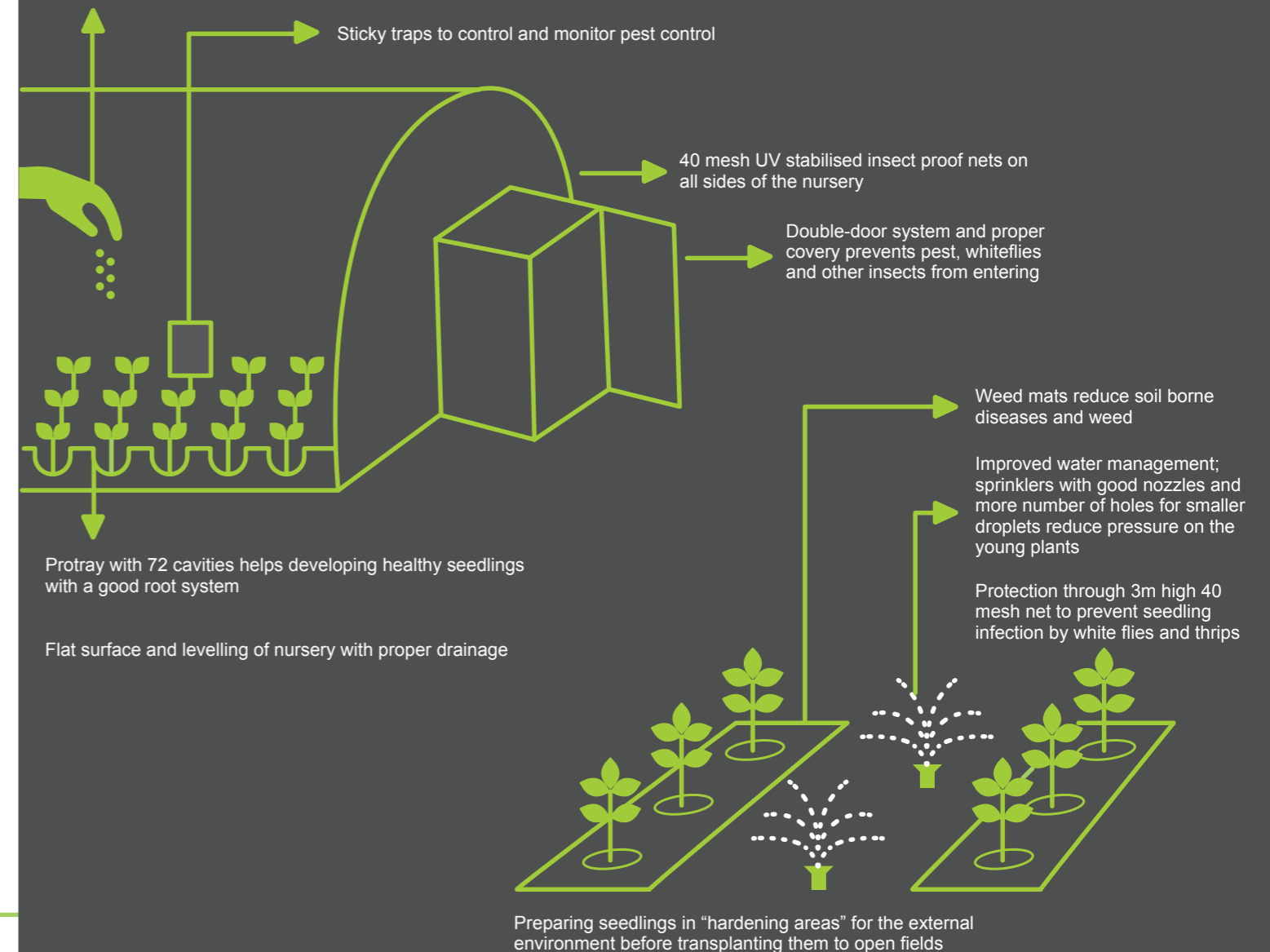


Our goal is to produce healthy
TOMATO SEEDLINGS
which will later translate into higher yields for the farmers



Awareness training for nursery owners and business model development

Use of biopesticides, trichoderma, pseudomonas etc. improve root system and increase the resistance of the seedlings



GREEN COLLEGES

Rural entrepreneurs on a fast track

Rampada Mahato, a young farmer from a rural district in West Bengal dreams about setting up organic stores in big cities like Kolkata and Ranchi. *"I participated in a Green College training and learned about bio-input production which I immediately introduced. Now, I already started supplying organic vegetables to nearby markets."*

The *Fast Track Programme* as a business accelerator programme supports high potential rural youth (HPRY) entrepreneurs like Rampada to develop agri-enterprises. Young entrepreneurs discover the potential of their business by designing, articulating and demonstrating their ideas. It also connects them with other entrepreneurs pursuing similar dreams.

"Just like the vegetables growing together on my field, we entrepreneurs can support each other to grow and flourish together" describes one of the trainees. Entrepreneurs go through leadership development and coaching; mentoring is a key aspect of the programme. Further, entrepreneurs can connect with potential investors through business meetings and events.



The programme also proved to be a boon for rural women entrepreneurs. Rakhi Das, entrepreneur from Birbhum, West Bengal, reinstituted her backyard poultry unit after undertaking a 15-day course on 'Backyard Poultry and Duck Farming'. Gleaming with pride, Rakhi says, *"I now produce my own feed and stopped buying broiler feed for the chickens as before. My income has increased by 75 percent and expenditure reduced by 50 percent. The training also taught me how to vaccinate the chickens myself. I now want to transform my efforts into an enterprise and invest the profits from my income"*. Balu Muley, an entrepreneur from Maharashtra, is also a farmer: *"Earlier, we used to produce at our convenience and sell to traders and get low prices, now we study market trends and plan our production accordingly and sell directly to consumers and earn better income. I keep records of my business expenditure, I value my time and the risks I take as an entrepreneur"*.



Check Ramapada's Story on YouTube



Rampada Mahato, a young farmer from Purulia district in West-Bengal grows organic tomato, cucumber, brinjal and chilli. He is inspecting his five-acre farm and applying bio-inputs.



Authors
Sanjay Gorai is the Principal for the SPWD Green Colleges. He is passionate about sustainable agriculture and has been associated with the Green Colleges since their inception in 2015. **Navnath Dhakane** is working for the past two years for the IIRD Green Colleges as the Principal. He is passionate about rural entrepreneurship, especially in poultry which is an allied livelihood option for the drought prone areas in Maharashtra, India.



BETTER TOGETHER

Hand in hand for innovation farms in Hassan

How can we make our innovations accessible for as many farmers as possible? One crucial part is working together with other institutions who are active in the same field – especially with the Indian Government and research institutions. In 2018, we took this approach into practice and introduced our so-called innovation farms in collaboration with KVK and HRES.

KVK stand for “Krishi Vigyan Kendra” which translates into “farm science centre”. KVKs are agricultural extension centres in India and serve as the link between the Indian Council of Agricultural Research and farmers and as a resource centre for extending government initiatives to local areas. They are usually associated with a local agricultural university. Their aim is to disseminate agricultural research and practices in local settings.

High-level research on modern agricultural trends such as climate change takes place in research institutions and does not necessarily reach the farmers on the ground. New crop practices, ground-level innovations or seed types are often tested in centralized locations. This knowledge needs to be gathered and disseminated between centralized institutions and the rural population.

What is an “innovation farm”? On our so-called innovation farms, new planting techniques and innovations in potato or tomato cultivation are being demonstrated to the farmers – often in direct comparison to fields with conventional farming methods. This allows the farmers to see the improvements of yield, quality of produce and saving of input costs with their own eyes. After experiencing this first hand, they can transfer the new skills and techniques to their own fields on so-called Participatory Technology Development (PTD) plots. In total, the project supports over 1,200 tomato and 1,500 potato PTD plots.

What is the benefit of such a team effort? The KVK Hassan and HRES are permanent institutions who will continue their work after project phases have ended. To integrate our work in such long-lasting, disseminating, local systems is crucial for a sustainable impact.

How does the cooperation work? Green Innovation Centre is supporting the input provision for both farms while irrigation and land is provided by the host institutions. The plots are maintained by Green Innovation Centre project staff in close cooperation with KVK and HRES.

KVK Hassan and HRES both accompany the joint journey with great enthusiasm. They were convinced by the tested innovations and the results of last year’s innovation farms. The new collaboration is not only a sustainable way forward to conduct and promote research on new innovations, but also provides the possibility to reach out to more farmers. So far, 505 innovation farmers are trained and visited the two innovations farms. The tables on the next page display the implemented package of practices.

Package as implemented at the potato research station in Hassan

Variety	Kufri Jyothi
Seed treatment	Seeds purchased one month before planting, graded and spread with good ventilation in time before planting. Afterwards, if necessary, sprayed with Gibberlic acid (GA3) to induce sprouting and treated with Mancozeb @ 5 gm/ltr of water before planting.
Seed rate	1000kg per acre with an average four to five sprouts per tuber.
Soil preparation	Before planting, the land was deep ploughed with a reversible mould board plough followed by a cultivator and a rotavator to break big lumps and make the soil friable for planting.

Nutrient Management	Type of fertilizer	Quantity	Application time
Basal dose	DAP	75 kg	Before planting
	Setright (Ca, Mg & S)	100 kg	
	MOP	150 kg	
1st Top dressing	Urea	75 kg	20 days after planting
2nd Top dressing	Urea	75 kg	40 days after planting
3rd Top dressing	Urea	25 kg	60 days after planting
1st Micronutrient application	Any micronutrient	5 ml/ltr	30 to 35 days after planting
2nd Micronutrient application	Any micronutrient	5 ml/ltr	55 to 60 days after planting

Planting machinery	Automatic Grimmer planter	Semiautomatic Rohit Krishi planter
Row distance	30 inches	27 inches
Seed to seed spacing	10 inches	7 inches
Planting time (per acre)	2 hours	3 hours

Spray type for disease management	Input type & dosage
Preventive spray	Mancozeb (Dithane M 45) @ 800 to 1000 gms/Ac
Curative spray	Mancozeb + Cymoxanil (Moximet or Curzate) @ 800 to 1000 gms/Ac
Preventive, curative & anti-sporulant	Dimethomorph (Acrobat) - 200 gm/Ac + Mancozeb (Dithane M 45) 800 to 1000 gms/Ac



02 HIGHLIGHTS AND EVENTS 2018

BMZ visit

New Delhi and Maharashtra | April 2018

Mrs Barbara Garbe-Hanssen, deputy head of the division responsible for the Green Innovation Centres in the German Ministry for Economic Development and Cooperation (BMZ), visited our project in April last year and shares her impressions of the week-long stay:

Visiting programme activities on site is important to understand the impacts, successes and challenges of our projects. The Green Innovation Centre in India gave me the opportunity to meet with key stakeholders such as Shri Dinesh Kumar, the Joint Secretary of the Ministry of Agriculture and Farmers' Welfare and partners like the Indian Agricultural Skill Council and Welthungerhilfe. It was a pleasant experience to observe the enthusiasm and active engagement of all involved partners.

The field activities in Pune district, Maharashtra, displayed the impact on small-scale farming enterprises. I was especially impressed by the development of the new potato planter (see page 7) together with the Indian manufacturer Rohit Pvt Ltd and local farmers. The cold storage in Peth we visited was equipped with new cooling technologies and the Farmer Producer Company (FPC) Agro Versatile First, formed by innovative nursery owners, carried conviction with its successful business model dealing with agri-inputs. After this fruitful insight I would like to express my appreciation for the efforts of all involved partners and the excellent team spirit and motivation that characterizes their work.



Potato Value Chain Platform Meeting

Hassan, Karnataka | 18 April 2018

About 45 members like farmers, government officials, research institutes, financial institutions or farm mechanisation companies deliberated on issues like access to and production of seed potato, mechanisation and late blight disease management practices. Some of the innovative solutions were evolved and agreed to experiment in coordination with farmers, scientists and government officials.

Partners Meeting

Hassan, Karnataka | May 2018

All partners of the project got together to strategize future activities and to update on current developments. The meeting included visits to potato fields in Hassan and a model nursery in Kadur.



Rural women leadership workshop in Feldafing and Herrsching

Germany | 30 July - 10 August 2018
Feldafing and Herrsching

Rajeshwari SM, the gender focal point of the project attended an international training on 'leadership and organisation skills for women in rural areas

in Feldafing, Germany. It aimed to equip women leaders from different countries with skills to successfully lead teams and organisations. 44 women from eleven countries participated in the two week workshop to learn and share their knowledge with the fellow participants.



Training of Trainers on ValueLinks 2.0

Bengaluru | 21-26 June 2018

Seven participants took part in the programme and learnt on selected concepts and tools of ValueLinks 2.0 and techniques to design and facilitate stakeholder workshop and trainings.

Regional Conference of all Green Innovation Centres

Cotonou, Benin, West Africa | 24-28 August 2018

One of the Green Innovation Centres' unique characteristics is their systematic South-South exchange. Every year, all 15 centres meet at so-called regional conferences, including technical and political partners from each country. After the first two conferences took place in Tunisia and Kenya, the 2018 get-together was hosted by the Green Innovation Centre in Benin and the Ministry of Agriculture, Livestock and Fisheries. India was represented by an eight-member delegation, including officials from the Government of India and Maharashtra. The highlight from an Indian perspective was a competition which crowned the best booth at the "market of ideas" where all centres showcased their innovations. But there is more to it: The Indian delegation was active in working sessions on potato farming, agriculture, information communication technology, risk management and farmer organisations as well as in several field trips. As one result of this exchange, read the interview of India's exchange visit to Nigeria. Now the burning question is: In which country will the next yearly meeting take place?

Workshop on Farmer Producer Organizations (FPO) & Tomato Value Chain

Sri Padmavati Mahila University, Tirupathi, Andhra Pradesh | 22-24 October 2018

The Honourable Minister for Agriculture, Horticulture & Sericulture, Government of Andhra Pradesh, Sri. Somireddi Chandramohan Reddy inaugurated the workshop as the Chief Guest, releasing the training manuals and witnessing the new partnership between eFresh, Ramasamudram FPO and APMAS. The three-day workshop included field visits with three thematic areas: production systems; marketing and processing.

The purpose of the workshop and platform meeting was to bring together various actors in the tomato-based value chain. As an outcome of the workshop, proceedings are prepared with policy recommendations and action plan engaging FPOs in collective marketing of vegetables, including tomato, with consumers, retail chains, whole-sale markets and processing industries.

Exchange with GIZ Country Office

Hassan, Karnataka | 5-16 Nov 2018

In order to strengthen the relationship and understanding between the project and the country office level, Matthias Vollhardt, Junior Portfolio Manager in the GIZ Country Office, spent two weeks in our project, including a field visit to the project region in Karnataka. The exchange and exploration of synergies was of great benefit for both sides.



International Exhibition and Conference on Cold-chain & Refrigeration Industry "ICE 2018"

Hyderabad | 16 Nov 2018

Sameer Valdiya, Senior Advisor of the project, presented the Green Innovation Centre's goals in India using a collaborative approach and participated in a panel discussion.

Training programme on Business Design and Innovative Business Models

Feldafing, Germany | 12-25 Nov 2018

Six participants from different partner organisations took part in the programme and learnt about business planning tools, design thinking and innovations.

Exposure Visit on Cooperatives

Feldafing, Germany | 20-29 Nov 2018

17 members including seven government officials took part in the programme. The team learnt the success factors for the sustainable cooperative business by visiting various kinds of cooperatives in agriculture, energy, banking etc.

Exposure Visit of Apple Farmers

New Zealand | 24 Nov to 6 Dec 2018

Ten apple farmers from Himachal Pradesh visited apple production farms in New Zealand. They were impressed by the high productivity level of New Zealand farmers and learned, among others, about high density apple farming, different methods of 'pruning' apple trees, nutrition and integrated pest and disease management, fully mechanized apple orchards and grading and packaging units.



SEWOH Talk

New Delhi | 11-13 Dec 2018

All three projects of the special initiative "One World - No Hunger" (SEWOH) and their partners showcased the processes and synergies of the SEWOH teams in India, including booth displays and a podium discussion of political partners. The three SEWOH projects in India are: The Green Innovation Centre (GIC), the project on Soil Protection and Rehabilitation for Food Security (ProSoil) and the project for Food and Nutrition Security (FaNS).



60 YEARS ANNIVERSARY

Indo-German development cooperation






Dear Reader,

In 2018, we celebrated a very special anniversary: 60 years of Indo-German Development Cooperation.

The roots for this long-standing relationship were laid way back in 1958. Since then, India has transformed from an impoverished developing country into an emerging market with global clout, influence and reach. At present, India is the world's sixth-largest economy and the world's largest democracy. Concurrently, Germany has seen its own share of momentous change: Rapid economic growth, European integration and re-unification.

Indo-German Development Cooperation has weathered it all. It stands out today as an important pillar in the relations between the two countries. I am happy to say the shared goal of this cooperation remains the same, then and now: To jointly achieve sustainable global development and to foster a spirit of partnership and trust.

Over the course of six decades, India and Germany have achieved much together. I would like to list and elaborate on a selection of joint milestones in the field of development cooperation:

- 1959** With the help of German financial assistance, India launched the **Indian Institute of Technology, Madras in 1959**, creating opportunities in the field of engineering. 
- 1960** In the **1960s** German Development Cooperation supported agricultural development in the Nilgiris, helping farmers to obtain loans and **establish favourable cultivation practices for potatoes**. 
- 1990** Throughout the **1990s** German Development Cooperation, together with the National Bank for Agriculture and Rural Development – a trusted partner of over 25 years –, supported programmes for watershed restoration and livelihood improvement for tribal households. 
- 2000** In the **2000s**, the launch of the **Indo-Energy Forum** further strengthened the partnership between India and Germany in the energy sector. 
- 2011** In **2011**, Germany provided concessional financing for the **Sakri Solar Plant** in Maharashtra, a pioneering plant which supplied 220.000 households with clean electricity. In a similar vein, also with Germany's support, the M. Chinnaswamy Stadium in Bengaluru became the world's first cricket stadium to be powered by solar energy. Increased solar energy capacities play a crucial leading role in India's gradual transition towards clean energy. 

Today Indo-German Development Cooperation continues with its important work, aligned with the priorities of the Indian Government and in line with the global imperative to implement the sustainable development goals.

Currently, Indo-German Development Cooperation is working in the areas of energy, environment, urban and economic development. In this context, the Green Innovation Centre project finds itself in a long line of successful ventures undertaken through Indo-German Development Cooperation, in particular in the area of rural development and natural resource management.

Should you, dear reader, be interested in learning more about the history of the Indo-German development engagement, in 2019 a touring exhibition will showcase the historical landmarks of Indo-German Development Cooperation. Stops include the three cities of Bengaluru, Kochi and Chennai.



Hope to see you there!

Yours truly

Dr. Julie Reviere

Country Director GIZ India

03 VOICES FROM...

FARMERS' COLLECTIVES

Taking FPOs beyond 'romance' to 'relationships'

Development professionals and policymakers have tried many a scheme to address these issues. One idea that has found resonance in recent times is Farmer Producer Organisations or FPOs.

Article as published in The Indian Express on 24 January 2019.

It is well-known that Indian farming is predominantly subsistence-oriented. Over 86% of our farmers operate individual holdings below two hectares, while cultivating 47% of the country's total cultivated area. The production and productivity of these farms are generally low, and so is the marketable surplus that is generated. Such farmers are also at the receiving end of our marketing system, with even the little produce that they sell fetching low realisations.

Development professionals and policymakers have tried many a scheme to address these issues. One idea that has found resonance in recent times is Farmer Producer Organisations or FPOs. Simply put, it represents the power of aggregation, from many small farmers coming together and forming an organisation that would collectively purchase inputs required by them and/or sell their produce. Initially, only small informal groups of 20-25 farmer-members are formed. Such farmer interest groups or FIGs are, then, aggregated into FPOs, supposedly of the requisite size for tapping input and produce markets. The FPOs, in turn, can remain informal groups or be registered societies, cooperatives, trusts and companies.

That's where the problems start.

A committee under noted economist Y K Alagh had suggested amending the Companies Act of 1956 to allow formation of farmer producer companies (FPCs), which combine the ideals of cooperatives with the more business-friendly regulatory framework of company law. The recommendation was accepted and many development professionals, too, felt it was a good idea to register farmers' collectives as FPCs. But remember, we thought of collectives mainly as an instrument for improving the lives of small farmers. And here, we were subjecting them to the rigours of company regulations that they were ill-equipped to handle and having to pay consultants for filing returns.



It raises the question:

What is the hurry to incorporate farmer collectives as companies?

Why not let them stay as informal FIGs till they are really ready to get into business?

1

Right now, there's probably an incentive for NGOs to assemble farmers, form them into FIGs and immediately register as FPOs, since the latter are eligible to receive a matching equity grant of up to Rs. 15 lakh from the Small Farmers' Agribusiness Consortium under the Union Agriculture Ministry.

2

Second, small farmers mostly produce paddy, millets, wheat, pulses, vegetables and other staples, with very few into boutique products such as chia seeds. Even if FPOs/FPCs are formed, are there enough margins in the business of just aggregating staples? Would these leave farmers vastly better-off than earlier, when they were individual sellers in the market? We need to, therefore, address issues relating to when and where to start an FPO, apart from the right product/product mix — whether plain milled rice or the whole value chain from rice bran to single polish, double polish, puffed and beaten rice — and a viable business plan. That calls for strategic thinking and going beyond short-term "infatuation" or "romance" when it comes to helping farmers.

3

Linked to this is the third point — the pedigree of FPO-promoting organisations. Many of them happen to be NGOs that are good at community mobilisation, but whose business acumen is suspect. The FPOs/FPCs ultimately have to compete with the arathiyas or middlemen-market makers. These are nimble individual players who, unlike the newly-minted FPOs, have been part of the Indian produce marketing system since time immemorial.

4

Fourth, while cracking the produce markets might be difficult, can't FPOs start with bulk purchase of agricultural inputs, which may help them to secure discounts from suppliers? But even to be input dealers, there are also other issues like obtaining the requisite licenses and being able to provide credit. Most agri inputs today are sold to farmers by arathiyas or dealers on credit.

5

Fifth, if FPOs are to operate as businesses, what is the quality of manpower at their member, board and CEO levels? In the past, we had IRMA (Institute of Rural Management, Anand) that was created in order to build a cadre for managing milk cooperatives, just as the Centre supported a long-training programme for the running of agri-clinics at the National Institute of Agricultural Extension Management, Hyderabad. Right now, the CEO's job at FPOs is done by NGO personnel whose core competence lies in community mobilisation. Can't we develop proper training programmes, including through producing short videos such as those used in massive open online courses? Also, why not introduce a system of issuing sweat equity to CEOs or board members of FPCs as a performance incentive?

The idea of FPOs is, no doubt, worthy of romance. But as already noted, there are dangers of this not progressing beyond temporary infatuation, wherein businesses are artificially propped up and numerical targets set for starting FPOs. Good FPOs are those that truly create value for the farmer and operate as or more efficiently than the nimble arathiya. An FPO of, say, pulses growers can create value by aggregating and processing their produce, and selling it as milled dal. But if the dal mill belongs to somebody else and also not from the same village, the benefits of value addition will obviously not accrue to the growers.

FPOs further require an enabling ecosystem, through sensitising government officials and bankers to the unique potential of these business entities for improving farmers' incomes. We saw such sensitisation and commitment when the movement for creation of self-help groups and their linkage with banks was launched in 1992. Powering an idea into a vehicle for rural development needs not merely "infatuation" and "romance", but forging "relationships" and all actors — NGOs, governments and banks, in this case — folding their sleeves and working in tandem.



P V S Suryakumar, Chief General Manager, National Bank for Agriculture and Rural Development, is head of the Nabard Karnataka Regional Office. Suryakumar is a post graduate from the Indian Agricultural Research Institute, New Delhi, a Commonwealth Scholar and obtained his Masters in Sustainable Development at the Staffordshire University in the United Kingdom. He has handled key national level verticals of business development and corporate communications at the head office of Nabard.

INTERVIEW

What does Bayer have to do with Indian apples?



For more than two years, Indian apple growers from the regions of Jammu, Kashmir and Himachal Pradesh have been working together with GIZ and the Bayer division "CropScience". Together they have implemented, among others, early warning systems against pest infestation. Stefan Heinke, Senior Sustainable Development Manager from Bayer, summarizes past achievements and future outlooks of the collaboration.



Image by kaboompics on Pexel

1) The first project phase is over. What was the content of the collaboration so far?

Small-scale farmers in Jammu and Kashmir and Himachal Pradesh have seen a decline in apple yields in recent decades. Reasons found by GIZ and Bayer include inter alia improper treatment of scab diseases. Together with local partners from science and farmers' cooperatives, we have analysed for example suitable cutting techniques and advised on good agricultural practices.

2) Where does the project stand today, what have you achieved?

An essential element of the project is the development of the early warning system "RIMpro". To this end, Bayer has purchased a weather station that predicts bursts of scab disease based on weather and spore data. Thanks to trainings, farmers know how to cut their trees for optimal crown growth. Most importantly, farmers were able to increase their profits at approximately 90 per cent.

3) What challenges have arisen in recent years?

The weather conditions have been very difficult in the project region in the last three years. Particularly damaging was a hailstorm, which destroyed almost half of the apples in Kullu and Shimla.

4) How can Bayer as a company benefit from improved apple products in the project regions?

Bayer has financial and non-financial goals. These non-financial goals include contributing to improve the livelihoods of smallholder farmers and promoting sustainable agriculture. We were able to learn, have increased our own competences and capacities in the apple growing industry and can now offer a wider range of services.

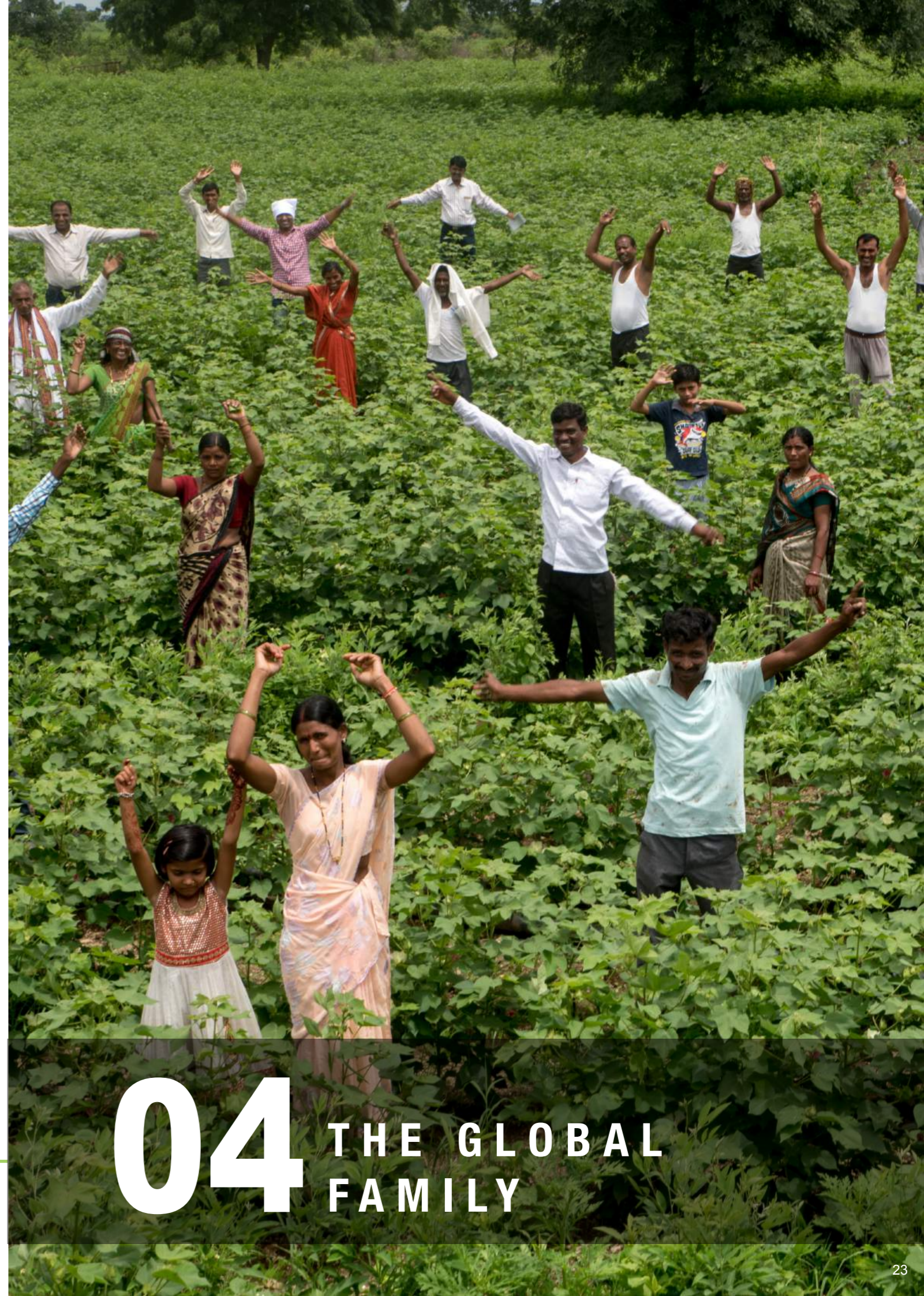
5) Bayer and sustainable agriculture – what do you respond to critics who see a contradiction between those two?

It is true that agriculture consumes a lot of water and that the conversion of land can be linked to the loss of biodiversity. Incorrect or excessive use of pesticides leads to soil damage. In the long term, these problems are also burdensome for our business. Therefore, Bayer advocates sustainable intensification, with the use of chemical and non-chemical methods to control pests and diseases.

6) What goals would you like to achieve in the coming years with our project?

We intend to apply the early warning system also to other diseases. Further, we may be able to provide solar-powered cold storages to make farmers less dependent on seasonal price fluctuations.

The Green Innovation Centre India project is collaborating with Indian, German and international firms and institutions to develop path-breaking, scalable and sustainable innovations. Our collaborations span an interesting mix and reach over 50,000 farming enterprises. If such an opportunity in the rapidly growing agriculture and food sector interests you, please write to greeninnovationcentreindia@giz.de or visit www.bit.ly/GIC-India.



04 THE GLOBAL FAMILY

INTERLINKED MARKETS

Record for India = Ruin for Mozambique

There is no other agricultural product in Mozambique of which nearly 100% is exported to India than the pigeon pea (97% in 2016). However, India is not only by far the biggest importer of pigeon pea but also the biggest producer itself.

This means that the domestic production in India is of highest relevance to the global prices of pigeon pea. The demand of India for importing pigeon pea is directly influenced by the domestic production and so is the price.

The most drastic situation the exporting countries had to face was in the year 2017. In 2016, the pigeon pea producers in Mozambique received a comparatively high farm gate price of around 50 Meticaís/kg (ca. 0,8 USD). This, of course, stimulated the production and the farmers were looking forward to a good business when selling in 2017. But the result was catastrophic. The farmgate price dropped to 5 Meticaís/kg and was thus 90% below the price of the year before.

What happened? In India, after dry years in both 2015 and 2016, the farmers enjoyed a record production of 4,87 million tons which is 70% more than the average of the previous years.



Image by Malsawm on Pixabay

What is pigeon pea? Pigeon pea is a legume which was domesticated on the Indian subcontinent at least 3,500 years ago. It is a major source of protein for the Indian subcontinent.

As a logical consequence there was no or much less need for importing pigeon pea anymore. This seriously affected Mozambique, Tanzania, and Malawi, the main producers in the region. Mozambique was still slightly privileged as there had been a signed agreement which allows Mozambique to export a certain quantity to India.

What is the reality today and what are the consequences for Mozambican pigeon pea farmers? In 2018, the prices for the farmers are around 8-10 Meticaís/kg, which is not enough to really make profit, but enough not to make losses. The farmers which are still in the pigeon pea production will continue, hoping for at least some increase of the price in the coming years and for benefiting from the other advantages of pigeon pea production for the soil and the climate resistance.

The Green Innovation Centre in Mozambique is empowering producers to take decisions on what to produce based on their own economic analysis. In addition, the project is introducing a market information system which will be able to estimate the production in India at an early stage allowing the Mozambican producers to react to this forecast.

The authors: **Uli Lachenmaier** works as the Implementation Team Leader of Green Innovation Centre Mozambique since March 2017. **Erika Conselho** also joined the centre in March 2017 and is the Monitoring and Communication Advisor of her team.

INDIA AND NIGERIA

“We have similar challenges & our successes can be replicated”

A unique feature of the Green Innovation Centre project is its global perspective – 15 centres in 15 countries. A profound South-South exchange comes naturally. From 24 to 26 October last year, India and Nigeria went on a joint exchange.

Ravindranath Reddy (AFC/ETC), long-term expert for potato under the Green Innovation Centre project in Hassan, Karnataka, India participated in a potato value chain platform meeting in Jos, Nigeria. His counterpart in Nigeria was Folarin Oguntolu (AFC), a long-term expert and Potato Value Chain Advisor with the Green Innovation Centre in Nigeria. Ravindranath and Folarin explain what they have learned from their shared venture.

Ravindranath Reddy

Farmer Business Schools (FBSs) can have a huge impact on the livelihoods of farmers. Nigeria is successfully organizing such FBS.

Nigeria has an interesting contract farming business model and is successfully implementing business training and coaching loops for small and medium-sized enterprises (SME) from which India could learn. I also learned that livestock rearing by farmers in Nigeria is not very prominent, though there is abundant fodder available.

Potato production is carried out predominantly by small-scale farmers. And the potato yield is still very low in both countries compared to advanced countries like Germany or the Netherlands.

Potato productivity is high in India, I think in India farmers have successfully moved from subsistence farming to commercial farming whereas in Nigeria it still seems to be subsistence farming.

This exchange was an important first milestone. From here, we want to improve the learning across our two countries.

I think we both agree that more workshops and field trips between Southern countries should be organised to facilitate the exchange of ideas, right? We have similar challenges and our successes can be replicated in the other countries.

Questions

What was your key learning from this exchange?

What surprised you the most about agriculture in the other country?

What were the biggest similarities between the two countries that you noticed?

What was the biggest difference?

How will the future exchange between the Green Innovation Centres in India and Nigeria look like?

How can we foster more South-South exchange?

Folarin Oguntolu

India seems to use a lot of machines and equipment suitable for small-scale potato production. This level of mechanisation can be adopted and adapted to the Nigerian situation.

India is more advanced in the area of diseases and nutrient management. Especially late blight disease management at the community level seems very successful. Also, the level of usage of certified seeds in India is very high compared to Nigerian potato farmers.

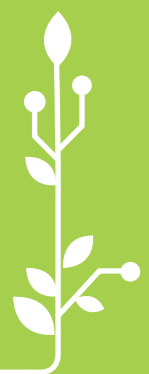
Yes, and two other similarities are: In both countries farming is rainfed and at the same time both are affected by climate change. Both countries will face similar challenges in future.

Yes, the potato farmers in India are more advanced than Nigerian potato farmers in terms of production techniques and its adoption. Practices like deep ploughing and raised beds used in India contribute to this difference as opposed to small beds and shallow plough in Nigeria.

For example by developing joint packages of practice for potato cultivation, establishing innovation farms, learning more about FBS and introducing small-scale potato planters.

Yes, in our case especially study tours and exchanges for both farmers and mechanization service providers. And this does not only include Nigeria and India but all Green Innovation Centre countries!

What will the next phase bring?



The project will have the possibility to scale up its activities in Himachal Pradesh.

After the global Green Innovation Centre project has come into its fourth year of existence, we used 2018 to take stocks of the results so far. Project appraisal missions and a mid-term data collection took place in all countries to assess the status quo and the objectives achieved so far.

The very positive results from India proved that the project is on track and has been able to contribute to the positive development of the value chains supported and the situation of many small-holder farmers and small and medium enterprises in rural India. It became obvious how the many partners contributed to the successful implementation and realization of project activities.

On the global level, a strategy for the upcoming phase of the overall project (2019-2023) has been formulated that will also provide the future framework for the individual country level.

What does that mean for India? In the next phase, the project will continue its overall engagement in Maharashtra, Karnataka and Andhra Pradesh. In addition, it will have the possibility to scale up its activities in Himachal Pradesh to a full-scale value chain approach based on apple production. Two new thematic foci will be water and soil conservation and renewable energy solutions. The Green Colleges initiative will in future focus on the two colleges in Maharashtra and Karnataka.



Mareike Hahr works since 2011 for GIZ and since 2016 for the Green Innovation Centres in the steering unit in Bonn, Germany. She enjoys the exchanges with different partners and countries within the project.



Sangeeta Patil

"It just feels awesome to be part of the project. It always gives opportunity to bring in a "fresh view" to the activities. I live and breathe agriculture and love to create awareness and ensure perceptions of agriculture are not misled. As agriculture is the wisest pursuit, because it will in the end contribute most to real wealth, good morals and happiness among the farming community."

Green Innovation Centre, AFC/ETC Consultants India Pvt Ltd
National long-term expert for potato and team leader at the Green Innovation Centre in Peth, Maharashtra

Parthasarathy Thiruvankadam

"In the scope of my work I want to facilitate farmers, through Green Colleges, to view agriculture as profit-making business and to develop themselves as "eco-preneurs" focused on sustainability, profits and innovation."

Deutsche Welthungerhilfe e.V.
Project Coordinator (Green Colleges in Karnataka & Maharashtra)



Madhu Murthy

"In my work I focus on livelihood enhancement of farming communities, particularly small, marginal and women farmers in rainfed farming. This happens through value chain services for farming institutions and with a focus on sustainable practices."

Mahila Abhivruddhi Society Andhra Pradesh (APMAS)
Programme Director – FPOs & Livelihoods

Sameer Valdiya

"I am passionate about identifying and developing opportunities for sustainable livelihoods for rural communities alongside building effective bridges between agri-based rural enterprises, education & research institutions and the private sector."

Green Innovation Centre, Gesellschaft für Internationale Zusammenarbeit (GIZ)
Senior Advisor - Private Sector Cooperation



Sanjai A B

"I live and breathe horticulture and love to create awareness and ensure perceptions of horticulture are not misled. Through my career I want to promote horticulture and showcasing the many positive sides of this farming industry."

Karnataka State Horticulture Department
Deputy Director of Horticulture, Zilla Panchayat, Hassan

