

South-South Exchange on ICT4Ag: Indian drones meet African tractor apps

The ICT Working Group of the Green Innovation Centres brings partners from twelve African countries to India to explore digital solutions in agriculture.

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Blockchain – hype or an essential technology for food traceability? Apps for smallholder farmers in Africa – applicable to the Indian context? 4G coverage and smartphones in many households in rural India – what can African partners learn from this impressive e-infrastructure?

These and many more questions were in focus of the Green Innovation Centre’s South-South knowledge exchange on Information and Communication Technologies (ICT) in the agriculture and food sector. The outcome? Fruitful discussions, valuable new business linkages and inspiring new ideas for digital solutions in field implementation.



In the hot afternoon sun next to a tomato field in Kadur, Southern India, Samuel from the Foundation for Environmental Monitoring (FFEM) demonstrates to 40 curious pair of eyes how his digital innovation works: An app which can measure soil parameters via spectrography. The dry soil is being treated with chemical solutions from the FFEM kit. The liquid solution will then be screen with the flashlight of a smartphone camera which can detect the colour scheme of soil parameters such as nitrogen, pH or potassium. Through this, the farmer can know on the spot about the field’s soil composition and can add required nutrients.

The advantages? The results are cheaper than conventional soil tests and available at the farm itself. Bourehima Coulibaly, representing the Malian start-up Satgrie, is impressed: *“This technology would be also very useful in Mali as farmers are facing the same difficulties: lab results are expensive, take a lot of time and are often flawed.”*

From the 27th to the 31st of January 2020 India hosted its third South-South knowledge exchange for the Green Innovation Centres. 35 participants from 12 African countries benefitted from the five-day programme.

The goal of the exposure visit was to promote mutual learning amongst participants on digital solutions in the agriculture sector in the global South. Experts from the private sector, implementing partners, government officials, and GIZ staff from 12 African countries, Germany and India actively contributed to the valuable discussions, networking and exchange of learning experiences.

“South-South knowledge exchanges like this bring together different important partners from various countries. It is a unique opportunity to learn from each other, to build new networks and to transfer and up-scale innovative ideas and solutions between countries.”

Ariane Borgstedt, head of the global project Green Innovation Centres for the Agriculture and Food Sector,
GIZ Germany

Having enjoyed Bengaluru’s cultural and culinary highlights on the day before the official start, the programme of the five-day exchange guided participants through different phases – from the better understanding of complex theoretical concepts and important framework conditions to the practical day-to-day use of digital solutions and realities for farmers on the ground:

- **Day 1:** Different individual and group exercises on the first day helped participants to understand the ICT landscape in India and triggered reflection on the framework conditions in the African sister countries. Controversial expert talks for example by Shekru Foundation or Mysuru Consulting Group on Artificial Intelligence (AI), Internet of Things (IoT), Blockchain, digital payments for farmers, data ownership and sustainability of digital tools gave food for thought about the existing chances and risks of digitalisation.
- **Day 2:** One highlight of the week was the innovative start-up slam in a co-working space on the second day: Indian and African start-ups pitched their ICT solutions in three minutes followed by 20-minutes speed dating sessions. The pitches were clustered along the agricultural value chain – upstream, production, downstream – and both – African and Indian Start-ups - presented their technologies supporting the work of smallholder farmers and/or small and medium enterprises. The subsequent business-to-business (B2B) rounds made detailed information exchange and networking possible. In a voting, the slam was won by the Ghanaian start-up TROTRO Tractor.

Start-ups present:

Start-up	Country	Start-up	Country	Start-up	Country
Gramophone	India	AgroCenta	Ghana	Viamo	Burkina Faso
One-stop solution for inputs		Digital food distribution platform		Decision-making tool	
Satgrie	Mali	Smart Soft Pro	Tunisia	SourceTrace Systems	India
Sensors and satellite images for soil requirements		Online irrigation platform based on IoT, artificial intelligence and machine learning		Farmer advisory services, supply chain management, traceability, certification, monitoring and evaluation, market linkage and financial services	
CropIn	India	Ezzayra	Tunisia	IntelIoLabs	India
Decision-making tools		Precision irrigation system		Matching quality to specifications using image analysis and AI	
Tene-AG	India	CultYvate	India	Digital Green	India
Software platforms for agricultural extension		Customised smart irrigation solution using AI & IoT		Training frontlines workers, connecting farmers to markets	
Esoko	Ghana	Seabex	Tunisia	Karabi Software	Tunisia
SMS platform and voice messaging to disseminate information		Smart irrigation solution		Business process management, accounting, inventory and asset management	
Stellapp	India	Ecozen	India	AgNext	India
End-to-end dairy technology solutions company		On-farm cold storage		Platform for instant quality assessment and traceability linkages	
TROTRO Tractor	India	E-Agribusiness	Togo	TraceX	India
Digital platform for tractors and other agricultural machinery services		Digital data collection system, web and mobile platform for publishing offers and requests for agricultural products		Traceability solutions along th value chain	
Skycrafts Aerospace	India	AgroWave	India		
End-to-end spraying solutions using drones, IoTs and Blockchain		Linking farmers to retailers for better market prices			



African and Indian Start-ups pitching their solutions

- **Day 3 and 4:** How does the situation look like on the ground? What do farmers have to say about apps, algorithms and AI? Day three and four led to field visits to Kadur and Hassan. Here, implemented ICT solutions within the Green Innovation Centre India along the tomato and the potato value chain were demonstrated to the African delegation.

“I thought this was going to be one the usual talk shops where participants are brought together to discuss the obvious. The GIZ ICT Study Tour turned out to be very insightful for me. Learnt a lot from seeing how India uses technology in Agriculture. Given that we have similar problems, these are lessons that could be applied though not in their entirety. I’ve got some ideas now on where to introduce some elements of IoT in our platform” **Michael Ocansey, AgroCenta, Ghana**

One example was FarmHand's precision irrigation system “Water-Hand”. This technology – regulated by a smartphone application – delivers the right volume of water at the right time based on the crop’s lifecycle, local weather and soil conditions. Benefits for the farmers are the increase in yield, saving of water and energy and the decrease in fertiliser and labour costs.



Demonstration of the precision irrigation system



Demonstration of the *Smart Farming App*

A second innovative solution is the “Smart Farming App” for potato cultivation. Farmers first feed the app with information specific to their field characteristics to then receive daily customized advice. For example on pest and disease management or irrigation in the local language, incorporating weather forecasting.

A third example is the intelligent potato “SolAntenna” invented by Solentum which measures temperature, humidity, CO2 and GPS location in real-time. It can be placed among real potatoes during a whole transportation cycle to monitor and improve the respective parameters.



Intelligent potato “SolAntenna”



Besides the presentation of practical tools, participants also had the chance to talk to the farmers and get insights in their day-to-day work with the new technologies. “*What convinced you to use the new IT technologies?*”, “*What is the main communication channel between you and other farmers?*” “*How many women in your household own a smartphone*”, “*Are digital solutions an incentive for the youth to get engaged in agriculture?*” were some of the questions answered by the Indian farmers to the African delegation.

Exchange between farmers and the delegation

- Day 5: The last day in Bengaluru was used for the reflection on key learnings and take-aways of the event. The German Consul General Margit Hellwig-Bötte complimented the knowledge exchange in her closing remarks, thereby highlighting that this event proves that agriculture can be a young, dynamic and modern sector and motivated participants to bring innovative changes in their home countries.



Sharing of the key take-aways with the Consul General (left)



Group picture with certificates at the end of the study tour

“The event was good and important. It has enlightened me on some digital solutions which will help me in my work and that of my colleagues” Olive Masaka, Farmers World, Malawi

Already during the study tour potential collaborations were explored and contacts were exchanged between participants who are eager to transfer and adapt certain solutions to their home countries’ specific contexts. Some examples: The “ConseilCaféCacao” from Côte d’Ivoire expressed their interest to collaborate with the Indian start-ups “IntelloLabs” and “CropIn” to tailor their solutions to the coffee and cocoa value chain. Tunisia decided to work on ecosystem for start-ups similar to the one they have seen in Bengaluru in order to create incentives for investors to support innovations. Kenya showed interest in the Ghanaian machine rental app TROTRO Tractor. The Indian start-up TraceX on traceability along the value chain connected to Mozambique. Furthermore, the GFA consulting group is in negotiation with the Indian start-up Ecozen solutions about bringing their solar pumps to Togo. Amongst the “B2B” linkages is also Bourehima Coulibaly from Mali. Convinced with the demonstration of FFEM’s soil testing kit he – as well as delegation members from Ghana and Zambia – purchased it directly from Samuel, planning to do soil tests for and with smallholder farmers in Mali.



Handing over of the soil testing kit from Samuel from the Indian start-up FFEM to the Malian entrepreneur Bourehima Coulibaly

Further questions on our event? Feel free to contact us:

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