4th - 5th of
OCTOBER

2022

CAIRO

GREENTECH IN EGYPT

Multi-stakeholder dialogue

Leveraging Tech & AI for Resilient Agriculture and Sustainable Smart Cities

D4D HUB · African Union · EXPERTISE FRANCE · Ministry of Communications and Information Technology · itida · tiec · CREATIVA · AMBASSADE DE FRANCE EN EGYPTE · L'équipe France en Egypte En route vers la COP27

CRÉDIT AGRICOLE · CMA CGM · IDEMIA augmented identity · orange · Schneider Electric · Valeo · voltalia · aivancity

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EXECUTIVE SUMMARY

Egyptian and European digital actors vowed to boost Egypt's green technology (Greentech) industry during a two-day workshop that took place on 4-5 October at Sultana Malak Palace, in Heliopolis, Cairo. Over 60 representatives of private sector, civil society, academia, and government, gathered in an effort to draw a common roadmap to support Artificial Intelligence (AI) and digital technology applications in the field of resilient agriculture and sustainable smart cities.

The workshop also emphasized the importance of involving the private sector in co-creating solutions to meet Egypt's sustainability and digitalisation targets. Egyptian, European and other African actors were given the opportunity to present new products and services, with the objective to spark new collaborations with potential partners.

The event was convened by Expertise France, an implementing partner of the African Union-European Union (AU-EU) Digital for Development (D4D) Hub, in partnership with the Ministry of Communications and Information Technology (MCIT), the Ministry of International Cooperation (MoIC), the Information Technology Industry Development Agency (ITIDA), and the French Embassy in Egypt.

The exchanges brought together 11 startups and 7 international corporates based in Egypt from different sectors and resulted in 4 common roadmaps and 8 solutions for greentech. Recommendations identified by participants showed a shared ambition of government, corporates and startups to build AI solutions for resilient agriculture and smart cities, and reinforce the partnership between the private sector to develop the greentech sector in Egypt.

CONTEXT

GOALS & WORKFLOW

Context, goals and workflow

This report provides a detailed overview of the Greentech in Egypt D4D Workshop named "Leveraging tech & AI for resilient agriculture and sustainable and smart cities" held in Cairo on October, 4th & 5th, 2022.

Context

In March 2007, The European Neighbourhood Policy Action Plan was adopted and in 2016, The EU and Egypt initiated a dialogue on future Partnership Priorities, in line with the revised European Neighbourhood Policy. EU-Egypt Partnership Priorities were adopted at the occasion of the EU-Egypt Association Council in July 2017 and guided the partnership for the period 2017-2021; the new Partnership Priorities 2022-2027 were adopted in June 2022, that reinforced the collaboration in the areas of green and sustainable development.

The African Union – European Union (AU-EU) Digital for Development (D4D) Hub supports African institutions to create an enabling environment for an inclusive and sustainable digital transformation. It is co-funded by the European Union and jointly implemented by eight European organisations. It is part of the D4D Hub, an EU-led platform that creates and leverages partnerships to shape a sustainable digital future worldwide.

Context, goals and workflow

Egypt will host the 27th Conference of the Parties of the UNFCCC (COP27) from 6 to 18 November 2022 in Sharm El-Sheikh – a pivotal momentum to reinforce multilateral cooperation to tackle climate change. The workshop took place in the lead-up to COP27 with the aim of shedding light on how to build on technology (AI in particular) to support these efforts.

Goals

The Workshop aims to integrate green innovations and advanced technologies into the global agenda to cope with climate change. It brings together a multi-stakeholder ecosystem of private and public players, eager to connect and work together around major issues in line with the expectations of COP27, as well as with the ambitions of the Egyptian National Artificial Intelligence Strategy. The Workshop is organized around two days:

- Oct 4th – a multi-stakeholder dialogue to draw a common vision & roadmap on the uses of technology and artificial intelligence on resilient agriculture and sustainable smart cities.

- Oct 5th – an open innovation challenge, to highlight solutions, products and services that can be co-created by startups & corporates in response to identified challenges.

Context, goals and workflow

The two-days workshop was introduced by **a panel of institutional speakers** who emphasized the stakes and challenges of the event:

"Innovation must play a pivotal role in the ecological transition. Together with our Team Europe and Egyptian partners, we look forward to accompanying digital entrepreneurs, strengthening the Greentech ecosystem, fostering multi-stakeholder collaborations, and amplifying the reach of initiatives with high potential" introduced H.E. Marc Baréty, French Ambassador to Egypt.

Among the others interventions, H.E Amr Mahfoud's one, CEO of ITIDA, the Information Technology Industry Development Agency of the Egyptian Ministry of Communications and Information Technology, can be mentioned. He insisted on the role ICT can play to address the issue of climate change: *"ICT is the basis for the development of the powerful tools and innovative processes that can help us to efficiently utilise our natural resources."*.

ITIDA was also represented by Dr. Hossam Osman, his vice-president. *"AI is often considered as the highest technology when it comes to innovation."* This *"game-changing technology"* is promising in full of potential to build the "*future of mobility and clean energy*".

These speeches set the context and launched the work of participants.

DAY 1

SUMMARY

Day 1

1. Overview

The first day of the workshop aimed **to launch a multi-stakeholder dialogue** (public sector, private sector, civil society, academia, international institutions, etc) to highlight the challenges, needs and opportunities of the greentech sector in Egypt. Participants had to draw a common vision and build roadmaps on the uses of tech & artificial intelligence on the 4 following topics:

- **Topic 1 : Adaptation to climate change in agriculture**
- **Topic 2 : Affordable, reliable, and sustainable energy for agriculture**
- **Topic 3 : Greener mobility in smart cities**
- **Topic 4 : Sustainable energy in smart cities**

Participants:

Corporate partners: CMA CGM, Crédit Agricole, Idemia, Orange, Schneider Electric, Valeo, Voltalia

Corporates: CHAER, French Chamber of Commerce Egypte, Icealex, Megawra, Mirai Partners

Startups: Agrcology, Carboni Bank, Delta oil, Finres, FortyGuard, Mashreq For Energy Systems, OZ-TECH, ReNille, ToumAI, Vision Computing & Systems

Institutionals: French Embassy , D4D - Hub , ITIDA, World Bank, AFD, Business France

Incubators/accelerators: Flat6Labs, Incubateur UFE, Seedstars

Academics: Cairo University, Frech university of Egypt

2. Methodology

Participants were split into 4 differents groups (1 per topic). The groups were mixed in order to allow representation form all categories of stakeholders within each group.

Each group was supported by 2 facilitators, all experts in the greentech sector and specialists of design-thinking of co-creation processes.

The workshop was divided into 3 main parts:

1) Identifying the issues / challenges related to the topic, and selecting the two most pressing or main ones to focus the solutions on;
2) Identifying 1 or several solutions involving artificial intelligence applications to solve the 2 main selected issues;
3) Build a roadmap to develop the solutions accordingly

At the end of the day, each group pitched their solutions to the attendees.

3. Institutional talks and keynotes ceremony

The opening ceremony was highlighted by different intervention:

- **H.E Marc Baréty**, Ambassador for France in Egypt, highlighted the importance of French and Egyptian cooperation in digital and greentech development and recalled the MoU signed between the two countries to cooperate on artificial intelligence.

- **H.E Amr mahfoud**, CEO of ITIDA, the Information Technology Industry Development Agency of the Egyptian Ministry of Communications and Information Technology, recalled the importance of building concrete, practical and innovative solutions to address real changes faced by Egypt today.
- **Hussein Jaffar**, from the AU-EU D4D - Hub, expressed the ambitions of the European Union in supporting partnerships between Egypt and Europe that can shape a sustainable twin green and digital transition through a holistic approach involving multiple stakeholders.
- **Elodie Montetagaud**, from the Agence Française de Développement (AFD), reminded the importance of sustainability in AFD's digital transformation strategy, with 80% of its portfolio in Egypt being climate-compatible, which can still be improved through digitalization, ICT, and the climate tech actors.
- **Juliette Hirsch**, from Expertise France, insisted on the importance of learning from each other's experience in managing climate change and Egypt's expertise in the topics discussed during the workshop., while maintaining a sustainable and human-centered focus when applying digitalization solutions to those.

Topic 1 : Adaptation to climate change in agriculture

The first issue identified was related to **the availability and the use of qualify information and data regarding the adaptation to climate change for farmers**. Participants identified the need to provide correct, reliable and understandable information and data to farmers and landowners as a priority.

To solve this issue, the main solution designed by participants was **an awareness program for farmers called "Carbon Farming"**.

This awareness campaign should be designed with a specific methodology, involving actors with complementary expertises, skills and influences:
- the Ministry of Agriculture
- NGOs
- academia
- landowners

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Work on the awareness campaign	Work on the awareness campaign and government mandates	Adaptation of the methods and financial modeling	Application of the methods
2024 S2	**2025**	**2026**	**2027**
Application of the methods	Scaling	Scaling	Scaling

The second issue linked with the adaptation to climate change in the agriculture sector was the difficulty for farmers and others actors involved **to deal with rigid systems, set up with unclear permits / regulations because of an unclear political will.**

One solution to clarify information could be **"The AgriHub".** The Agri Hub aims to **revisit different laws and regulations and create a platform dedicated to agriculture sector services** to facilitate investment, authorization, purchasing, experimentation, consultations, tools...

Building such a platform requires working with:
- public sector
- engineers
- investors
- NGOs
- researchers
- farmers
- landowners.

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Awareness and scoping	Focus group and proposition laws	Concept note, planning and funding	Beta version, test, feedbacks and media campaign
2024 S2	**2025**	**2026**	**2027**
MV, integration of stakeholders and 30% of decentralized agri services	M&E and 50% of decentralized agri services	Full operations and 85% of decentralized agri services	Effective, fast and smart decentralized support

Topic 2 : Affordable, reliable, and sustainable energy for agriculture

Participants pointed out **the lack of farmer-friendly solutions coupled with a lack of support** in efforts they put into improving the energy consumption of their farms.

To solve this issue, severals solutions were identified (promote the development of aquaponic systems, farm installation systems to raise farmer awareness, etc.). The one that has been deepened is the development of an **app using AI monitoring systems to consult farmers and help them to manage their farms.**
This app would do a **real-time monitoring of the activities of the farm** and host a channel (voice, video, etc) which allows to consult farmers, in a specialized way. The database would be be built around collective crowd sourcing.

The development of the app would involve:
- Academics (ex: University of Cairo)
- Banking sector
- Technology provider (ex: Karm solar, Renile...)
- Donor organisations (ex: GIZ..)

Main steps to develop the solution

2022 S2	2023 S1	2023 S2
Farmer-oriented needs assessment and development of the beta version of the app	Finalization of the beta version and trial phase, with government support	Actual launch of the app

The second issue spotted by participants is **the resistance / the lack of awareness of farmers regarding the evolution of their practices, emphasizing cultural barriers to change.**

Participants thought about different solutions (conducting awareness sessions to NGOs to train farmers, creating government-led campaigns that are grounded and responding to the pressing needs, etc...) but they decided to work on **the creation of a "one-stop shop" through a consortium between corporates and startups, with government support.**
The short-term goal is to fully cover one governorate by green energy. The long term goal is to develop a national strategy for green energy in the agricultural sector.

The consortium should be composed of:
- Governmental officers, local authorities and ministries
- Private sector (corporates, startups, etc)
- Engineering Syndicates
- Banks
- AFD

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Form consortium and locate a city to implement the solution (e.g. Suez)	Announce the initiative in the media	Designing & implementing the training to the stakeholders	
2024 S2	**2025**	**2026**	**2027**
20% of this area fully covered by green solutions	30% of this area fully covered by green solutions	75% of this area fully covered by green solutions	Whole governorate is covered by green energy

Topic 3 : Greener mobility in smart cities

The main barrier to develop a greener mobility within cities **is the current limitation of public transports.**

Some cities established car sharing tools, enhanced user experience of smart payment solutions for sustainable mobility, etc.. Participants worked **on improving the access to information through a smart city map.** The city map should be considered as a tool to provide tools to know stations of public transportation (location, distance, etc...).

To develop this smart city map, different skills will be needed from:
- AI research academic institutes
- Green NGOs
- VCs

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Customer validation, partnership establishments and governments liasoning	POC integration with data from the public and private transport, integration with Google maps and UI POc dev	Prototype and development of the AI algorithm and the footprint data points	Pilote in one city
2024 S2	**2025**	**2026**	**2027**
Product launch in Cairo	Major cities in Egypt, infrastructure improvement, and feedbacks		

The second issue identified by participants regarding the development of greener mobility is **the lack of cultural awareness among citizens.**

The solution that has been selected combines the development of infrastr<ucture and a wide communication campaign: **developing a pilot project of cycling and walking in one city, supported by an awareness, marketing and multimedia promotion.** This would include AI solutions for data collection in the city.

This project would be run with:
- Government and local municipalities
- R&D teams and consultants
- NGOs
- Funding corporations

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Social studies, technical / financial feasibility, infracture ability, cultural adaptation, assessment if we will apply similar project	Funding and governmental permissions, spectrum of required permissions, awareness and campaigning for green mobility, piloting walking events	Launching pilot projects in universities, schools, gated compounds, developing application and assessment from customers with lessons learnt, technical studies	Expansion through installing bikes in longer scales, developing apps and longer awareness campaigns
2024 S2	**2025**	**2026**	**2027**
Governmental adoption in greater Cairo, lobbying for law change in traffic	Promotion through metro stations, stadium, sports club, historical destination	Governmental adoption	

Topic 4 : Sustainable energy in smart cities

The development of sustainable energy in smart cities is slowed down by **the lack of financial business models to accelerate resilient energy.**

A **broad finance program**, focused on a one renewable energy such as solar energy, in collaboration with governmental entities and solar panel providers could be launched on a test territory.

This project would involve:
- Real estate developers
- Governmental entities
- International organisations
- Academic universities
- Insurance companies
- Citizens

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Business case, partnership agreement, sponsors selections	Business model, approval cycle, digital platform, implementation	Kick-off launch	Awareness and marketing communication
2024 S2	**2025**	**2026**	**2027**
Check Point	Check Point	Check Point	Check Point

The second issue is related to the **implementation of renewable energy and the digital transformation in systems,** especially within industries and households.

The main solution would be to **implement smart sensors to detect all energy consumption habits**.
The aim would be to implement application & IOT hardware devices to give insights to consumers on their usage, savings, comparisons in order to reduce their consumption and improve their buildings performance.

Stakeholders invited to participate in the launch of this solution are:
- Government and institutions
- Energy Consumers and civil Society (Media Citizens)
- Financing institutions (Banks, VCs)
- Academics (Universities in Cairo)
- Private Sector (Energy Companies, Telcom as Orange)

Main steps to develop the solution

2022 S2	2023 S1	2023 S2	2024 S1
Discussion, deployment of the hardware with energy company and KPI identification	Discussion with the regulator to implement in the households and obtain relevant licences	Deployment of the hardware in the household, companies costs integration and households data and KPIs	Data collection and AI analytics to allow forecasts, insights, advice to consumers
2024 S2	**2025**	**2026**	**2027**
Feedback, improvements, deployment of social / environmental impact measurement			

DAY 2

SUMMARY

Day 2

1. Overview

The second day of the workshop aimed to **initiate collaboration between actors to develop concrete solutions** (ex: startups, corporate, NGOs, officials, etc) through an open innovation challenge around products and services that can be co-created by startups & partners. The two following challenges were addressed:

- **Challenge 1 : Resilient agriculture**
- **Challenge 2 : Sustainable smart cities**

Participants:

Corporate partners: CMA CGM, Crédit Agricole, Idemia, Orange, Schneider Electric, Valeo, Voltalia

Startups: Agrcology, Carboni Bank, Delta oil, Finres, FortyGuard, Mashreq For Energy Systems, OZ-TECH, ReNille, ToumAI, Vision Computing & Systems

2. Methodology

Institutions, NGOs and academics were not involved on the second part of the workshop, as the objective was for the startups and the corporates to work together on solutions addressing the challenges. Two mixed groups were formed, each one affiliated to an issue.

The workshop was divided in 3 main parts:

1) Identify the issues / problems related to their topic;
2) Identify the assets owned by companies to address the issue;
3) Match assets from startups and corporates to develop a common solution.

At the end of the day, each group pitched their solutions to the attendees.

3. Opening ceremony

The opening ceremony was highlighted by different interventions:

- **Dr. Hossam Osman**, vice-president of ITIDA explained how "innovation nods" can help to develop synergies among the Egyptian innovation ecosystem. He also called for a better use of AI to solve issues caused by climate change.
- **Ahmed Mansour**, from Plug & Play, introduced the structure and the support they provide to startups. He insisted on interconnections between them and the importance of collaborations.

Challenge 1 : Resilient agriculture

Participants started the ideation process by listing the main issues that slowed down the development of resilient agriculture in Egypt. Issues were linked to:

- **labor** (ex: the decendy of the jobs in the field, ability to compete globally, etc...)
- **storage** (ex: logistic management, etc..)
- **transport** (ex: live tracking for the for transported crops, warehouse temperature, etc...)
- **data and tech** (ex: ability to integrate tech into the agricultural fields, lack of data...)
- **value chain** (ex: fragmented land distribution, etc...)
- **crops** (ex: high dependency of manpower increases crops diseases, lack of diversification...).
- **energy sources** (ex: renewable energy are not enough promoted, etc...)
- **data and resources management** (ex: lack of knowledge about resource alternatives, etc...)

Issues selected by participants: **(1) data and tech** and **(2) energy sources**. On each issue, participants listed the assets they can mobilize to tackle the issue.

(1) Data and tech
Assets listed by startups: monitoring system for fridge, satellite data to monitor traffic, etc...
Assets listed by corporates: international network, e-commerce plateforms, expertise, etc...

Solution developed: COOR Tracking system
The COOR Tracking system is based on IoT implemented in trucks, warehouses and containers. All data are monitored in a real time database that alert and notify the user (ex: corporates, logistics companies) when conditions get worse.

(2) Energy sources

Assets listed by startups: data-driven technology to control the use of energy sources, robot to clean solar panels, AI and machine learning to forecast future impacts, etc...

Assets listed by corporates: availability of experts, R&D in energy solutions, availability of workspaces with all needed ressources...

Solution proposed to be developed : Optimisation Transportation

Optimisation transportation aims to accelerate the implementation / the use of renewable energy among farms. It would rely on a technological solution that monitors the energy consumption on site, highlights the energy consumption through the bill to push renewable alternatives. In a long term, a fund opened to farmers would be created to finance the transition to renewable energies.

Challenge 2 : Sustainable smart cities

Developing a sustainable smart city goes with the development of greener public transports and developing reliable data to help the city management. Some obstacles still preventing actors to work toward this goal. They are:

- **administrative** (ex: public transports delays, challenge of coordinating between the different energy providers, etc...)
- **technical** (ex: difficulty to collect data, difficulty of integrate different modes of transportation, etc...)
- **social** (ex: adoption of the suggested solution among the lower socio-economic segments, lack of awareness, etc...)
- **financial** (ex: financial sustainability, higher expenses associated with new type of transportation, etc...)

Participants reviewed each categories of obstacles listed above and brought together assets they can mobilise to tackle them.

Assets listed by startups: understanding local dialects and gathering data to get precise feedbacks on project (social), good network with local regulators (administrative), prediction of the traffic (technical), data analytics skills and technologies (technical), etc...

Assets listed by corporates: sponsoring (financial), financial support (financial), mentoring (technical, administrative), capital investment (financial), AI expertise (technical), etc...

Solutions proposed to be developed

Transport GURU
Transport GURU determine the public transportation coverage / needs / behaviour of one city. It optimises transportation time and method of transport. The solution targets public and private transportation companies, government and regulator to deliver better service to citizens, workers and tourists. It would enhance user experience, lower emissions and pollution and optimised shared mobility.

GreenFund (powered by Carboni)
GreenFund develop under Crédit Agricole banking using Carboni tech and team to mobilise green finance from carbon market to support local green development plans. This fund is destined to government, startups, SMEs and local multi-nationals.

Process of accurate data collection and analytics
The process implies to set up new IoT devices that can collect accurate data and enable analytics that can lead to cost optimisation through the app, where the feedback will be provided by customers. End users are citizens and government.

Analysis and communication to motivate citizens to use public transportations
The idea is to gather public data from different sources (ex: social survey, news, etc...), analyse these data to understand major issues and share the results with government / transport companies so they can improve their services according to the needs of users.

GLOBAL

SUMMARY

The two-day workshop highlighted two main recommendations :

1. Innovation via artificial intelligence and data analysis plays a crucial role in addressing the underlying issues in the field of resilient agriculture and smart cities, and in the greentech sector in general.
Incorporating AI-based solutions to the sectors of agriculture and smart cities can contribute greatly to achieving goals of sustainability and resilience linked to climate change. This can be made possible through **better data availability and accessibility**, a supportive **regulation and legal framework,** and the **development of capacity and awareness** for the end users. The implementation and the development of AI-based solutions should be accompanied and supported by relevant stakeholders throughout the ecosystem, both from the public and the private sector, in order to facilitate the development of human-centered and smart solutions on a large scale.

2. Partnerships and collaborations between corporates and startups are key to improve existing solutions and to develop new ones.
During the 2-day workshop, corporate innovation product managers collaborated with CEO and co-founders of relevant startups to build roadmaps and solutions. This matchmaking showed interesting results, since merging profiles is not a common practice yet. Corporates were able to present their assets to startups and offered opportunities for future collaborations, while startups pitched their services and skills to a relevant audience including corporate leaders, paving the way for new partnerships. This showed that **partnerships** both with the private sector and between entities of the private sector with different levels of maturity can lead to innovation. This can be facilitated through **match-making initiatives and partnerships**, an enabling **regulatory framework**, and **support structures** for the development of viable **business models**.

To learn more about the project:
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The AU-EU D4D Hub project is co-financed by the European Union and implemented by: