New digital technologies to enhance women's lives through agriculture development

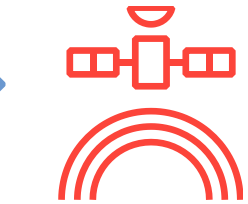
Ashish Narayan, ITU Asia Pacific Regional Office

Meet us

What we do

‘Committed to Connecting the World’

3 Sectors



ITU Radiocommunication

Coordinating radio-frequency spectrum and **assigning** orbital slots for satellites

ITU Standardization

Establishing global standards

ITU Development

Bridging the digital divide

193 MEMBER STATES

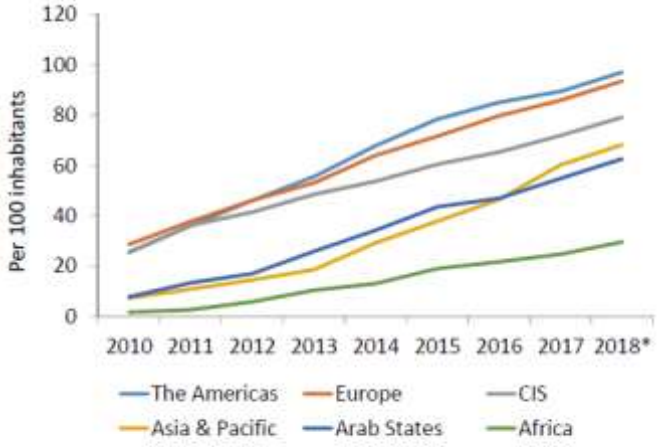
+800 MEMBERS FROM THE PRIVATE SECTOR, ACADEMIA AND INTERNATIONAL AND REGIONAL ORGANIZATIONS

Digital transformation is key to accelerate our progress towards SDGs..

17 Sustainable Development Goals

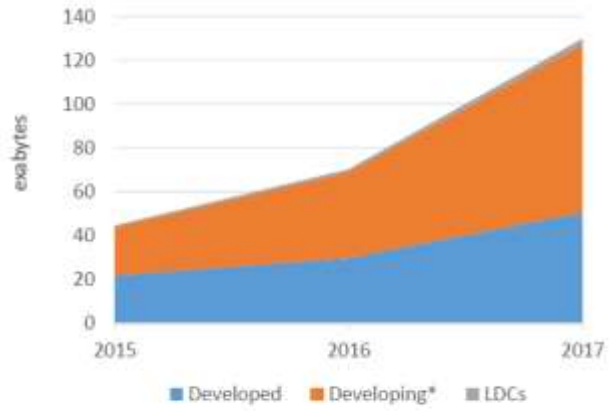
169 Targets

ICT trends..



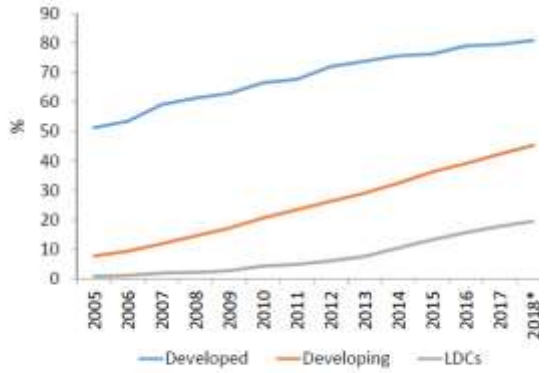
Note: * ITU estimate.
Source: ITU.

Active mobile-broadband subscriptions per 100 inhabitants, by region, 2010–2018*



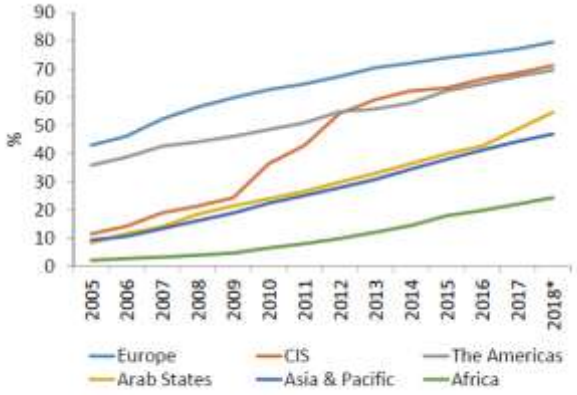
Note: * Excluding LDCs.
Source: ITU.

Mobile-broadband traffic, exabytes, 2015–2017



Note: * ITU estimate.
Source: ITU.

Individuals using the Internet by development status, 2005–2018*



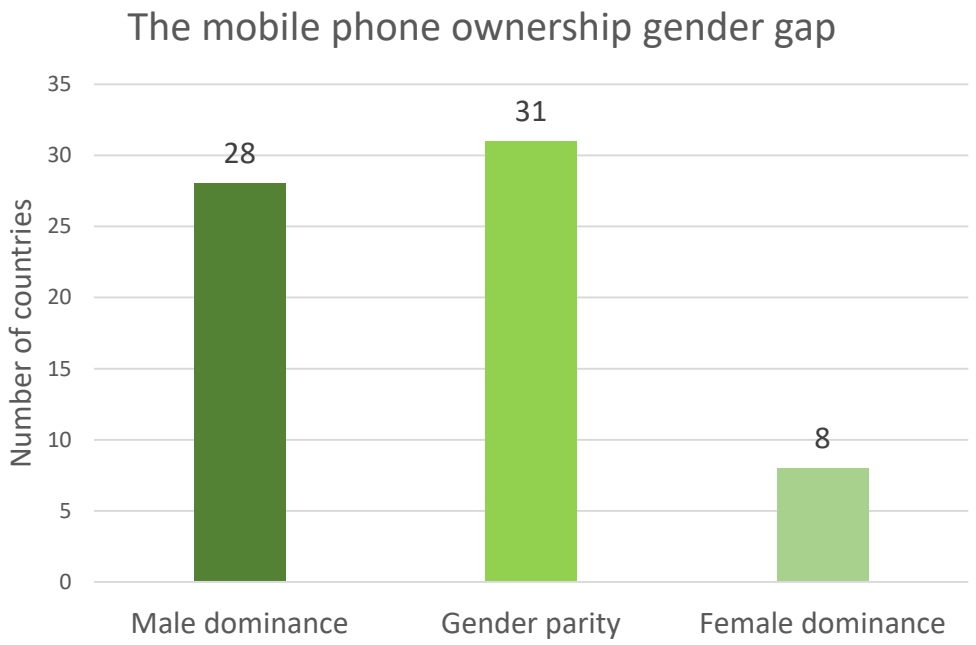
Note: * ITU estimate.
Source: ITU.

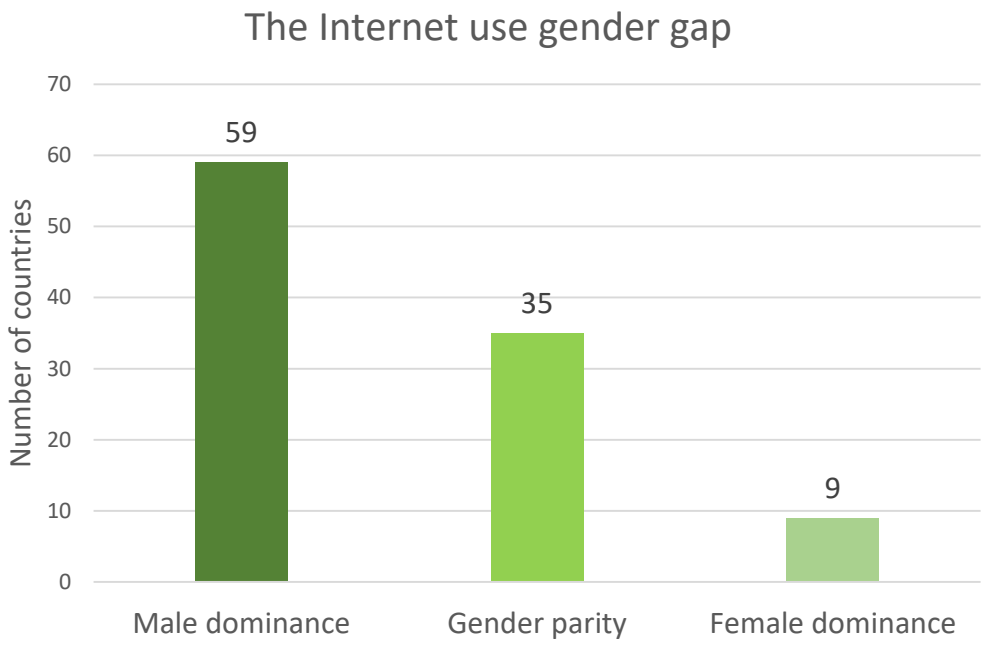
Individuals using the Internet, by region, 2005–2018*

ITU and SDG gender aggregated…

- ITU monitors 3 SDG indicators that can be disaggregated by sex:
  - ➢4.4.1: Proportion of individuals with ICT skills
  - ➢5.b.1: Proportion of individuals who own a mobile telephone
  - ➢17.8.1: Proportion of individuals using the Internet
- Allowing us to explore the gender gap for these indicators

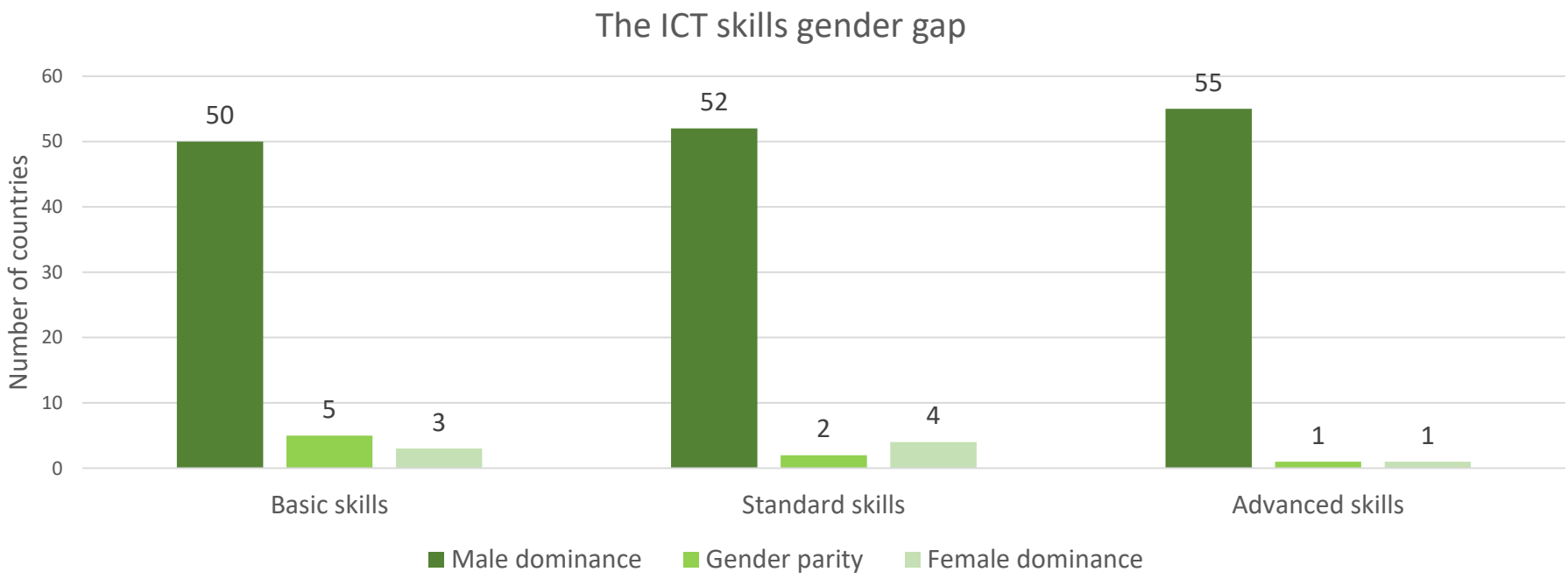
What is the gender gap?





Note: The gender gap represents the difference between the penetration rates for males and females relative to the penetration rate for males, expressed as a percentage.
Gender parity is defined here as a gender gap between -2% and 2%.
Source: ITU World Telecommunication/ICT Indicators Database; countries are included that submitted data at least once for reference year 2015 to 2018.

What is the gender gap?



Note: The gender gap represents the difference between the penetration rates for males and females relative to the penetration rate for males, expressed as a percentage. Gender parity is defined here as a gender gap between -2% and 2%. The value for basic skills is the average value of the following four computer-based activities: copying or moving a file or folder, using copy and paste tools to duplicate or move information within a document, sending e-mails with attached files, and transferring files between a computer and other devices. The value for standard skills is the average value of the following four computer-based activities: using basic arithmetic formula in a spreadsheet; connecting and installing new devices; creating electronic presentations with presentation software; and finding, downloading, installing and configuring software. The value for advanced skills is the value for writing a computer program using a specialized programming language.
Source: ITU World Telecommunication/ICT Indicators Database; countries are included that submitted data at least once for reference year 2015 to 2018.

Methodology document

✓ **Includes:**

- Name of the indicators
- Data source description
- Processing methodology
- Expected results example
- Disaggregation
- The purpose and value of the indicator

➢ **Complemented and amended during the project**

➢ **Published on ITU website**

15 Indicators + Country indicators

BD01: Percentage of the Land Area Covered by Mobile-Cellular Network, by Technology

BD02: Percentage of the Population Covered by a Mobile-Cellular Network, by Technology

BD03: Usage of Mobile-Cellular Networks for non-IP Related Activities, by Technology

BD04: Usage of Mobile-Cellular Networks for Internet Access, by Technology

BD05: Number of Subscriptions with Access to Technology

BD06: Active Mobile Voice and Broadband Subscriptions, by Contract Type

BD07: Average Number of Active Mobile Subscriptions per Day, by Contract Type

BD08: Active Mobile Devices

BD09: IMEI Conversion Rate

BD10: Fixed Domestic Broadband Traffic, by Speed, Contract Type

BD11: Mobile Domestic Broadband Traffic, by Contract Type, Technology

BD12: Mobile International Broadband Traffic, by Contract Type

BD13: Inbound Roaming Subscriptions per Foreign Tourist

BD14: Fixed Broadband Subscriptions, by Technology

BD15: Fixed Broadband Subscriptions, by Speed

BD16+: Proposed New Indicators from Pilot Countries

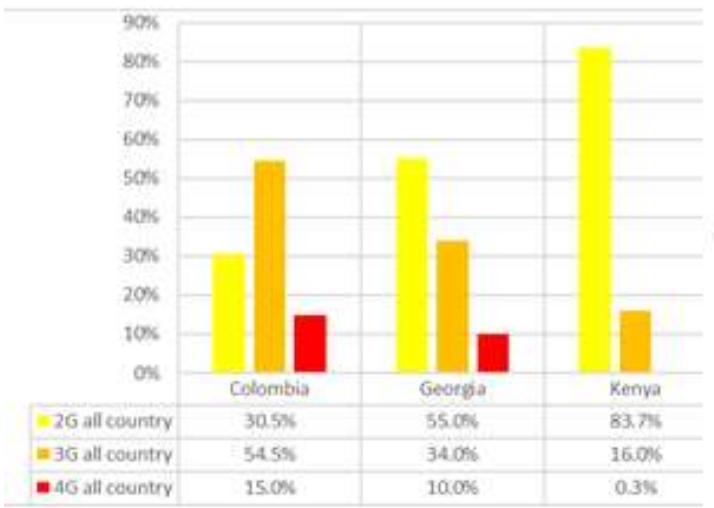
Big Data for Measuring the Information Society

	Colombia	Georgia	Kenya	Philippines	Sweden	UAE
BD01	-	-	+	-	-	-
BD02	-	+	+	-	-	-
BD03	+	+	+	+	-	+
BD04	+	+	-	+	-	+
BD05	+	+	+	+	-	+
BD06	+	+	-	+	-	+
BD07	+	+	+	+	-	-
BD08	-	+	+	+	-	+
BD09	-	+	+	+	-	+
BD10	-	-	-	-	-	-
BD11	+	+	+	+	-	+
BD12	-	+	-	-	-	+
BD13	+	+	+	+	-	-
BD14	-	+	-	-	-	+
BD15	-	+	-	-	-	+
BD16	++++	+	-	-	-	+
TOTAL	11	14	9	9	0	11

Broadband speed data

Indicators Example BD05

BD05: Number of Subscriptions with Access to Technology



Food and Agriculture Organization of the United Nations

E-agriculture

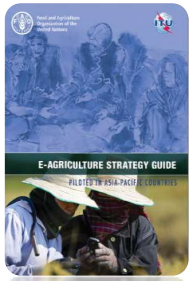
WORLD BANK

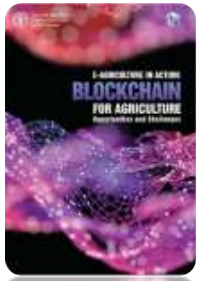
Digital finance

World Health Organization

m-health

Smart sustainable cities and digital government





agriculture SOLUTIONS FORUM

National strategies
Case studies
Solutions support
Forums
Trainings
Projects and Partnerships

BILL & MELINDA GATES foundation

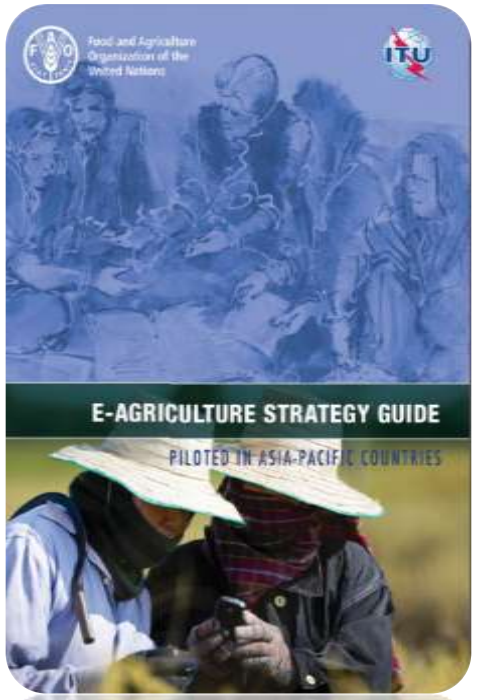
Afghanistan, Bhutan, China, Fiji, India, Mongolia, Pakistan, Papua New Guinea, Philippines, Sri Lanka,

Digital Economy and inclusive digital Society

" FAO recognizes that rural women and men, together, hold the keys to ending hunger and extreme poverty. Rural women and girls, in particular, are recognized as major agents of change. Across the developing world, women make up 50 percent of the agricultural labour force. As farmers and farm workers, horticulturists and market sellers, businesswomen, entrepreneurs and community leaders, they fulfil important roles throughout agrifood value chains, as well as in the management of natural resources such as land and water.

Yet the gender gap in food and agriculture is extensive. As consumers, women are more likely to be food-insecure than men in every region of the world. And as producers, rural women face even greater constraints than their male counterparts in accessing essential productive resources and services, technology, market information and financial assets. They are under-represented in local institutions and governance mechanisms, and tend to have less decision-making power. In addition to these constraints, prevailing gender norms and discrimination often mean that women face an excessive work burden, and that much of their labour remains unpaid and unrecognized."

Source: http://www.fao.org/gender/background/en/



Strategy Guide

Country Assistances

E-agriculture strategies, solutions

- Afghanistan
- Bhutan
- Fiji
- Mongolia
- Papua New Guinea
- Pakistan
- Philippines
- Sri Lanka

Case studies

Solutions Forum

agriculture SOLUTIONS FORUM 2016 — Thailand

agriculture SOLUTIONS FORUM 2018 — China

Trainings

FAO-ITU: E-agriculture strategy development
FAO-ITU-GIC: Use of drones, satellite imagery and GIS from agriculture
Agritech Using ICTs (Girls in ICT Day trainings)

Food and Agriculture Organization of the United Nations

ITU

CTA fhi360 www.cobi.org BIID SPC Secretariat of the Pacific Community CGIAR Platform for Big Data in Agriculture

E-agriculture – Asia-Pacific

(WSIS Action Line C7)

ICT AND AGRICULTURE APPLICATION TRENDS

Food and Agriculture Organization of the United Nations

BLOCKCHAIN

BIG DATA

Artificial Intelligence

Source: FAO-ITU E-agriculture Strategy Guide

What outcomes do we expect from digital technologies in agriculture

Food and Agriculture Organization of the United Nations

Institutional

- Increased inter-agency coordination and synchronisation of work for better delivery of e-agriculture expected outcomes
- Clear and well defined e-agriculture strategy, action plan and measureable benefits
- Using digital technologies to increase transparency in the relevant institutions

Infrastructure

- Improved network coverage and digital connectivity to enable data and information exchange with the smallest administrative / dwelling units (Bags)
- Availability of infrastructure to collect, store, manage, analyze, share and communicate data and information in a timely and secure manner
- Enhanced collection of data using digital infrastructure (e.g. drones, GIS, satellite, IOTs)

Data and information

- Improved quality, accessibility, availability and reliability of data for agriculture
- Integrated, secure and inter-operable database with established policy and rules for sharing of data with stakeholders
- Establishment of credible and audited databases required to support e-agriculture
- Availability of agriculture content and information in simple and easy manner that can be used across different communication channels

Services

- Availability of innovative e-agriculture services (e.g. food safety and health, agro-insurance, digital financial services, disaster alerts, traceability, market information and trade)
- Availability of user friendly ICT/mobile applications for e-agriculture services in Mongolia

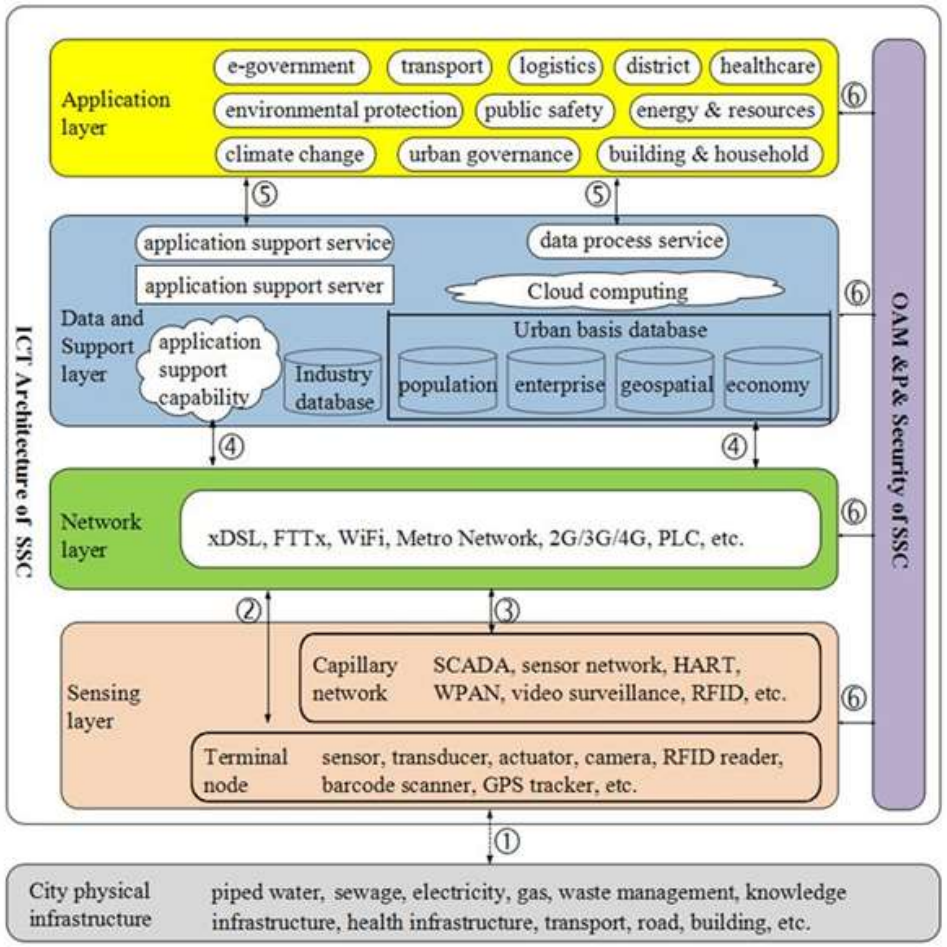
Processes and mechanisms

- Increased efficiency, compliance and monitoring in agriculture sector using digital technologies among various stakeholders
- Established processes and tools for timely sharing of information across stakeholders

Capacity, Knowledge & skills

- Increased digital skills and capacity of researchers, developers, workers, communities and users to harness digital technologies in agriculture
- Improved institutional capacity to manage knowledge and build skills leveraging on digital technologies
- Enhanced linkage between education, research and agriculture stakeholders through digital technologies

Digital transformation requires an ecosystem approach



+

Enabling Environment , Digital Inclusion

Skills and capacity Building

Innovation

Source: ITU-T Focus Group on Smart Sustainable Cities

Key areas of digital agriculture solutions

Food and Agriculture Organization of the United Nations

Content

Database

Information System

Services

Research and capacity development

Infrastructure

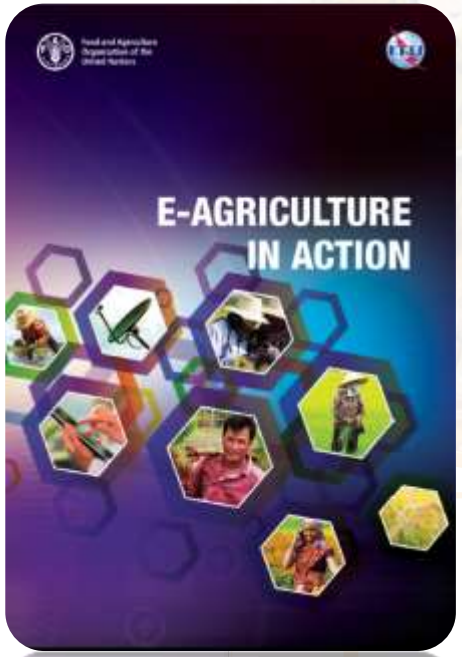
Policy and enabling environment

E-agriculture in Action

- Case Studies-

Food and Agriculture Organization of the United Nations

ITU



Case Study 8: Smart Water Management, Bangladesh

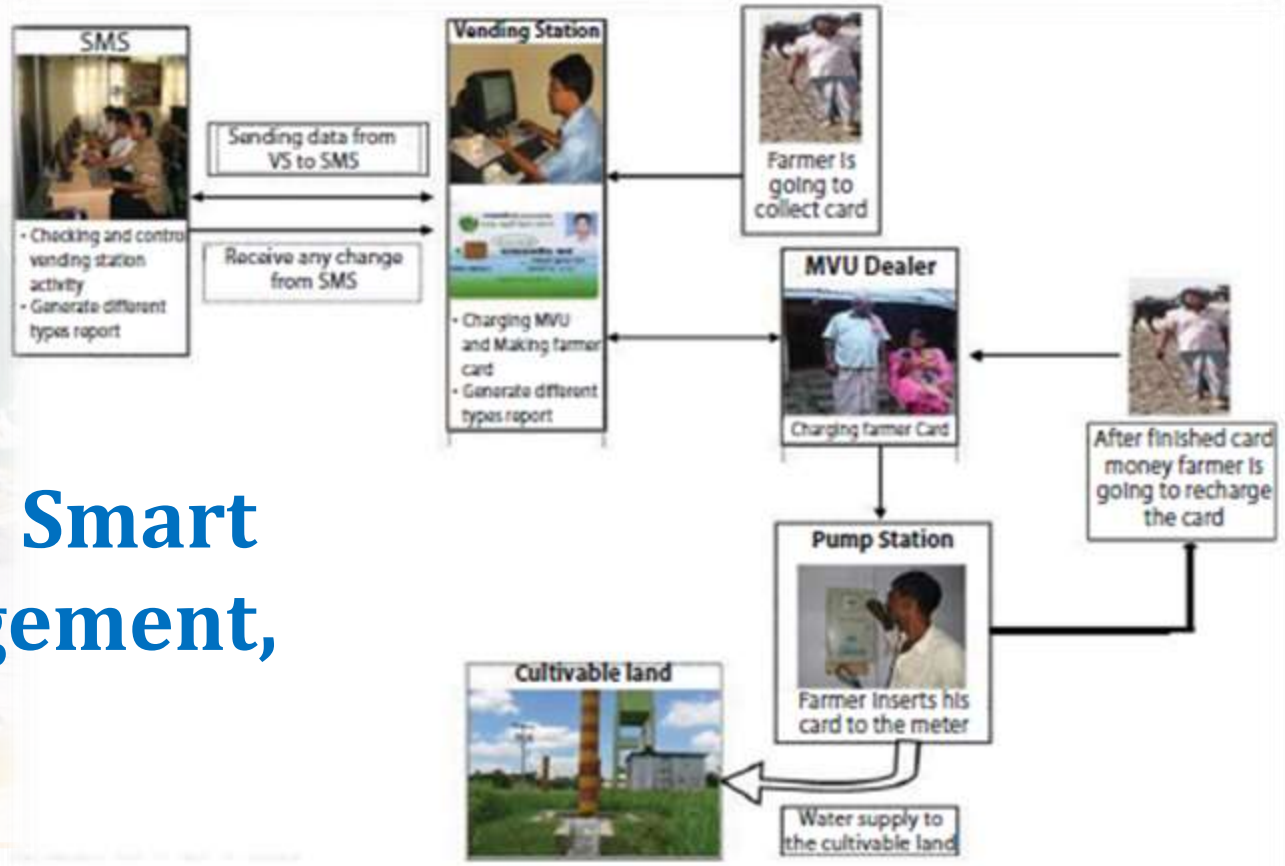


Figure H2: System operation

- *To ensure on-demand volumetric water supply to farmers.*
- *The application of the prepaid system with smart cards has been very successful and it is expanding.*
- *The net outcome has been an almost 100 percent fee recovery, farmers have access to on-demand water supply on a volumetric basis, overall groundwater extraction has been reduced owing to efficient use of water and overall energy consumption has declined.*

Case Study 3: Actionable intelligence from drones to the agricultural industry

Food and Agriculture Organization of the United Nations

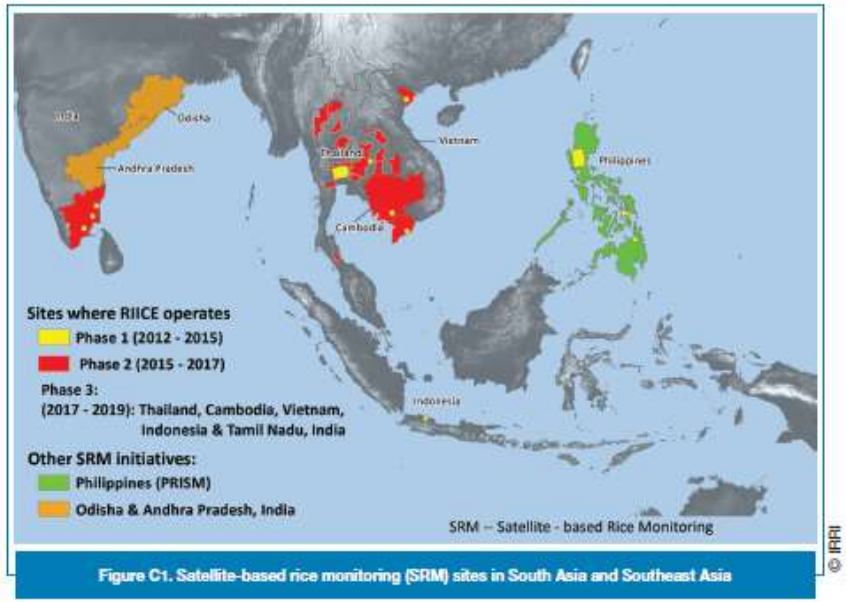


Figure C1. Satellite-based rice monitoring (SRM) sites in South Asia and Southeast Asia

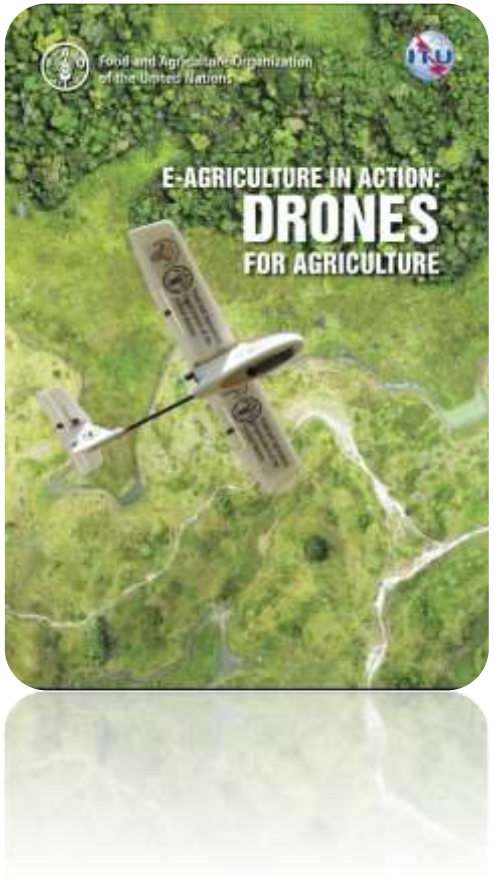
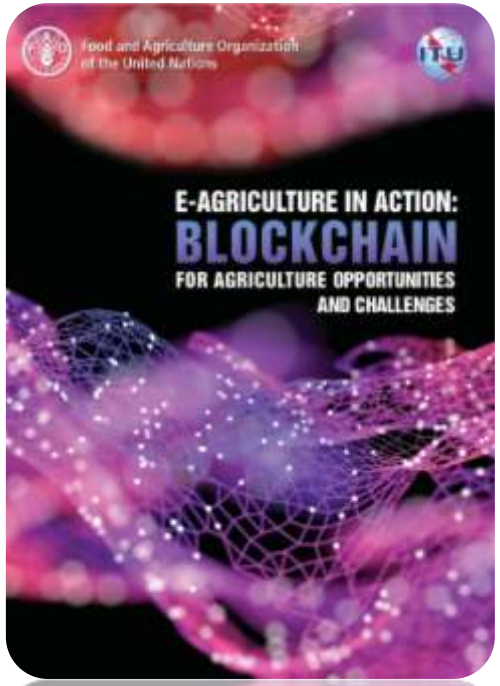


Figure D4. Three-dimensional model produced from image point cloud

© SAP

Blockchain or Database

Food and Agriculture Organization of the United Nations



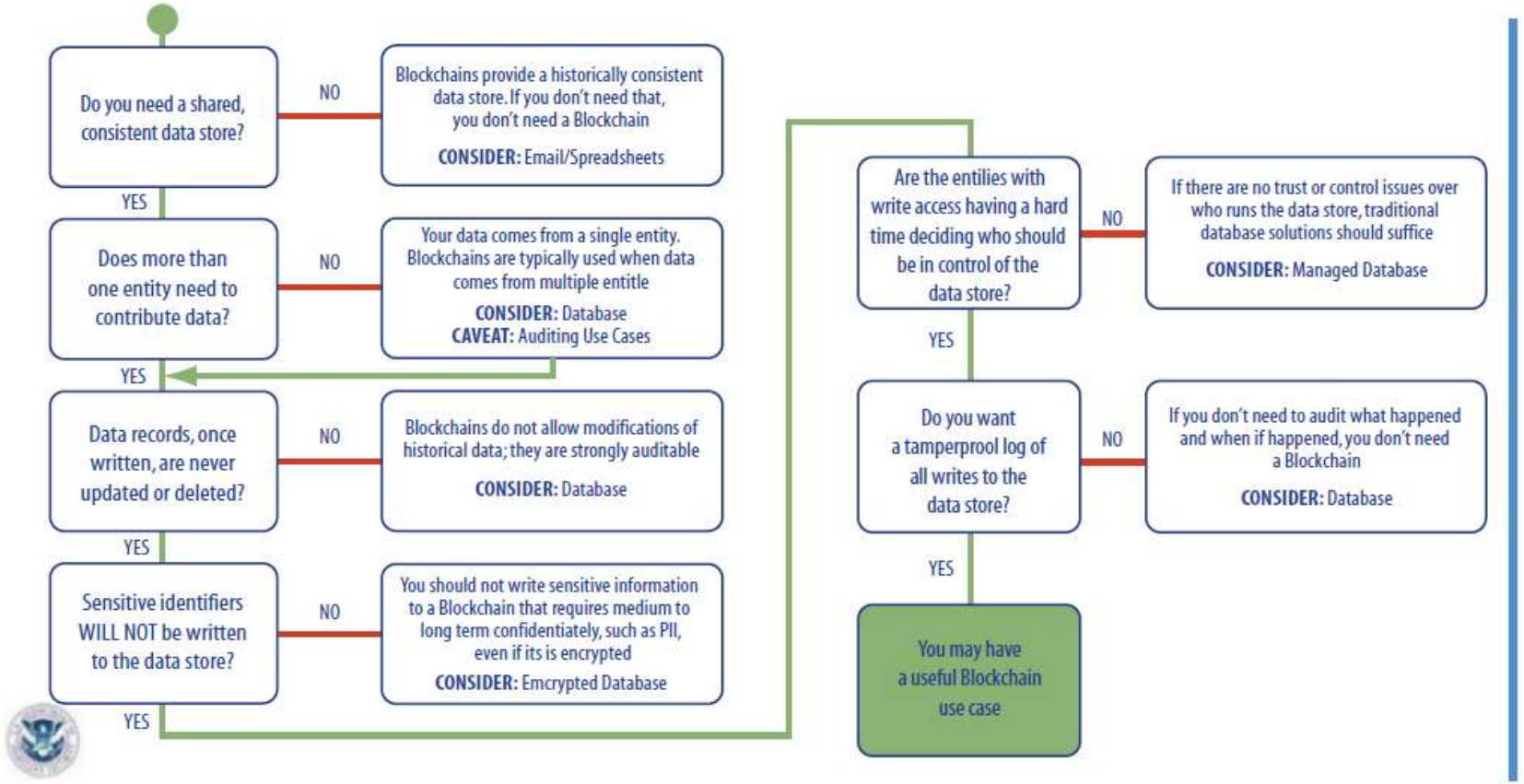
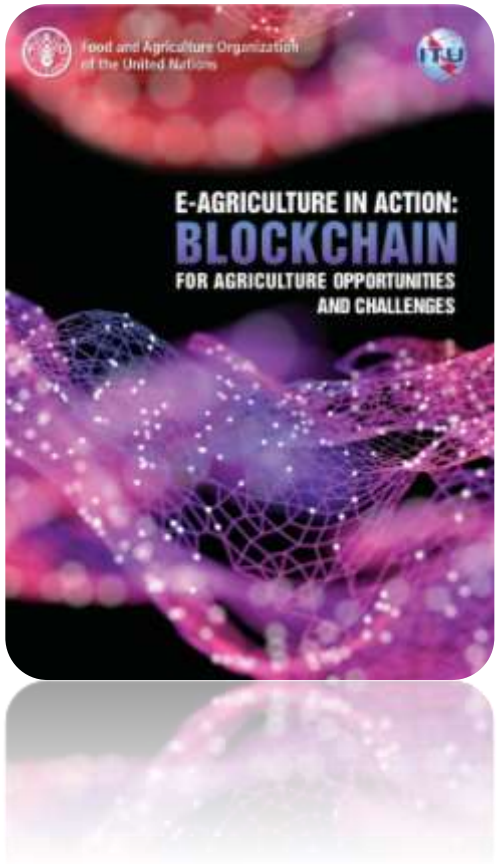


Chart 1: How to make a decision about using blockchain or a database

Source: United States Department of Homeland Security Science & Technology Directorate[32]

Implementation risks

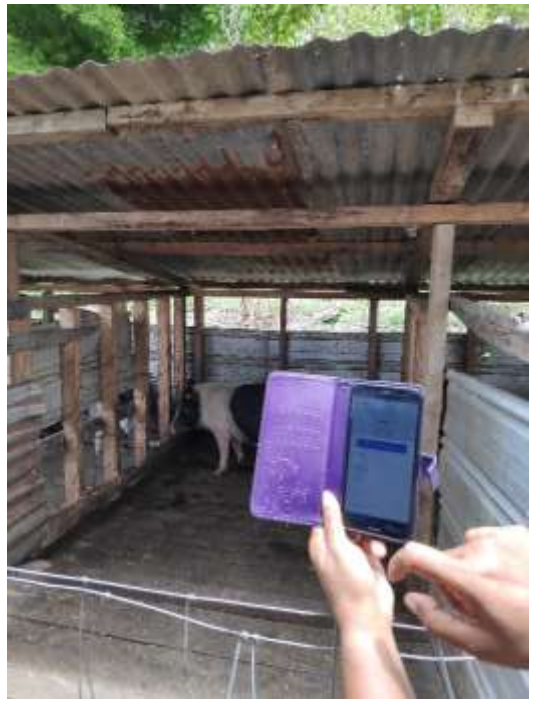
- Is a software code mature enough to replace the law?
- Standards are underdeveloped and not mature yet
- Energy requirement can be high
- Trusting the blockchain developers and managers
- Increased responsibility on the user
- Implementing data privacy legislation
- Policy and regulatory risks
- Speed of transaction
- Malicious users
- Identity and security



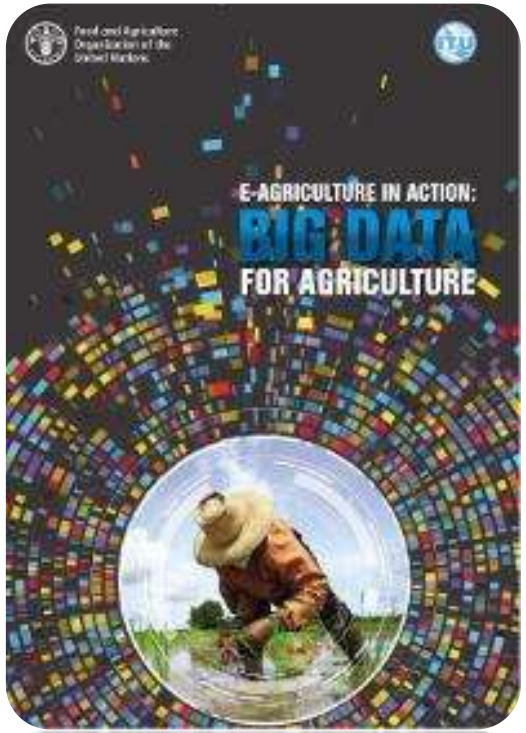
Source: FAO-ITU publication “E-agriculture in Action: Blockchain for agriculture, opportunities and challenges”

Case study: Livestock traceability in PNG

Food and Agriculture Organization of the United Nations



BIG DATA in agriculture



Increases data accessibility

- Unlocking significant value by making information transparent
- Creating and storing transactional data in digital form
- Reducing time for finding/accessing the correct data

Improves productivity

- Real-time monitoring and forecasting of events that impact either business performance or operations
- Timely insights from the vast amount of data
- Identifying significant information that can improve decision quality or minimize risks
- Creating new service models using big data analytics

Reduces cost

- Scale-out of data storage
- Identifying and reducing inefficiencies

Challenges are important considerations for big data exchange	Big data ecosystems areexpected to provide the following benefits:
Various sources, types and formats of data: big data service providers have to handle diverse aspects of data and data sources during data collection, storage and integration. **Schema-on-read:** usually big data is stored in a raw format, but after data is discovered and captured, it is transformed to fulfil the application's requirements. **Unawareness of suitable data/Unconstrained usage of data:** sometimes, the big data service customer does not recognize what kinds of data are really needed. This often leads to unconstrained usage of data in a big data ecosystem.	**mitigation of silos in the ecosystem** through a better sharing of high-variety data between involved parties; **monetization of data** enabling better revenues to be made by parties from high volume of data exchanged in the ecosystem; **openness of the publicly available data** contributing to human society and economic activities; **facilitation of the appearance of new and effective business models**; and **interconnection of valuable, high-variety, and high-volume data** contributing more to human society and economic activities.
Source: ITU, 2018b	

Global Partnership for Gender Equality in the Digital Age

- The Global Partnership for Gender Equality in the Digital Age (the Partnership) is a multi-stakeholder initiative implemented by ITU and UN Women to promote awareness; build political commitment, leveraging knowledge, efforts, and resources for the greatest possible impact to achieve digital gender equality at both the global and national levels. It aims at creating an unstoppable global movement where women and girls are equal participants in the technology revolution.

- Through gathering of data, sharing of knowledge, and direct action, the Partnership will focus on addressing Sustainable Development Goal 5b, "Enhance the use of enabling technology, in particular information and communications technology (ICTs), to promote the empowerment of women" through three areas of action:

    - ACCESS – Achieve equal access to digital technologies;
    - SKILLS – Empower women and girls with skills to become ICT creators;
    - LEADERS – Promote women as ICT leaders and entrepreneurs.

In the perspective of the promotion of The Global Partnership for Gender Equality in the Digital Age, ITU and UN Women launched in September 2016 the EQUALS campaign to promote together Gender Equality in the Digital Age. This campaign works closely to the achievement of Goal 5 of the Sustainable Development Agenda, 'Achieve gender equality and empower all women and girls'.

Digital Inclusion example- Asia-Pacific

More than 70 events reported for Girls in ICT Day (Asia-Pacific) in 2019

THAILAND

(EXAMPLE)

Enhance employment opportunities for girls and young women in Thailand by imparting employable digital skills relevant for the local job market

- Around 400 girls trained (2017-19)
- 8 trainings held
- More partners have joined
- Partnership continues in 2019

THANK YOU

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