2026 SIDS NDE Joint Programme

Forum, Capacity Building on AI and Energy, and Voluntary Technology Talk

16-18 September 2026,
Incheon & Busan, Republic of Korea

UN environment programme | CTCN UN Climate Technology Centre & Network | GGGI

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Capacity Building on AI for Adaptive Management in the Energy Sector

Jeawon Kim
CTCN Secretariat

Key Insights from SIDS NDCs and Technology Priorities

- **Energy efficiency** as a tool to strengthen endogenous capacity development on water and coastal resilience
- Strong demand for **capacity building** that:
    - Enhances the application of AI-related technologies
    - Reduces fragmentation application and duplicated projects
- Emphasis on readiness for transformational adaptation capabilities – managing climate risks rather than improvements alone

Group's Priority Technologies

Energy

- off-grid electrification
- battery electric vehicles

Overall Regional Trend

- Increasing readiness for **system transformation through integration**
- Strong relevance to link production, energy, and planning systems rather than being deployed in isolation

Reflection – Day 3. 4 Panel discussions

Energy crisis = climate crisis

AI cannot go without energy and electricity – how can we mobilise clean energy?

AI means energy; to be more efficient with energy production, this is where AI can jump in. Digital and green transformation go together and should be incorporated into climate change.

AI and EV growth is also energy-intensive. How we produce and use it is about balancing the energy crisis and the climate crisis

Policies and regulations are behind the technology innovation and speed of its growth.

Gap in AI policy and use of AI. When policy is in its draft, the private sector is ahead – and the impact is unknown.

Retrofitting policies to the market speed and expansion.

Fossil to RE transition is about job transition – mismatch between expected outcomes among private vs public. And this intersects; policy may assist?

Necessity to speak differently and ask differently when speaking to the private sector – make it attractive and come up with a win-win situation.

Energy mix, high energy consumption and social responsibilities? Another infrastructure is needed to meet the speed. Regulations for control. Is building AI data centres really cheap??

Need for building capacity – skills in emerging AI. Why do we need so many data centres? Hosted in developed countries, and could the benefit be shared with developing countries? SIDS don't necessarily need data centres – locally isolated data clouds to maintain data security.

Recap: The AI-energy nexus and climate policy

1. AI is not a cloud; it's physical

- It uses materials, hardware, and electricity – this includes copper, chips, water, cement, and investments
- Renewables as additions, not substitutions
- Industrial clusters to aggregate demand, and governments to provide grants to initiate research and development.
- More body carbon is on production of semin-conductors, then cement, steel, or water.

2. Trust is the key infrastructure

- The speed of AI data centre growth is behind the speed of grid decarbonization.
- The private sector, like Google, is committed to generating 12 GWt of net new renewable energy by increasing its data centres' energy efficiency by 88%.
- On average, 2.3 trillion dollars are invested in the clean transition. Energy availability shapes the bankability of clean energy.

3. Mismatch between power, policy, and purpose

- Regulations have not always kept pace with market transformation. Clear, predictable agreements and policies are needed to support investment and economic competitiveness.
- At the consumer level, the Global North is less positive about AI growth than the Global South.
- Attracting investment doesn't necessarily bring a clean energy transition – high-quality jobs, people-oriented, collaboration-focused
- Sovereignty is about preserving meaningful choice, not self-efficiency.

Co-leaders of System Transformation

Common Challenges

- Climate risks
- Resource pressures
- Coordination gaps
- Competing priorities

Opportunities

- Stronger resilience
- Better resource efficiency
- Cross-sector benefits
- More impactful investments
- Scalable solutions

Role of country focal points to the UNFCCC

- Ensure global climate support aligns with national priorities

Role of NDEs

- **Lead integrated technology planning**
- Identify and endorse technical assistance (non-investment instrument) opportunities
- Connect sectors and institutions at the national and regional-level

Role of NDAs

- **Lead integrated finance planning**
- Identify and endorse investment opportunities
- Guide the distribution of climate investments at the national level

Today's workshop schedule and flow

10:45-11:50	**Session 2** **Learning Energy System Transformative Technologies**
12:00-13:30	**Lunch Break**
13:30-15:00	**Session 3** **The role, application, and potential of AI**
15:00-15:15	**Coffee Break**
15:15-17:00	**Session 4** **Climate Narrative to design an energy project with strong AI components**

Flow of the Session

The sessions will move from initial framing and individual reflection, to group-based discussions, and conclude with shared insights and collective learning in plenary.

- *Listen*
- *Reflect*
- *Discuss*
- *Share*

Materials at hand

to support readiness and engagement

- Workbook for exercises and individual reflections

Expected Workshop Outputs

Session 3	Explore **TEC-verified emerging energy technologies** and gain a **deeper understanding** of pros cons of each technology.
Session 4	Understand public and private sector's AI application cases and explore replicability of the approaches/concept/framework in your country.
Session 5	Understand the concept of climate narrative. Ideate on climate-narrative-led TA project that tackles energy issue.

AI Law, policy, and governance

Jeawon Kim, CTCN

2024 Capacity Building on #AI4ClimateAction

Activity 1.2.1 of the Work Plan on AI4 Climate Action

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Asia (July 3-5, 2024)
12 NDEs, 14 presenters, 1 site visit to T.um, SK Telecom (largest telecommunication company in Korea). Partnered with NIGT.

Pacific (July 10-12, 2024)
10 NDEs, 16 presenters, 1 site site visit to T.um by SK Telecom. Partnered with NIGT.

Africa (August 29-30, 2024)
10 NDEs, 16 presenters, 1 site visit to Green Data Center. Partnered with GIZ.

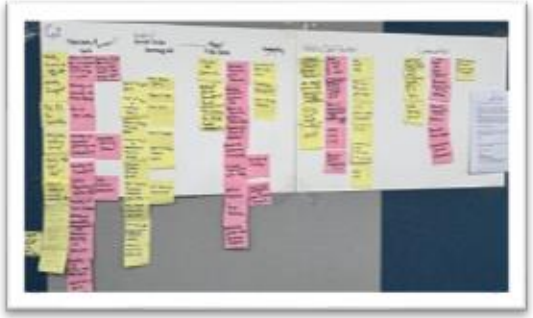
Latin America and the Caribbean (October 3-4, 2024)
22 NDEs, 20 presenters. Partnered with Costa Rica.

Objective: Increase the awareness of applicability of AI technology for climate action and facilitate the co-creation process of AI-led TA projects

Methodology:

- Workshop content developed through NDC analyses, focusing on AI components and sector priorities.
- Tailored to National Designated Entities (NDEs), aligning with their knowledge level on AI.
- Introduction to the history of AI, its challenges and opportunities, and pioneering cases of AI technology in the environmental and climate agenda.
- CTCN facilitated the Technical Assistance project ideation process.

Outcomes: 32 AI-led TA project ideas
Asia & Pacific: 17 new ideas
Africa: 11 new ideas
LAC: 4 new ideas



← Online playlist

ITU-TEC - Digital technologies and NDCs: Digital solutions in support of NDC implementation

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Methodology

140 NDCs with 2035 targets, submitted between January 2024 and July 2026 (ICTU included when submitted as part of the annex)

Keyword search

- Discoverability
- Excerpts and passages
- Baseline comparability

Expert review

- Analysis and interpretation
- Database
- Categorization

Cleaning and validation

- Multi-attribute tagging
- Deduplication logic
- Cross-checking

ITU-TEC - Digital technologies and NDCs: Digital solutions in support of NDC implementation

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Key findings

Nearly three quarters of Parties (74%) reference digital technologies as solutions to be deployed.

Data/MRV/Decision -making systems (70%)

Early warning systems (58%)

Resource efficiency (46%)

Others (28%)

Artificial Intelligence (12%)

By climate action domains:

61%	Adaptation
57%	Mitigation
56%	Cross-cutting
14%	Loss & damage

By implementation level:

73%	National
5%	Regional (subnational)
15%	Local
10%	Multi-level

ITU-TEC - Digital technologies and NDCs: Digital solutions in support of NDC implementation

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Key findings: implementation and support dimensions

- A minority of Parties delineate highly specific targets, milestones or other quantified references.
- Cost estimates and budget components are referenced in some NDCs.
- Several Parties highlight plans to strengthen institutional arrangements and develop the institutional capacity using digital solutions.
- 43% of NDCs refer to digital technologies in the context of technology transfer.
- 21% of NDCs link a given digital solution as being explicitly conditional.

Country examples:

Andorra, Armenia, Azerbaijan, Bahrain, Bahamas, Brazil, Costa Rica, Côte d'Ivoire, Dominican Republic, El Salvador, Fiji, Guinea, India, Iraq, Kazakhstan, Marshall Islands, Mexico, Moldova, Morocco, Paraguay, Republic of Korea, Russian Federation, Rwanda, Sierra Leone, Singapore, Somalia, Suriname, Uruguay, Vanuatu

Artificial Intelligence – Versatile tool

Available at low-to-no cost to anybody with internet access

General-purpose technologies (GPTs) include electricity, information technology, and the internet.

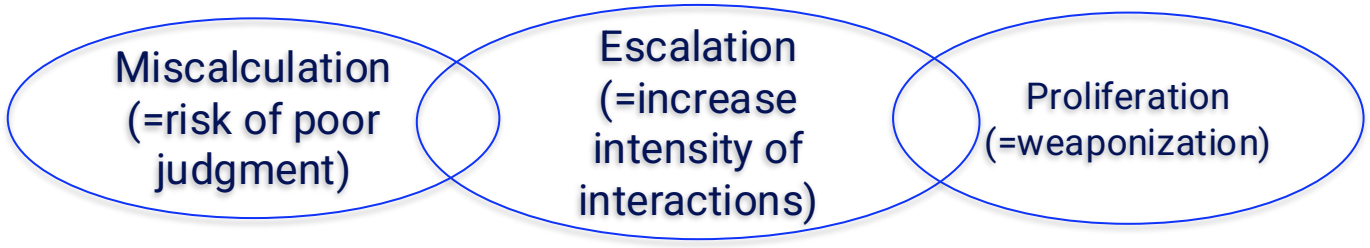
* This is different to Generative Pre-trained Transformers that form the basis of the AI model architecture on which ChatGPT is based. A GPTs is an economics term describing new ways of doing and producing, which includes both AI and non-AI innovations.

The three properties of GPTs are (Jovanovic & Rousseau, 2005):

- **Persuasiveness**: Applications of the GPT can be found across industries and sectors
- **Improvement**: Over time, the performance of the GPT improves while cost of use remains low
- **Innovation spawning**: The GPT gives rise to new product or process innovations that would not have been feasible before

Regulatory competition and innovation across jurisdictions

International security



Policymaking under uncertainty

A programme can learn while retaining the ability to change direction.

Uncertain capability and impact

Technical progress, costs and social effects do not follow a dependable timetable.

A bounded learning process

Compare a local pilot with current practice and agree criteria for continuation.

A reversible investment

Fund data and staff capability. Retain a fallback service and an exit route.

Who shapes AI policy?

Institutions influence whose priorities enter a policy and who can challenge it.

Actor	Role in governance	Climate-programme relevance
Executive and legislature	Set priorities, budgets and legal authority	Define mandates and accountability
Regulators and courts	Interpret, supervise and review decisions	Clarify sector rules and routes to remedy
Businesses, researchers and communities	Contribute expertise, interests and experience	Identify feasibility, data gaps and unequal effects

Instruments of AI governance

Different instruments carry different authority and enforcement mechanisms.

Instrument	What it contributes	Programme application
Law and regulation	Binding duties within a defined scope	Establish applicable legal obligations
Contracts and standards	Terms, specifications and evidence of performance	Set acceptance tests, data rights and audit access
Ethics, voluntary codes and cooperation	Shared principles and expectations	Translate principles into operating procedures

A principle becomes useful when someone owns the task, evidence and response to failure.

Responsibilities of deployers

Using a supplier’s system introduces responsibilities for the institution deploying it.

Use and human oversight

Follow the intended-use instructions. Assign competent people with authority to intervene.

Records and monitoring

Retain relevant evidence and logs. Investigate errors and respond to incidents.

Assessment and remedy

Assess effects in the local context and establish a route to question harmful decisions.

Four regulatory approaches

Comparative models and the climate-programme question

Jurisdiction	Policy emphasis and main instrument	Question for a climate programme
European Union	Risk and rights Horizontal AI Act	Could this use affect safety, rights or essential services?
China	Development and security Layered AI service and content rules	How will data and public-facing content meet applicable controls?
United Kingdom	Innovation and contextual governance Existing laws and sector regulators	Which regulator and sector rules govern this decision?
Republic of Korea	Promotion and trust AI Basic Act and adoption support	How will adoption meet transparency and applicable safeguards?

Risk categories in the EU approach

Classification depends on intended use and the conditions in the AI Act.

Category or duty	Regulatory response	Relevant example
Prohibited practices	Ban specified unacceptable uses	Certain harmful manipulation or social scoring
High-risk applications	Requirements for defined sensitive uses	Certain safety components in critical infrastructure
Transparency duties	Disclose specified AI interactions or content	Chatbots and particular synthetic content
Minimal or no risk	No additional AI Act duties for this category	An ordinary spam filter

General-purpose models with systemic risk form a separate model-level category.

Generative, foundation and frontier AI

Term	Meaning	Governance implication
Generative AI	Produces content such as text, images or code	Outputs may be plausible but inaccurate
Foundation model	A model trained broadly for adaptation to many tasks	Model limitations can affect many applications
Frontier model	A model at the leading edge of capability at a given time	Capability and associated risks require reassessment

A model's capability does not establish its reliability for a particular climate decision.

Generative AI in project preparation

Example: preparing an NDC-aligned concept note

Source pack

Use approved NDC text, sector evidence and verified programme data.

Draft with traceability

Request source references, assumptions and a clear list of missing information.

Review before use

Check every figure and citation. The responsible officer approves the final document.

Example instruction: “Use only the supplied sources. Mark missing evidence. Separate documented facts from proposed activities.”

What would make the proposed use of AI justified?

Purpose and context

An NDC objective, an institutional need and a clear understanding of affected people.

Authority and safeguards

Applicable rules, accountable officials and evidence proportionate to the consequences.

Capability and learning

Local validation, recurrent resources and the ability to revise or stop use.

CTCN's Global Network with specialization in AI

WIPO's categorization of AI technologies and recent GenAI patent owner

Types

A. Computer vision (crop monitoring, pedestrian detection, animal monitoring)

B. Control methods (cruise control system in vehicles)

C. Distributed AI (GPS systems, speedometers, thermostats)

D. Knowledge representation and reasoning (classification, tutoring)

E. Planning and scheduling

F. Predictive analytics (risk modelling, quality assurance, healthcare diagnosis)

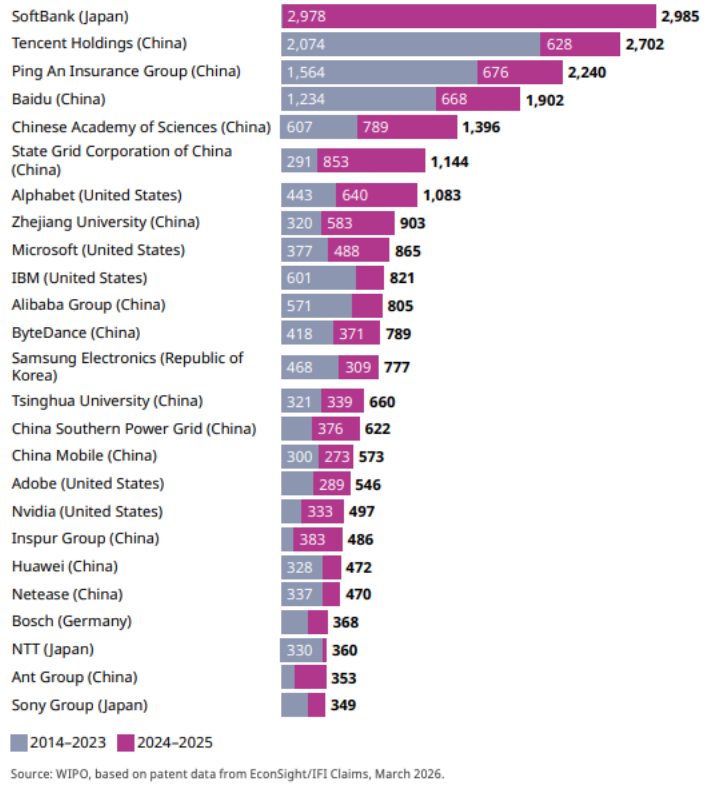
G. Robotics (home assistance, manufacturing, autonomous surveillance)

H. Speech processing (Siri, Alexa)

I. Natural Language Processing (smart assistants, autocorrect, predictive text)

Despite continued growth from the top Chinese players, SoftBank is now the largest GenAI patent owner.

Figure 3 Top 25 patent owners in GenAI, by number of published patent families, 2014–2023 vs. 2024–2025



Source: WIPO, based on patent data from EconSight/IFI Claims, March 2026.

Coffee break (10:40~10:55)

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Session 3

Learning Energy System Transformative Technologies

Transitioning to net zero and renewable energy sources – Gaps in Policies and Opportunities for Implementation

Haruka Yoshida, Climate Technology Innovation Unit, UNIDO

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Session 2: Learning Energy System Transformative Technologies

Transitioning to net zero and renewable energy sources

SIDS NDE Forum, Busan, Republic of Korea
Thursday 17 Semtepber 2026

Haruka Yoshida, Climate Technology Innovation Unit, UNIDO

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Progress by innovation

Who are we?

173 Member States

UNIDO is a specialized agency of the United Nations (Established 1966, became agency 1985) with a unique mandate to promote, dynamize and accelerate industrial development.

compass.unido.org

UNIDO Priorities

- Ending Hunger
- Sustainable Supply-Chains
- Climate Action
- Digitalization and AI

~ **680** Ongoing Projects in 120+ countries

$1.5 billion portfolio

Climate Innovation Technology Unit

Areas of Intervention
Safe Access to Energy, Early warning systems, Climate finance, Agricultural value chains, Innovations for Adaptation and Resilience, Local Innovation Ecosystem building, SMEs and MSMEs acceleration

Geographical Focus:
LDCs, SIDS and Lower-middle-income countries (global, multi-country, single country approach)

Portfolio Value:
$ 156 Mil (implementation and hard pipeline)

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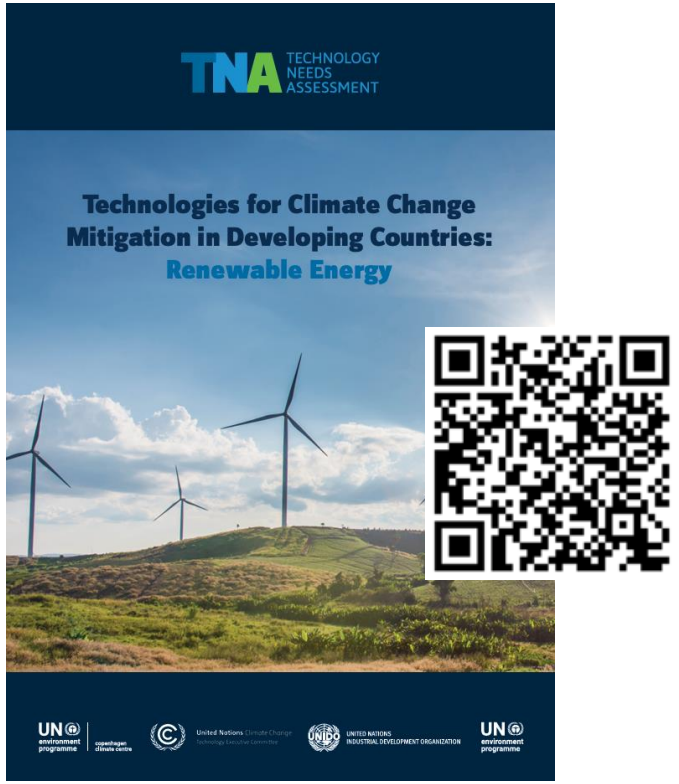
Technology Needs Assessment (TNA) Guidebook on Renewable Energy

Why renewable energy?

- The energy sector is the largest contributor to global GHG emissions, with 60% of electricity still generated from coal and natural gas.
- To remain on track for net-zero emissions by 2050 the IEA estimates fossil-based electricity must drop to 30% by 2030.
- Renewables, and especially solar and wind are key to mitigation: 50% of Parties referenced solar energy and 36% referenced wind energy in their NDCs.

Why this guidebook?

- Provides an overview of up-to-date information on a wide range of renewable energy technology options.
- Provides practical guidance to developing countries conducting or updating their TNAs on energy supply, energy storage, energy transmission and distribution.
- Highlights aspects of just transition that could be considered to promote a fair and inclusive workforce transition to meet Paris Agreement goals.



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TNA Guidebook on Renewable Energy

What is covered?

Scope: Covers energy supply, storage, and transmission / distribution. The guidebook excludes demand-side and sector-specific technologies (such as agriculture, buildings, transport)

- **Energy supply technologies**: Solar PV, wind (onshore and offshore), hydro, biomass, geothermal, marine
- **Energy storage technologies**: batteries, pumped hydro, thermal, green hydrogen
- **Energy transmission and distribution**

How is it structured?

Chapter 1: Introduction

Chapter 2: Interplay of energy & climate action

Chapter 3: Analysis of energy technology type

- Technology description
- Advantages and disadvantages
- Economic assessment and affordability
- Mitigation and net zero potential
- Aspects of Just Transition
- Resilience to climate change
- Barriers to dissemination and deployment
- Real-world examples

Chapter 4: Conclusions

Appendices: Technology Summary Sheets, Glossary, Additional Sources of Information on Mitigation Technologies and Practices, Further Reading

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TNA Guidebook on Renewable Energy

What to expect?

Energy Supply

Energy Storage

Energy Transmission & Distribution

Technology options (description, cost, impact, feasibility)

Net zero potential

Sustainability & Just Transition

Barriers to dissemination/ deployment (financial, technical, policy)

Real world examples

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TNA Guidebook on Renewable Energy

Conclusions

Generation technologies

- Solar PV and wind may be **prioritized** where viable, **complemented** by hydropower, biomass and geothermal to ensure **dispatchable, reliable power**.
- Countries may **tailor their mix** to available resources: solar PV in high-irradiance zones, geothermal in tectonic regions, wind in areas with high wind speed, etc.
- Countries may consider the **latest technological innovations** in solar PV, hydro, geothermal, and wind to sustain rising temperatures and more extreme weather patterns

Storage & grid technologies

- **Smart grid upgrades** like Advanced Distribution Management Systems, Dynamic Line Ratings, Power Flow Controllers, and topology optimization improve load balancing, outage response and integration of variable renewables.
- Pumped hydro, lithium-ion, sodium-ion, Concentrating Solar Power with thermal storage, and green hydrogen **enhance flexibility, reliability and long-term dispatchability**.
- Cross-border electricity trade, local manufacturing capacity and distributed infrastructure improve resilience, reduce costs and enhance energy security.

Just transition policies

- **Retraining programs** and **targeted employment** in geothermal, offshore wind or battery sectors create equitable workforce pathways.
- Mini-grids, small hydro and community-owned projects **increase energy access** in rural areas while generating local economic opportunities.
- **Land use conflicts** can be avoided through agrivoltaics and participatory planning as well as increasing energy crop yield and efficiency; projects must uphold labour rights and gender equity.

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Transitioning towards net zero and renewable energies in industry

Initiatives

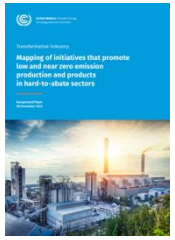
Climate Club
Global Matchmaking Platform

Net Zero Partnership

IDDI

Publication

TEC Brief: Integrating hard-to-abate industries in the process of preparing and implementing NDCs



Background Paper: Mapping of initiatives that promote low and near zero emission production and products in hard-to-abate sectors

Platform

STePP

Global convening

Global events for promoting industrial decarbonisation and renewable energy, e.g. COP29, COP30, International Vienna Energy and Climate Forum (IVECF)

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Thank you!

Climate Technology Innovation
www.unido.org
www.unido.org/climate-adaptation-innovation-learning
UNIDO Climate Tech Innovation

Haruka Yoshida
Industrial Development Expert
h.yoshida@unido.org

Technology Discussion Activity (45mins)

Objective

To identify opportunities and solutions to accelerate renewable energy deployment, through consideration of enabling environment to bring transformational change

Format

11:00-11:05	Introduction of the activity
11:05-11:10	Silent thinking (individual work)
11:10-11:40	Group discussion
11:40-12:00	Reflection from each group

Guiding questions

Based on the gaps/challenges identified in the morning session, what do you need to overcome those gaps/challenges to deploy renewable energy in your country? What kind of CTCN TA projects are needed to promote renewable energy deployment?

Reflection: Technology Discussion Activity

Let’s check how other groups did!
NDEs and NDAs from each group to share their group’s discussion to the room

Lunch break (12:00~13:30)

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Session 4

The role, application, and potential of AI

Case of adaptive system strengthened through AI – International

Deeba Yavrom, Deployment Strategist, Palantir Technologies

CASE OF ADAPTIVE SYSTEM STRENGTHENED THROUGH AI

AI-Assisted Disaster Response for Small Island Developing States

Deeba Yavrom
Deployment Strategist, Palantir Technologies

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Q Palantir

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Programme
September 17, 2026

Who Am I? What is Palantir?

My Background

→ World Bank
Training city officials on greenhouse-gas inventories

→ Environmental Protection Agency
Analyzing sea level rise impacts on hazardous waste facilities

→ Palantir
Deployment Strategist for complex data problems

What We Do

→ Airbus: Maintain aircraft fleets effectively

→ PG&E: Improve grid safety, reduce wildfire risk

→ CDC: Coordinate public health emergencies

WE HELP ORGANIZATIONS AND GOVERNMENTS SOLVE COMPLEX DATA PROBLEMS.

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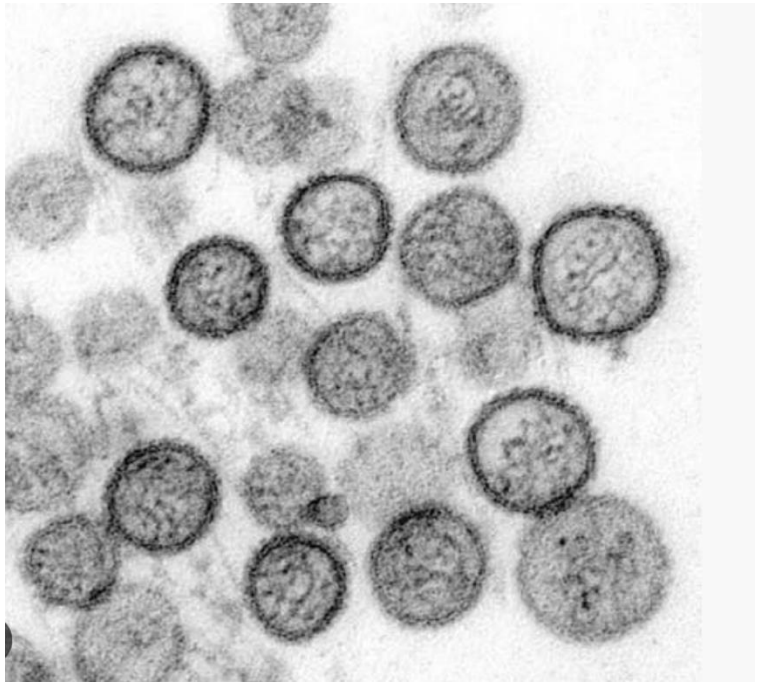
Agenda

1. A firsthand case study of digital systems supporting a public-health emergency
2. Practical ways AI can strengthen climate and disaster-response decisions
3. What it takes to build the system underneath the AI and how one system becomes an ecosystem
4. The importance of maintaining ownership and control of national data

Case Study: Hantavirus Outbreak

The Challenge

Andes strain of Hantavirus aboard a cruise ship
- Highly contagious -- 4 in 10 infected cases are fatal
- Passengers from 20+ countries, days from returning home
- Sealed vessel, worst possible setting for an outbreak



CDC's Response Responsibilities

→ Investigate the source of disease
→ Track spread and location
→ Provide scientific guidance
→ Deploy field experts to stop the crisis

Technical Tools We Built

Each of these had to work correctly, together, under pressure:

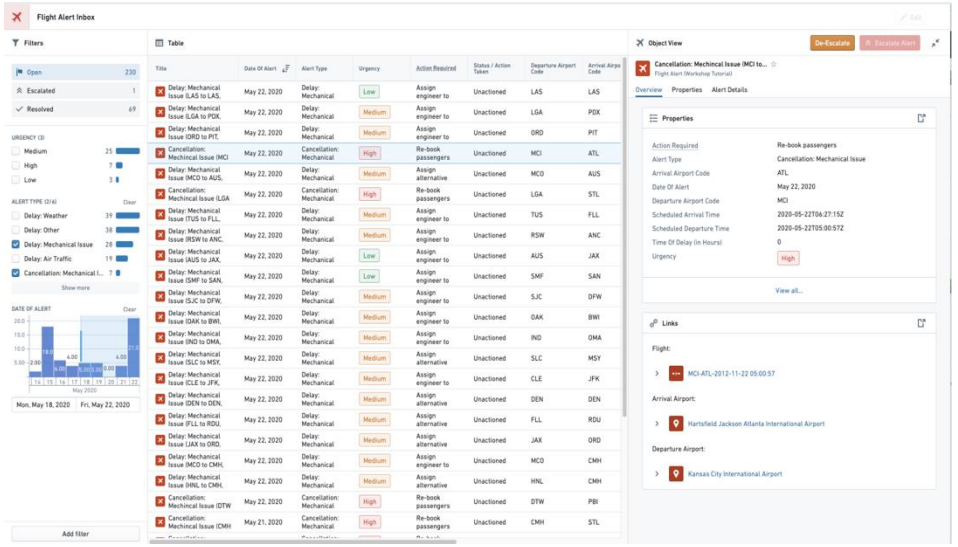
1. Digital Surveys
   Data collection even with minimal internet

2. Contact Tracing
   Track exposure web as it grows by the hour

3. Two-Way Messaging
   Reach exposed people, receive updates in real-time

4. Dashboards & Maps
   Turn raw records into decision-maker-ready visuals

5. Verified Updates
   Share updates and key documents, securely



What Made It Work?

Centralized Operating System

A single, shared picture where national agencies, local officials, and field responders all work from the same facts.

No conflicting databases. No siloed information.

What Made It Work?

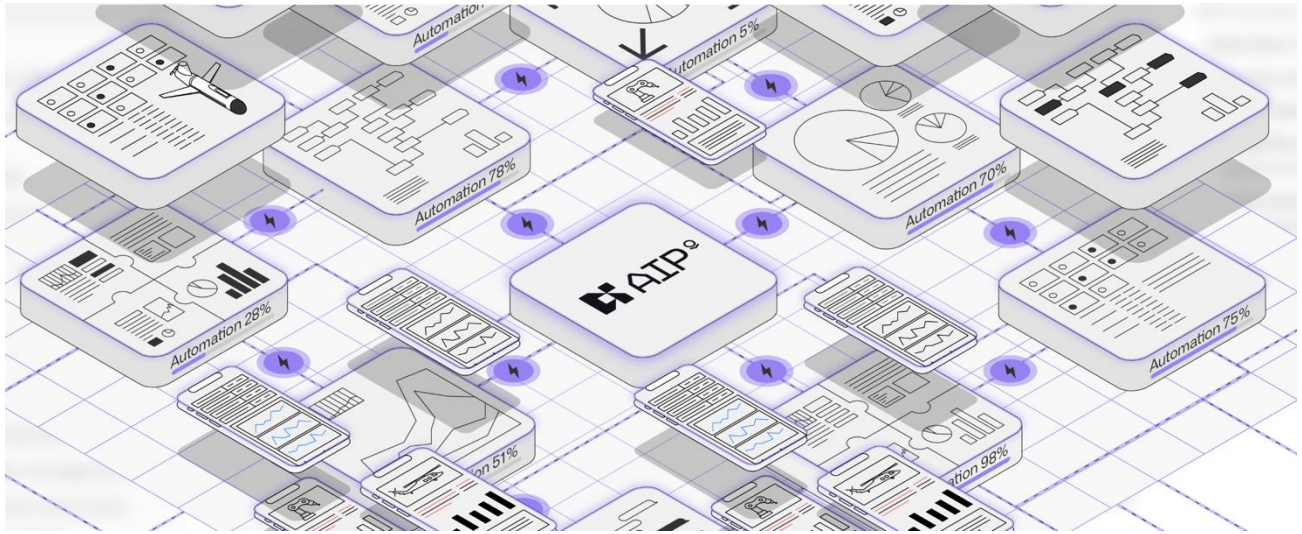
AI Accelerates Everything

Days, not months.

AI absorbed the slow work of building software. A very small team could build quickly.

People who weren't engineers became confident builders within weeks.

This is not a capability you must permanently import.



The AI Palette

AI Use Cases

Q Palantir

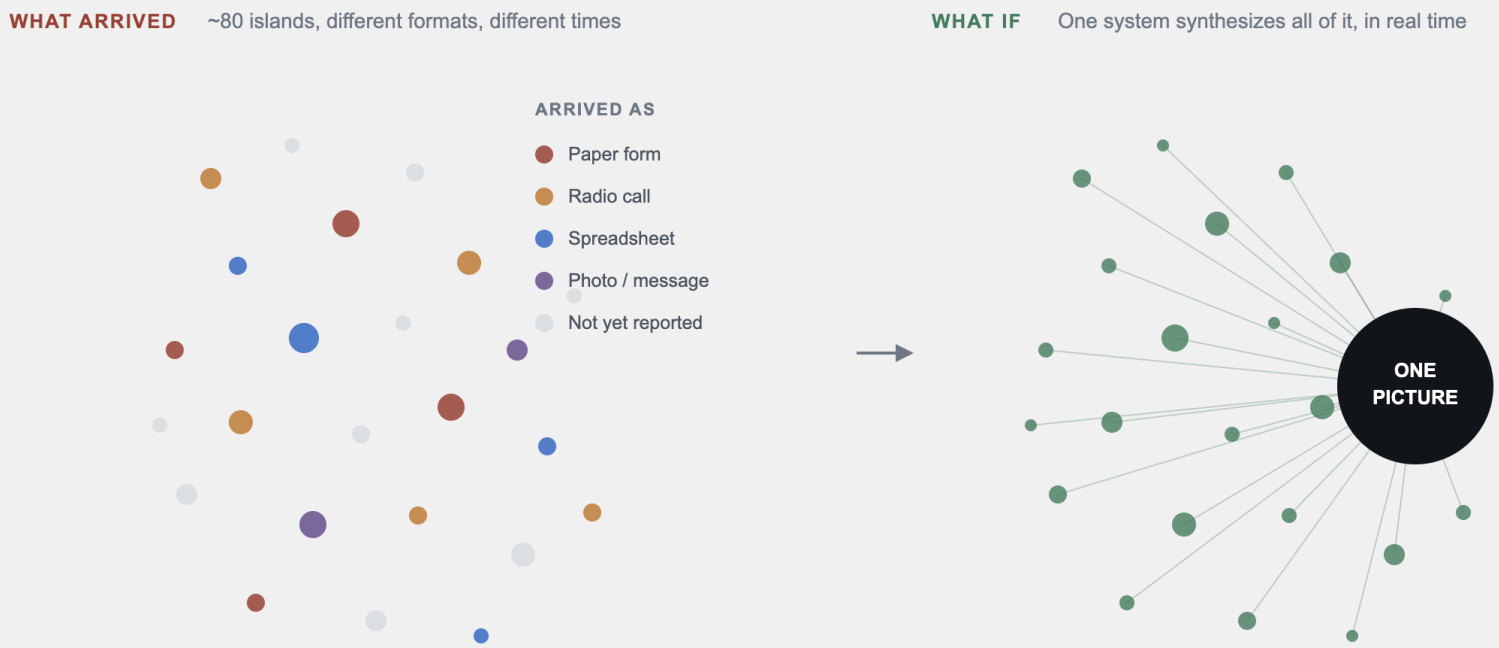
1. AI Can Synthesize

Cyclone Back-to-back hurricanes (Judy & Kevin 48 hours apart)

Assessments came in from ~80 islands in different formats, at different times, some by radio.

The information existed. The problem: no one person could hold it all at once.

What if a centralized system synthesized all data in real time?



2. AI Can Answer Questions

Direct Data Queries

"Which of our villages are most exposed to the next king tide that still has no seawall assessment?"

Get an answer back directly.

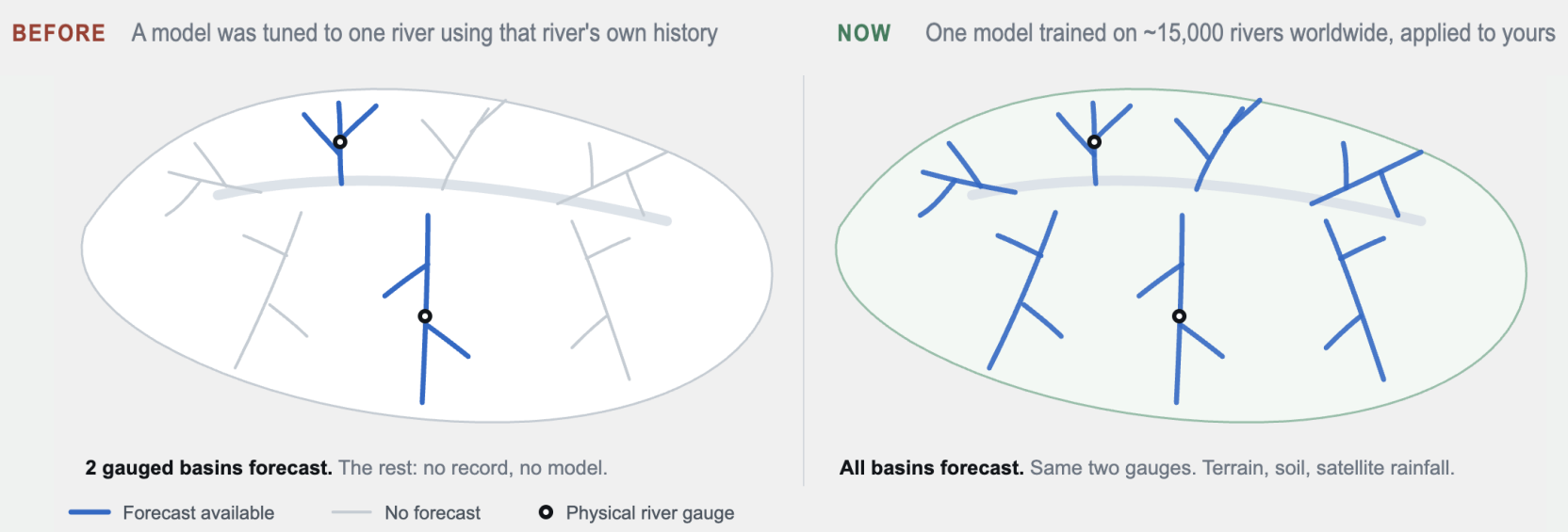
Capital city sits only 2 meters above sea level. King tides frequently impact road access. The question isn't whether exposure exists—it's which stretch gets attention first.

3. AI Can Forecast Ahead w/ Limited Data

Flood Forecasting

Challenge: Catchments that flood are the ones with no gauges.

Solution: Combine available data sources:
→ Satellite rainfall data
→ Weather forecasts
→ Terrain & slope (digital elevation models)
→ Soil type and land cover
→ Patterns from 15,000 other similar rivers

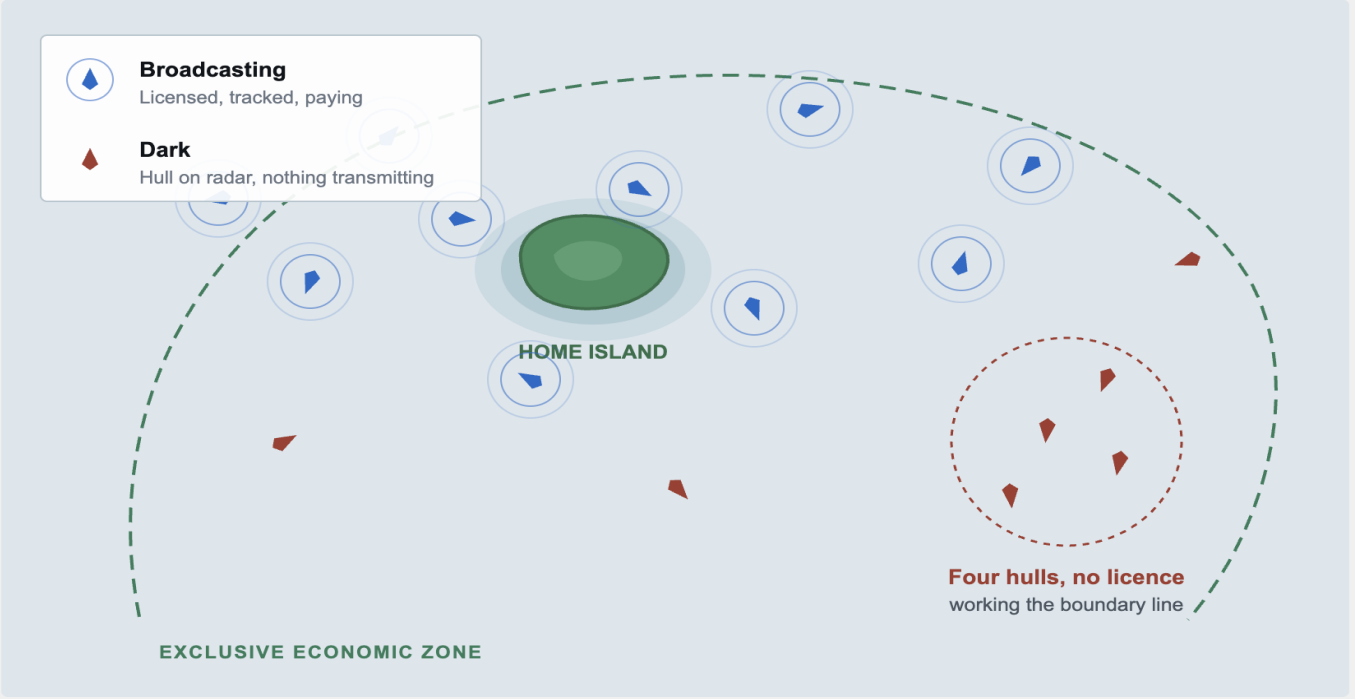


4. AI Can Detect Patterns Difficult to See

Example: Illegal Fishing Detection

Satellite radar + AI: Detect "dark" fishing vessels not broadcasting location.

Why it matters for SIDS:
→ Pacific produces over half of world's tuna catch
→ Economic issue
→ Sovereignty issue



The Method Is More Transferable Than the Technology

Inside the Operation

The Traditional Way (Slow)

Write requirements
↓
Requirements → specs
↓
Send to vendor
↓
18 months later…
↓
“Solution”

BUT

Problem changed.
Officials left.
Solution obsolete.

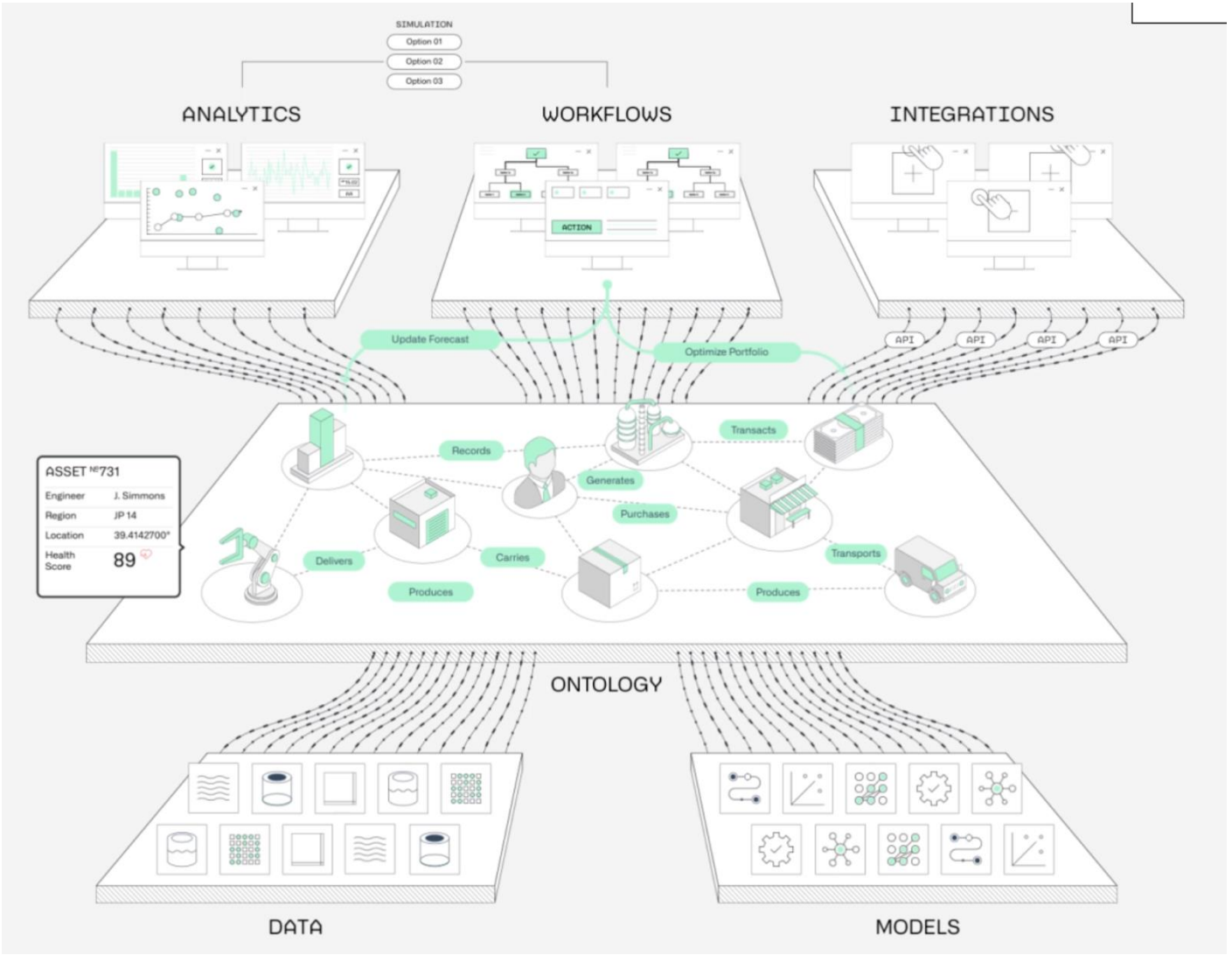
The Better Way (Responsive)

Put engineers in room
↓
Watch where stuck
↓
Build fix afternoon
↓
They use tomorrow
↓
Wrong? Change it.

Deployment IS product.

The Ontology

One shared representation of the real world



Three Layers Built on the Ontology

Data • Logic • Action + Governance

Data: Raw material. Most organizations stop here.

Logic: Rules, models, forecasts. Which villages are at risk?

Action: Something in real world changes. Work order. Dispatch. This matters most.

Solar PV Example

What This Means for Technology You Just Chose

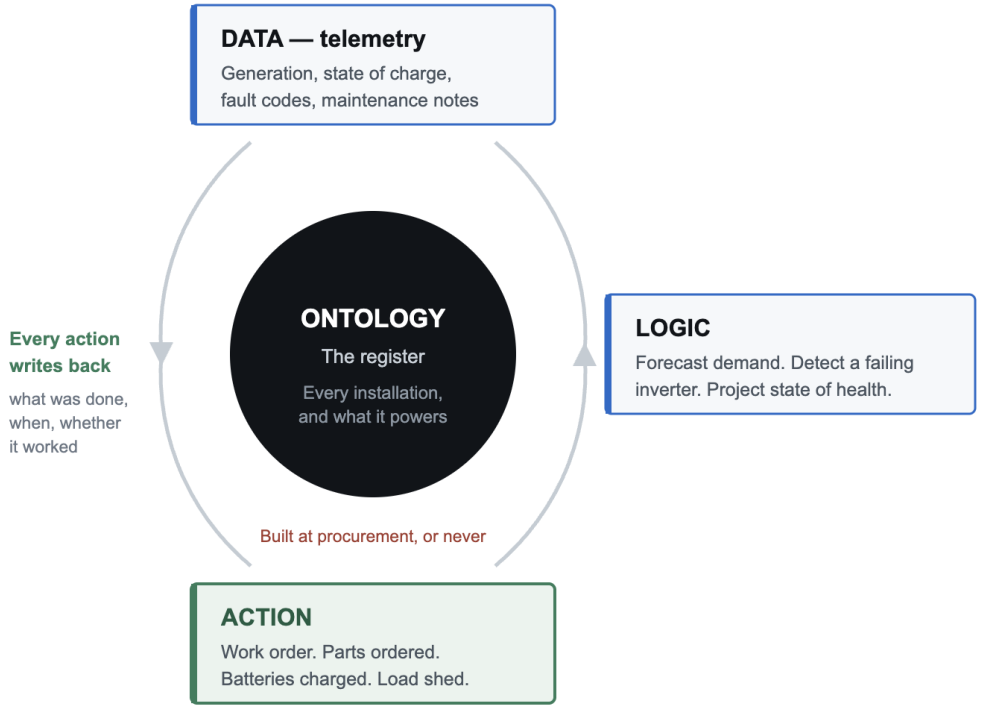
Ontology: You need a register of every installation: where it is, what model, what warranty, who installed it.

New Data: Telemetry from ontology. Generation figures, state of charge, fault codes, the maintenance notes someone typed on an outer island

Logic: Forecast generation and demand so storage is dispatched well. Build logic to detect the signature of a failing inverter before it causes an outage. Project battery state of health forward.

Action: You need a maintenance workflow: who inspects, on what schedule, who authorizes parts, how a fault on outer island reaches someone who can fix it.

Why does this matter?
Pre-position before a cyclone. A landfall forecast arrives; the system charges every battery to full, tops up fuel where needed and shifts the dispatch policy from economy to survival. That is an action taken on a forecast.



Data Sovereignty

Who Controls Your Data?

Your data is part of your national territory. Who controls that picture is the critical question.

Key Questions to Ask Any Partner:
→ Where does our data physically reside?
→ Must it leave our control to be useful?
→ Who owns the data and the logic?
→ Can the provider view, sell, or train upon it?
→ If we leave, what can we take?
→ Can we see who accessed our data, when, and why?

Get answers in writing. General assurances are not answers.

Close

Four Principles

Begin with one consequential decision.

Build for the conditions your people actually operate in.

Keep ownership and authority clear.

Use AI only where it materially improves the outcome.

—

The nations in this room are, out of sheer necessity, among the most adaptive places on earth. You already manage overlapping crises with limited resources and no margin for error.

That is the very capacity this technology exists to amplify.

Case of adaptive system strengthened through AI – Republic of Korea

Ji Eun Choi, Senior Economist, World Bank

Small AI for Big Impact

Leveraging adaptive system strengthened through AI

Jieun Choi
Senior Economist

2026 9

Outline

AI and Polarization: Crisis and Opportunity

WB Digital and AI Strategy

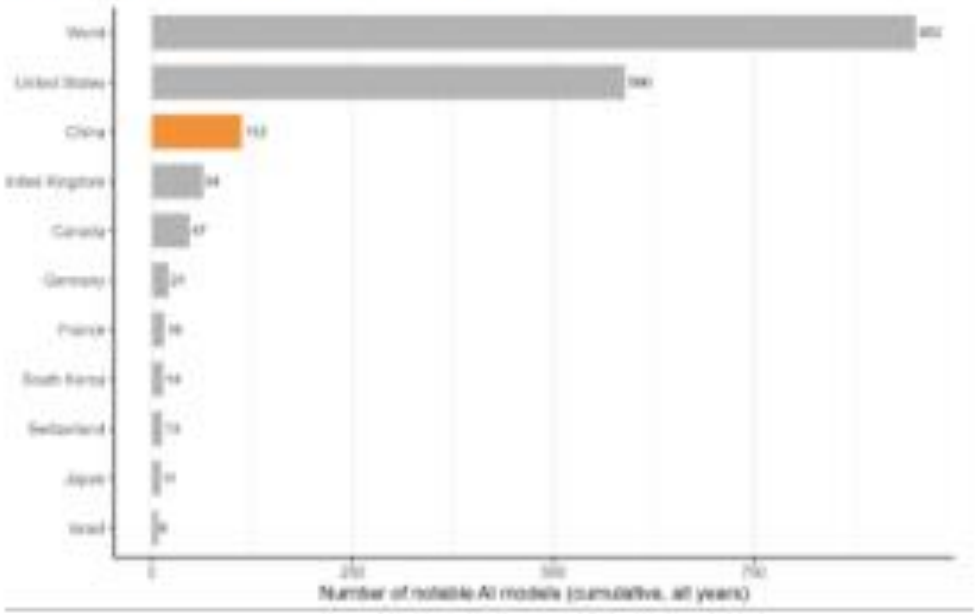
Leveraging adaptive system strengthened through AI

AI and Polarization : Crisis and Opportunity

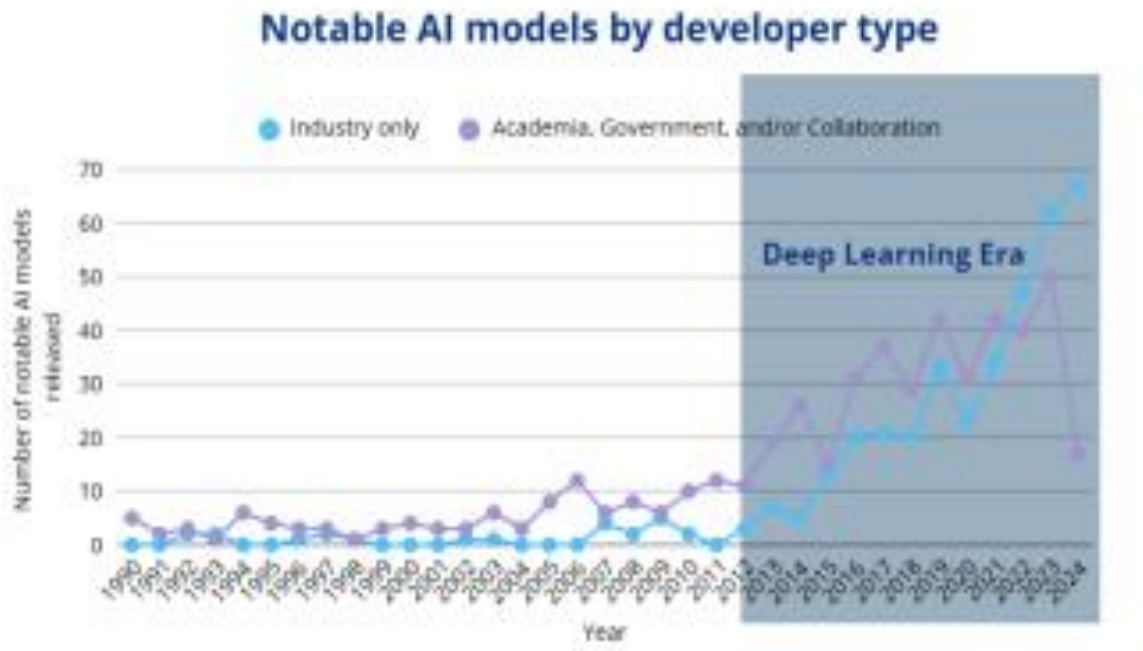
AI Creation Divide

- AI innovation is concentrated in **high-income countries and** in the **private sector**
- AI may benefit **owners of capital** more than workers & **skilled workers** more
- AI may **reduce the jobs dividend of certain sectors**

a. Number of notable AI models (cumulative, lead country method)



b. Prominence of private companies in developing most modern AI models



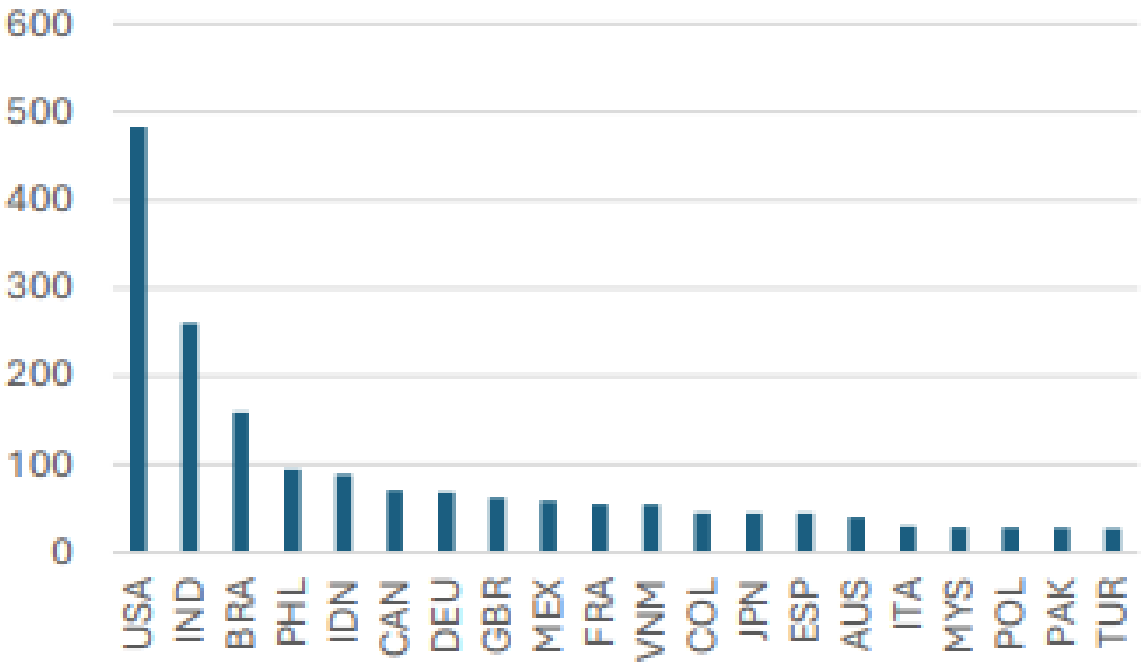
Sources: Panel a: Maslej et al. 2025. Panel b: Maslej et al. 2024.

AI Adoption Divide

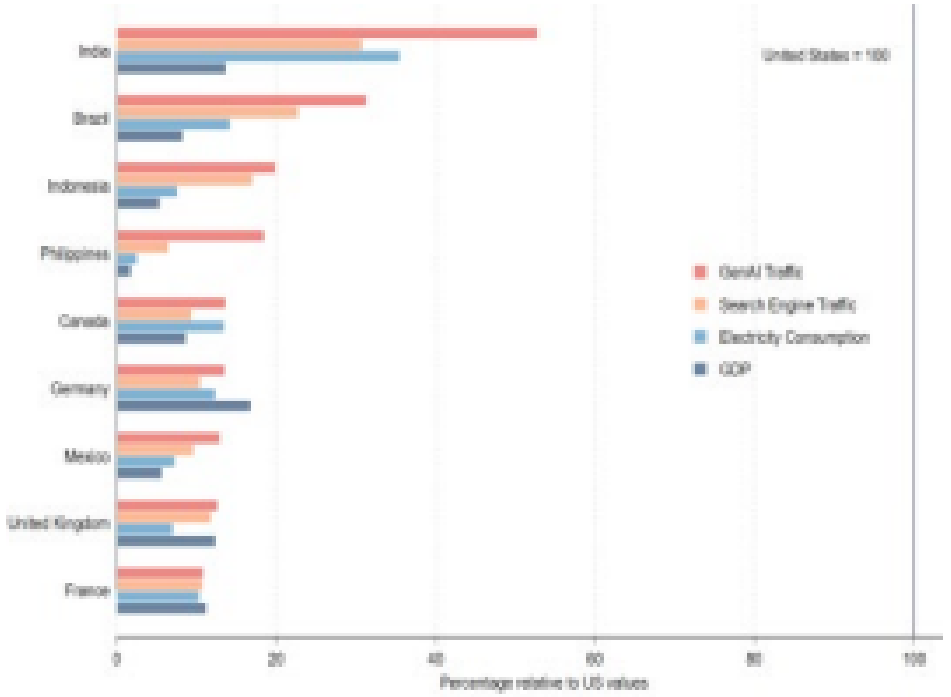
- **Rapid Adoption by MICs**
- The lack of **complementary factors** is likely to blunt AI's impact on productivity

Figure 5 Adoption of generative AI by middle-income countries is disproportionately high

a. GenAI traffic, by country, top 20



b. GenAI traffic, search engine traffic, electricity consumption, and GDP of leading countries relative to the United States



Source: WDR 2026 team based on Liu and Wang 2024.

Patterns for AI adoption

- AI models are becoming more capable and cheaper to use
- **AI use diffuses much faster than previous GPT**
- Most developing countries are poised to benefit from AI adoption/adaptation rather than advancement

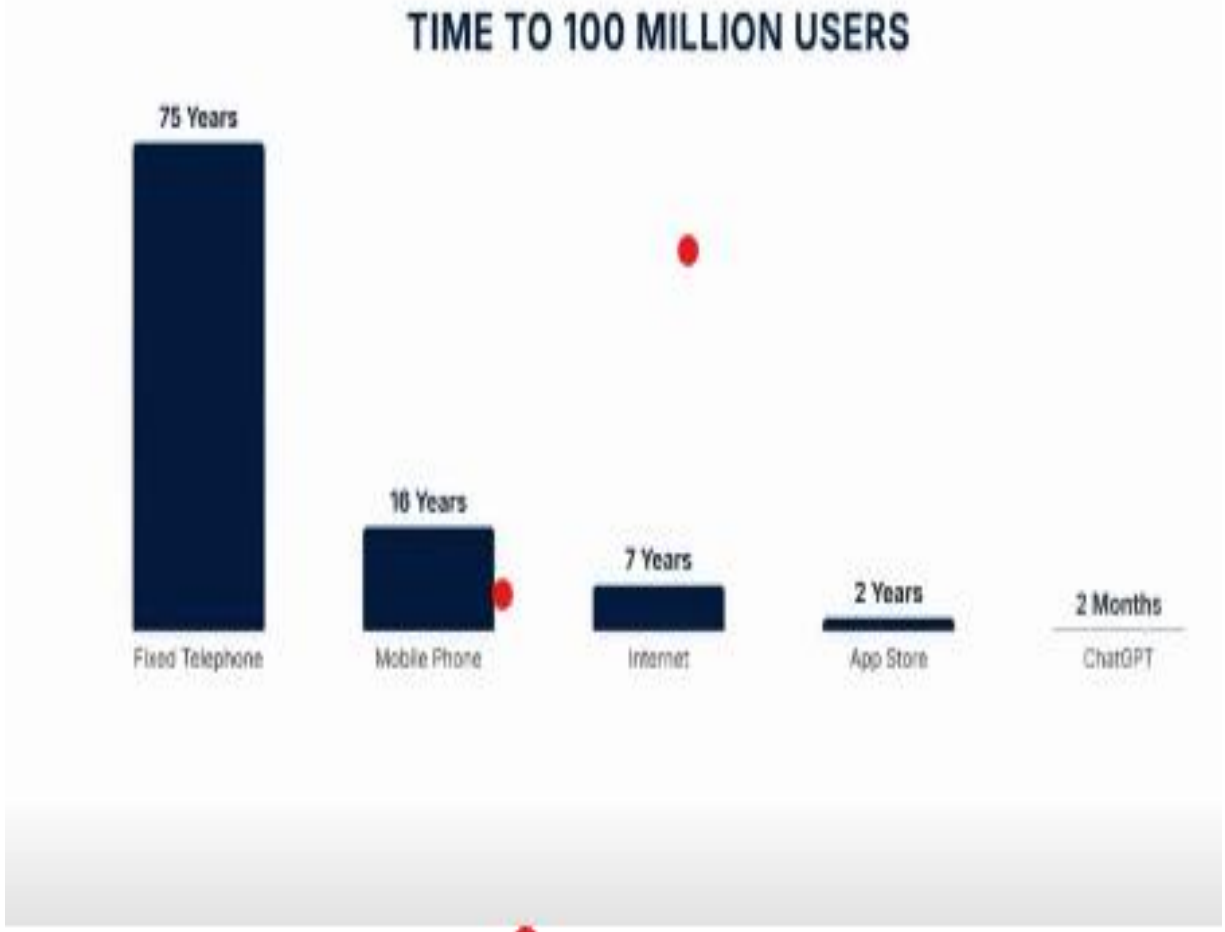
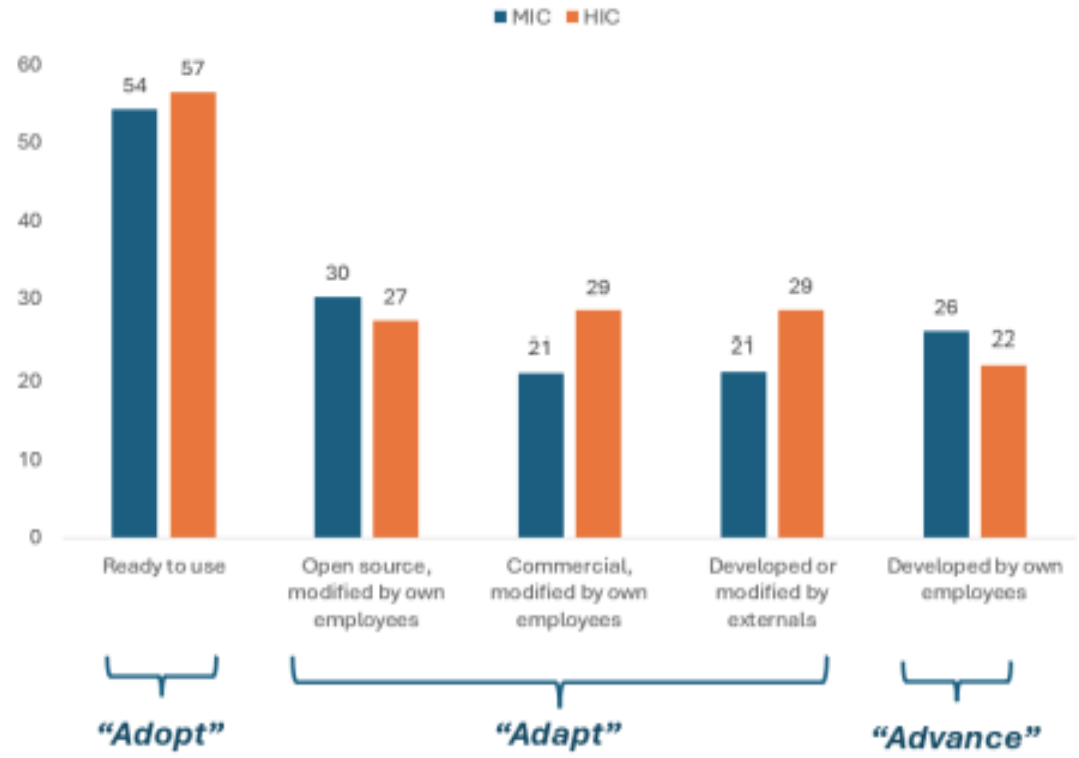


Figure 9 The diffusion of AI is led by ready-to-use AI solutions

Percentage, within firms using at least one AI technology



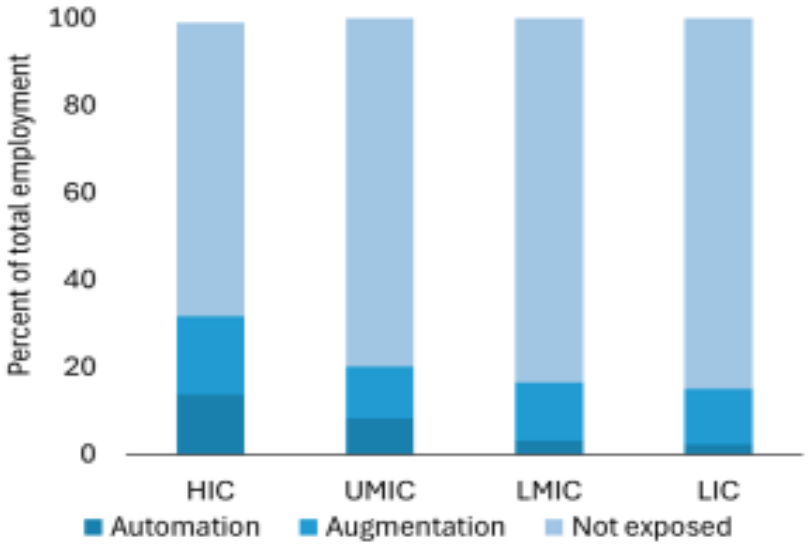
Source: Eurostat.

Opportunities for Developing Countries

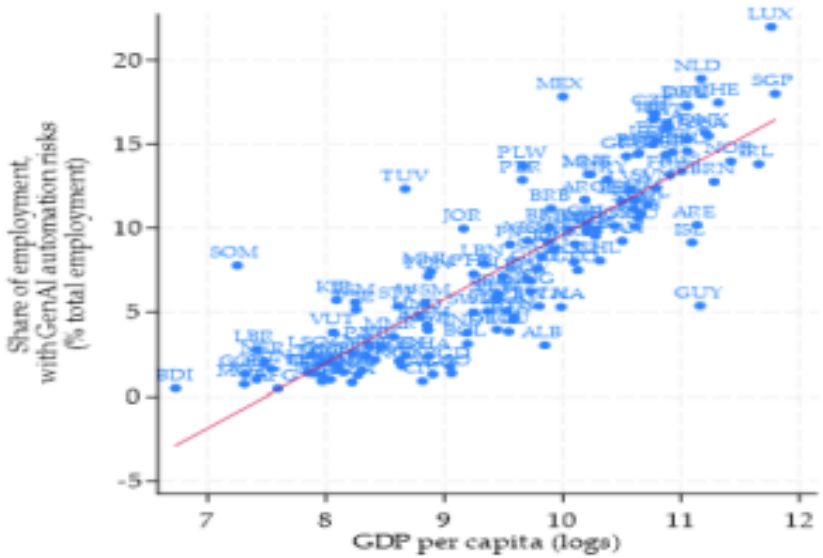
- AI is more likely to **complement workers** than displace them **in developing countries** today
- AI can **improve firm capabilities and worker productivity**, spur innovation and entrepreneurship
- AI can **lower the barriers to entry** for workers to complete cognitive tasks

Figure 4 The share of jobs exposed to AI automation is lower in developing countries than in advanced economies, and is lower than the share exposed to AI augmentation

a. Jobs exposed to GenAI (automation versus augmentation)

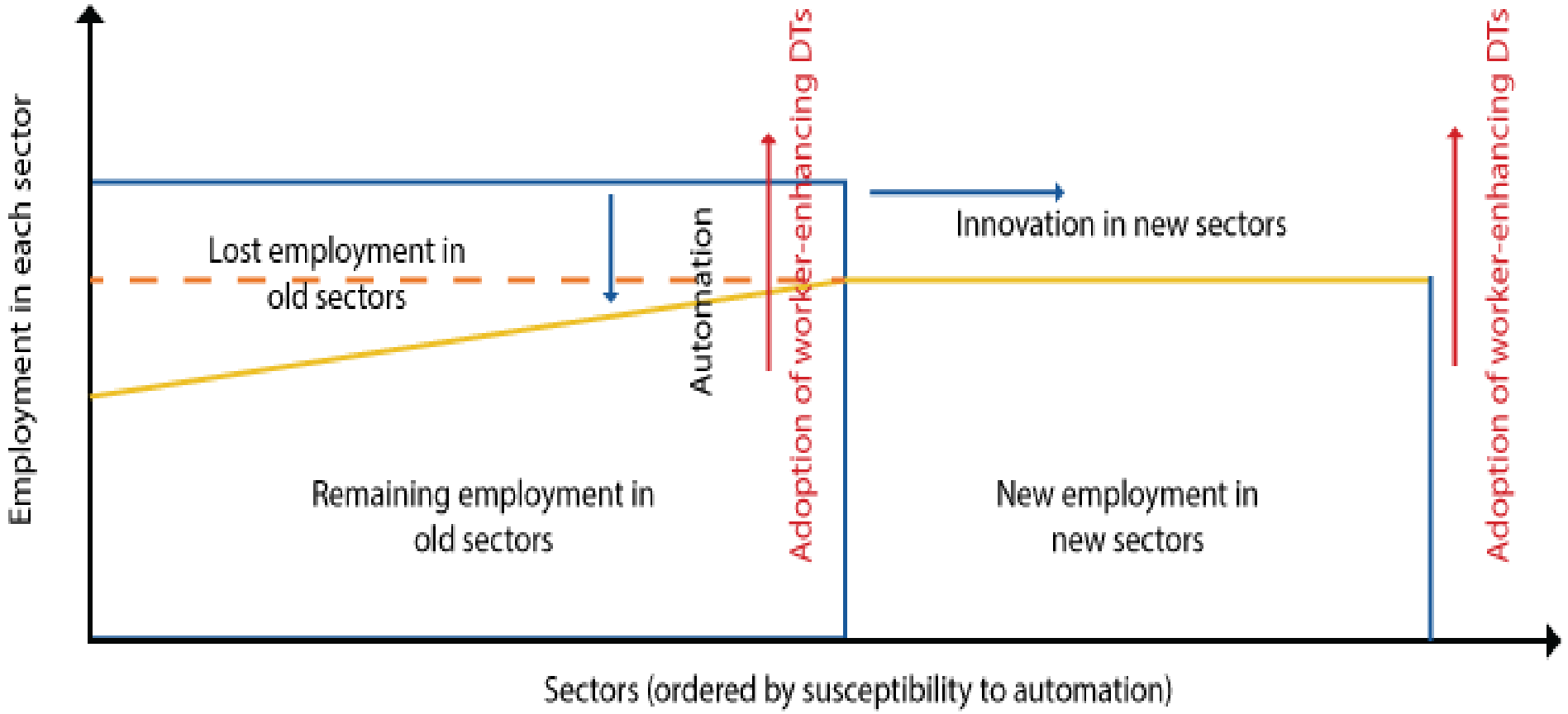


b. Jobs exposed to automation



Sources: WDR 2026 team based on Gmyrek et al. 2025 and World Development Indicators.

Innovation and Jobs

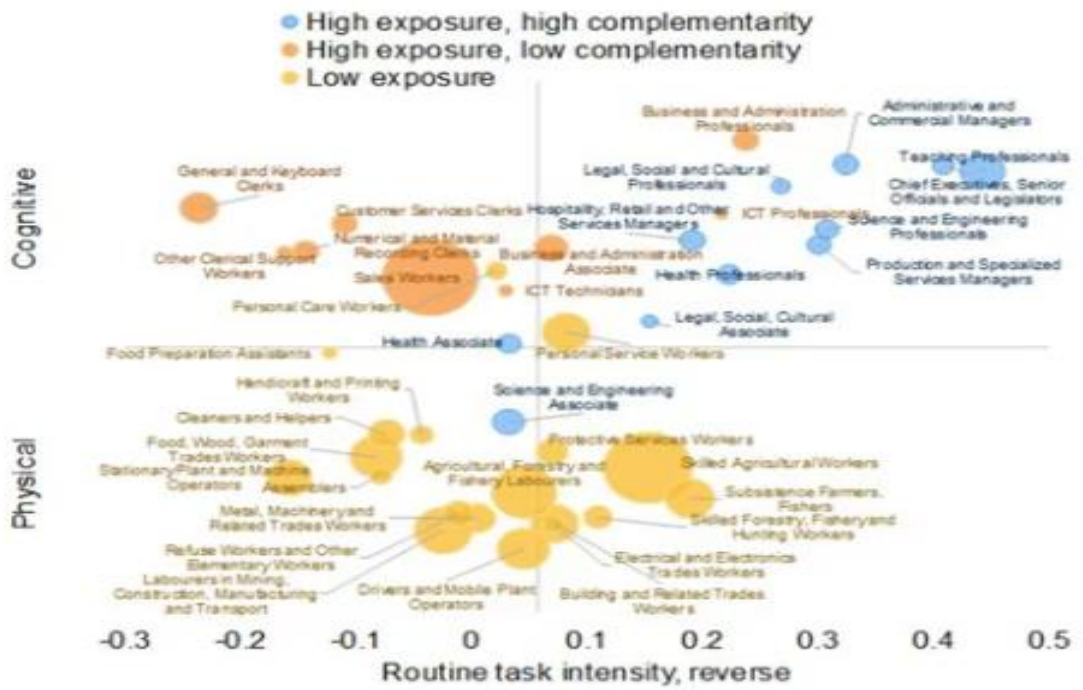


Choi and Dutz (2019), Future of Jobs in Africa, WDR Companion Report

East Asia and Pacific Case: AI and Jobs

- **Developing EAP countries face less risk of AI-driven job displacement but also have less capacity to benefit from AI.**
- **Only about 10% of jobs in developing EAP countries involve complex tasks (e.g., augmenting strategic, creative, and social tasks, instead of financial analysis, translation), versus 30% in high-income economies.**
- **Developing EAP countries need to harness AI to grow their services sectors and create better job opportunities.**

AI Exposure in workforce



SOURCE: Microdata, ILOSTAT, Felten, et. al. (2021), Pizzinelli et al. (2023)

NOTE: vertical axis measures routine manual content of tasks; horizontal axis measures routine task intensity following Autor and Dorn (2013). color code is based on median threshold of AI exposure measure (Felten, et. al. 2021) and AI complementarity measure (Pizzinelli et al. 2023). Bubble size denotes the average worker share in 9 EAP countries. Latest year data.

AI adoption

- Generative AI (GenAI) has the potential to be a powerful equalizing tool that narrows gaps and reduces disparities.
- **AI adoption rates across ASEAN vary significantly by country** and remain generally low.
- Key barriers include **language barriers, low digital literacy, lack of awareness, and in particular the absence of adoption incentives for SMEs.**
- Financial support for AI development within ASEAN is limited.
- Concerted efforts are needed to integrate AI tools into public services, education systems, and SME support programs.

ChatGPT adoption and usage patterns in ASEAN, March 2024

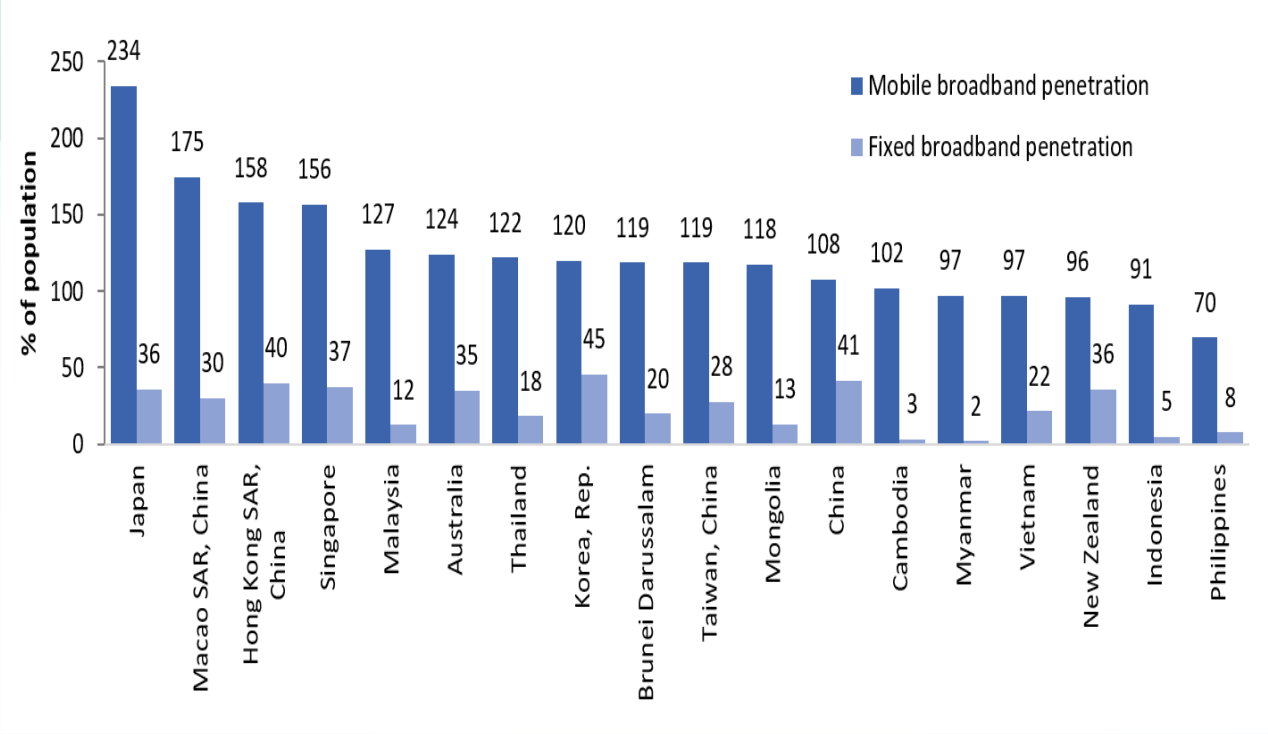
	"Extensive margin"		"Intensive margin"	
	Internet user per population	ChatGPT user per internet user	Traffic per ChatGPT user	Avg visit duration (minutes)
Philippines	68%	17%	7.1	19.8
Indonesia	72%	7%	6.6	16.7
Viet Nam	84%	9%	7.0	15.5
Malaysia	98%	14%	6.1	12.0
Thailand	91%	6%	3.4	15.2

Source: Based on Semrush and ITU data.

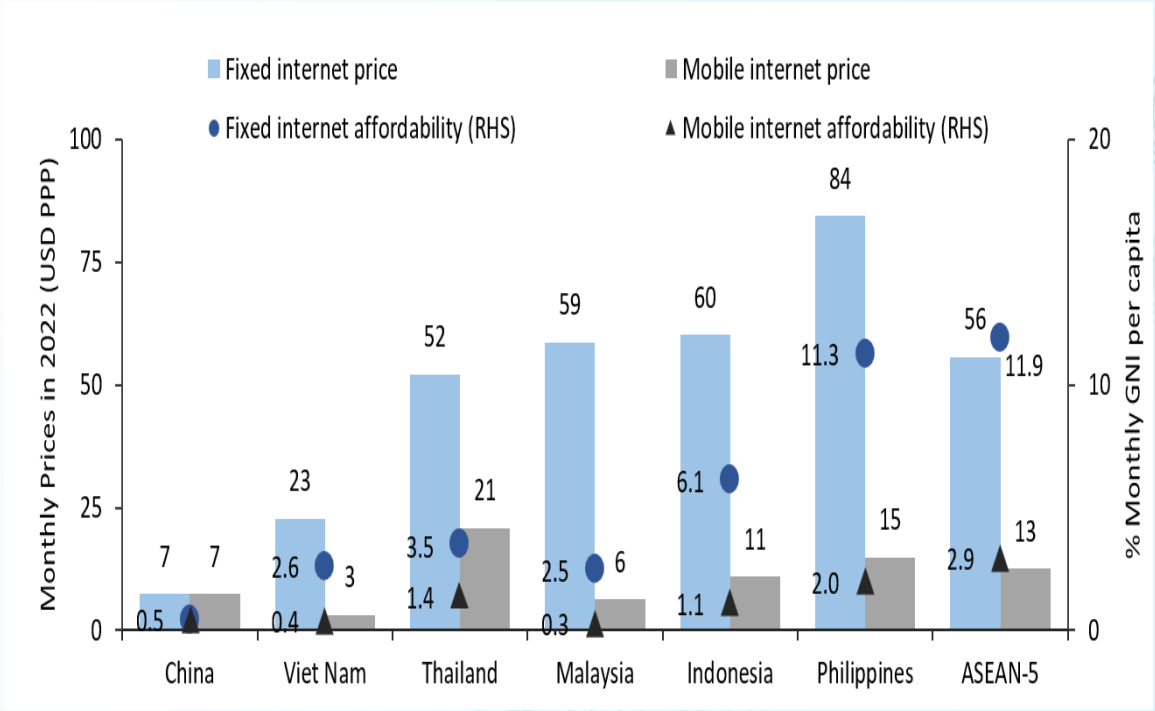
Internet Connectivity

- **Despite the success of mobile broadband adoption, gaps remain in fixed broadband access across countries and regions**
- **Affordability and network speed remains key constraint, particularly for fixed broadband.**
- **Public-private collaboration can help crowd in investment to underserved areas.**
- **Targeted policies will be required to sustain competition, expand fixed infrastructure, and strengthen digital equity.**

Broadband penetration by East Asia and Pacific economies, 2022



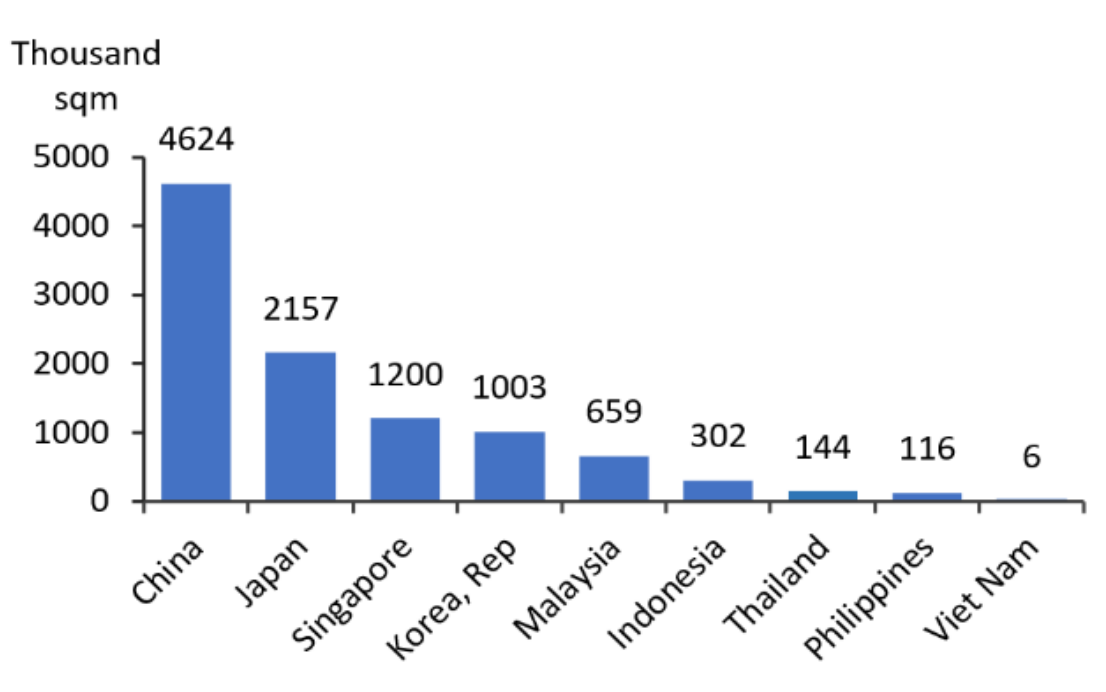
Broadband prices and affordability, 2022



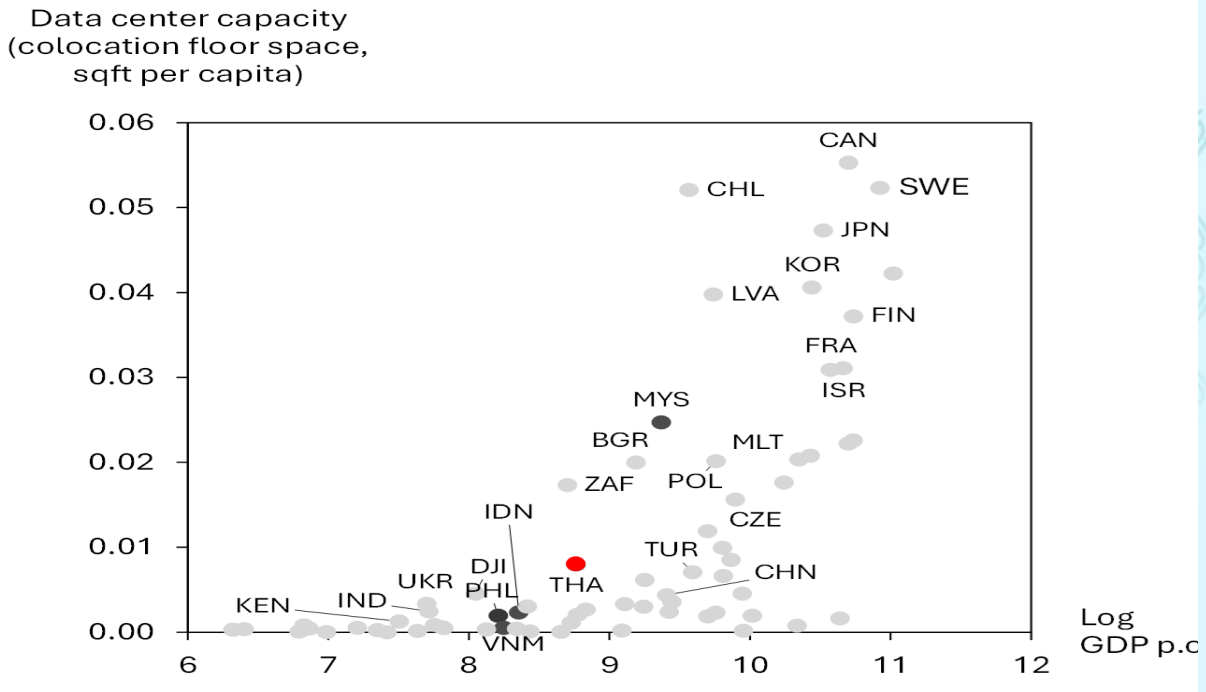
Data Infrastructure

- Gaps also remain in high-quality data centers, and high-performance computing.
- Data centers are foundational to the digital economy and AI applications
- The use of cloud-enabled services facilitated new business models, digital inclusion, and indirect job creation.
- In ASEAN, data center capacity is rapidly expanding with FDI from major cloud providers

A. Data center capacity by East Asia and Pacific economies in 2023



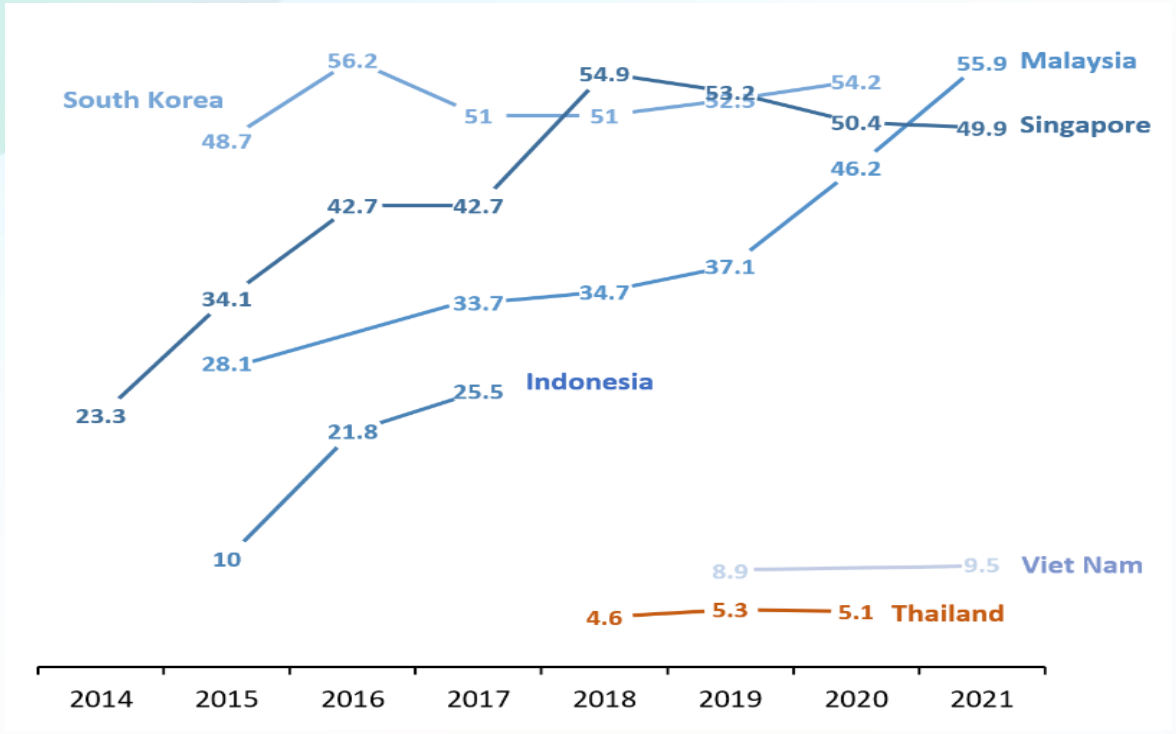
B. Data center capacity per capita against GDP per capita



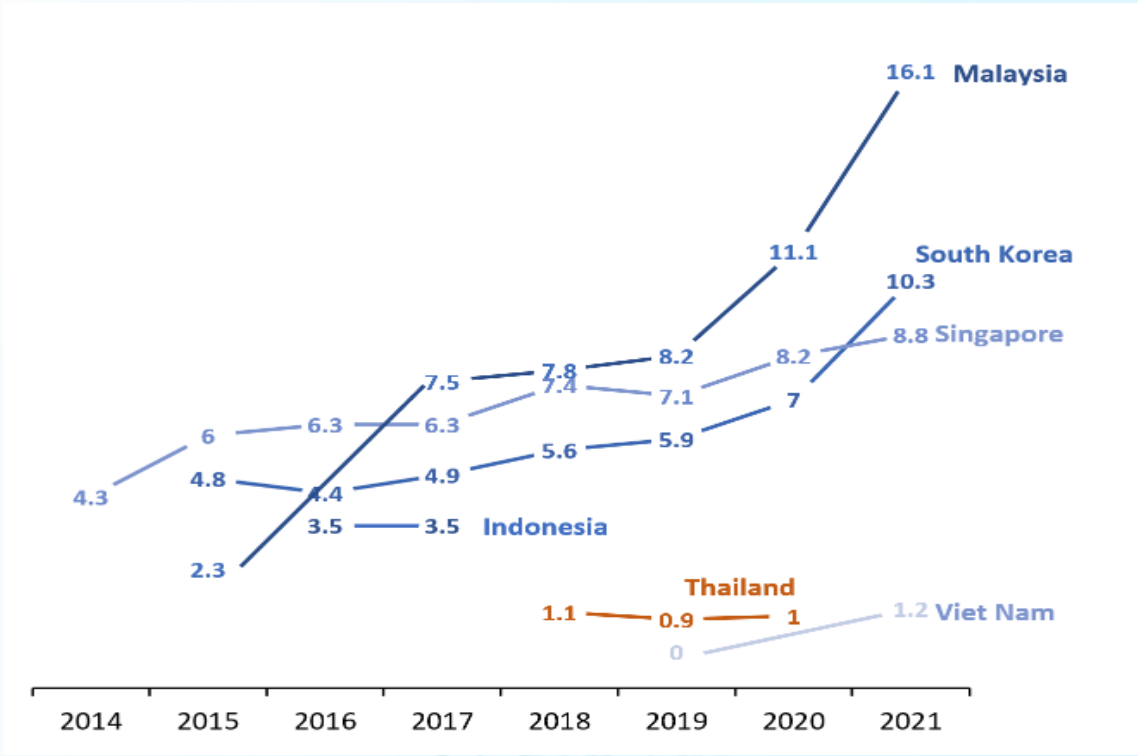
Digital Skills

- Both **intermediate and advanced digital skills remain a barrier** to digital transformation in many ASEAN countries
- Need to accelerate workforce upskilling to prepare its population for AI-driven transformation

Percent of adults with intermediate digital skills



Percent of adults with advanced digital skills



Source: International Telecommunication Union (ITU).

WB Digital and AI Strategy

WB

WORLD BANK GROUP

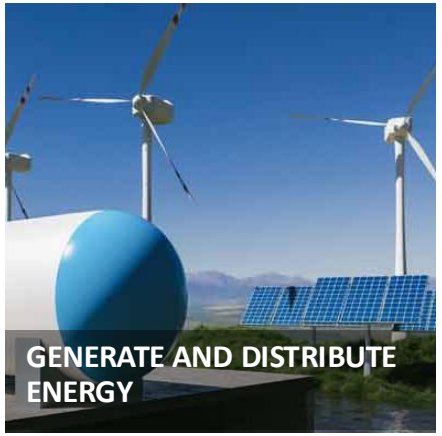
The largest development finance and knowledge institution, providing financing (loans and grants) and knowledge (policy advisory and research) to governments of developing countries.

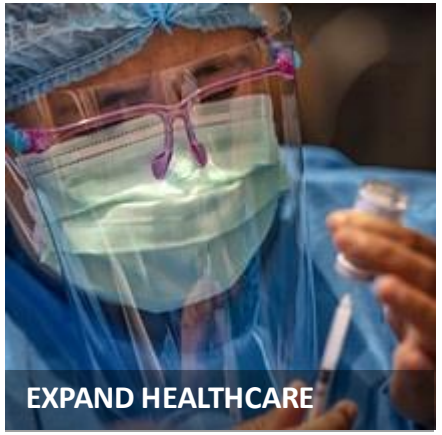
Mission: End Poverty + Boost Shared Prosperity

1944 — Bretton Woods Agreement (originally established to rebuild Europe after World War II) → 1950s–60s reconstruction of Europe and Asia → 1970s focus on poverty in developing countries → 1990s support for transition economies → 2000s MDGs → 2015 SDGs → Current mission as of 2024

189 member countries, 16,000 staff worldwide, offices in more than 130 countries, HQ in Washington, D.C., USA

WORLD BANK GROUP





@A Billion

Digital and AI Strategy Implementation Plan

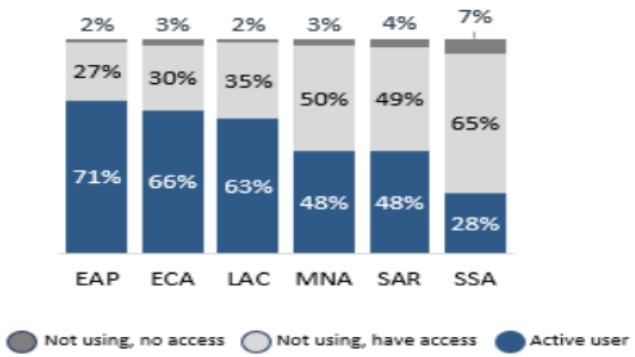
Board Approval Date: June 24, 2026

A FY2026–2030 implementation roadmap to deliver the benefits of AI and digital technology to 1 billion people (600 million through broadband + 400 million through digital services) by 2030.

The Challenge

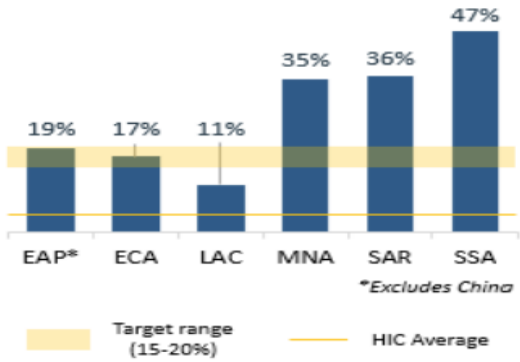
Over **2.2 billion people** in LICs and MICs do not use the internet, and 228 million are without broadband coverage

Regional Breakdown of the Connectivity Status (2024)
(percent of people in LICs/MICs)



Entry-level devices are unaffordable for **2.9 billion people**

Average Entry-Level Smartphone Price for LICs/MICs by Region (2022)
(percent of average monthly income)



2.8 billion people do not have access to official digital IDs

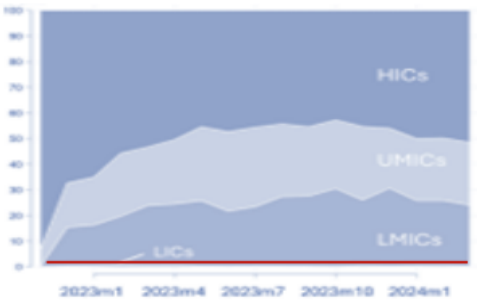
800m

Lack any form of official identification

30%

Live in countries without access to digital govt. services

Less than 1% of AI traffic flows to LICs



The @A Billion Implementation Plan

Addressing binding constraints to digital inclusion through scalable and replicable solutions:

Access

Connect people in hard-to-reach areas and improve quality of connectivity

Affordability

Make devices more affordable for the bottom 40% and MSMEs

Ecosystem

Expand digitally enabled public and private services across sectors

AI Readiness and Adaptation

Adopt, adapt, and advance AI solutions, and leverage small AI

Trust, Safety & Security

Scaling Access

Solution 1: Eliminate connectivity barriers

Solution 2: Unlock private capital via Digital Access Fund

Solution 3: Reduce upstream device costs

Solution 4: Expand device financing

Solution 5: Scale refurbished devices

Solution 6: Scale digital service delivery

Solution 7: Catalyze local digital industries

Solution 8: Boost and diffuse digital skills

Scaling Use

Solution 9: Enable locally relevant Small AI solutions

Solution 10: Strengthen AI infrastructure

Solutions are prioritized based on evidence of results, WBG mission fit, adaptability across country contexts, and potential for scale.

For many developing economies, the practical starting point for AI-enablement is Small AI

Big AI features (vs Small AI)

- General Purpose
- Trained on all internet data
- Engineered for maximum performance
- Requires constant connectivity
- Costly monthly subscriptions

Small AI

- Designed to solve specific tasks
- Adapted using local data and context
- Engineered to operate with minimum compute and power
- Deployed to work with low or no of constant connectivity
- Made to deliver at minimal cost

Jobs

Creates Jobs due to market expansion and Augments Jobs *to Improve Outcomes*

Investment Pipeline

Built by AI ***Startups*** *that can become* ***bankable with the right support.***

AI Ecosystem

Helps strengthen countries capability to implement AI and lay the ***foundations for economic transformation***

Small AI solutions are already driving impact in LMICs across multiple sectors

InkubaLM for low-resource African languages

Use case overview

- InkubaLM is a 0.4B parameter model designed specifically for five African languages: Hausa, Yoruba, Swahili, isiZulu, and isiXhosa.
- InkubaLM achieves similar performance to larger models on machine translation, and outperforms many larger models in sentiment analysis.
- Heavily leveraged existing architecture and attention mechanisms to enhance efficiency.

Critical challenges

- **Language inconsistencies:** The model may sometimes use different languages when generating text responses
- **Accuracy and bias:** Similar to other language models, InkubaLM can struggle to provide accurate, logically consistent and bias-free responses

Lessons for Policymakers in LMICs

- **Growing techniques for developing SLMs:** The paper introducing InkubaLM discusses numerous techniques used to build the model, which can be directly leveraged by other model developers
- **Academia as a data source:** The paper also introduces two novel datasets used to train InkubaLM. These data sets could be leveraged to train more expansive models for African languages.

Fostering literacy and preserving culture- RobotsMali in Mali

Use case overview

- RobotsMali is using AI to create educational materials in Bambara, a local language in Mali.
- By generating schoolbooks and content in Bambara, RobotsMali empowers students and fosters literacy, ensuring that educational resources are accessible & culturally relevant.

Critical challenges

- **Data volume:** Limited digital or annotated data in Bambara to train AI models.
- **Vendor dependence:** Lack of local compute resources increased dependence on external platforms.
- **Cultural barriers:** Many users had not interacted with digital content in their native language.

Lessons for Policymakers in LMICs

- **Localization drives value:** AI tools that support local languages can enhance participation and learning outcomes.
- **Human-in-the-loop:** Human oversight of AI outputs helps manage quality and maintain trust in AI generated materials.

Agriculture resilience support- Plantix in India

Use case overview

- Plantix is an image recognition app which processes photos uploaded by users of diseases or pests which are present on their crops. The app also suggests solutions to remedy the issue.
- In India, Plantix partnered with the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) to train small farm holders

Critical challenges

- **Measuring feedback:** Plantix has struggled to comprehensively measure impact of the tool beyond proxy metrics such as number of users
- **Achieving expert-level accuracy:** While the app was still maturing, the app would only provide a list of potential identifications. As the model has matured, the confidence in the predictions has increased.

Lessons for Policymakers in LMICs

- **Training partnerships:** Leveraging ICRISAT's network of research labs and universities, the partnership was able to train over 3,500 students and staff on the Plantix app.
- **Community-based annotation:** Government agricultural workers, students of agricultural universities, and farmers in India helped with identify and annotating training images

Sources: Artificial Intelligence for Development, Showcasing Responsible AI in Action: Real-World Impact Across Health, Education, Agriculture, and Human Rights; https://www.ai4d.ai/blog/showcasing-responsible-ai-in-action-real-world-impact-across-health-education-agriculture-and-human-rights; InkubaLM: A small language model for low-resource African languages, Tonja, Atnafu et.al., 2024, https://arxiv.org/html/2408.17024v1

Goal: establish the WBG as enabler of private-sector driven AI ecosystems in developing economies

Solution 9: Enable locally relevant Small AI solutions

Solution 10: Strengthen AI infrastructure

PROGRAMS

Small AI
Develop, scale, promote, and own the WBG Small AI program

Data Program for Value Creation
Support data ecosystem development to enable private-sector value creation

AI Compute Demand
Assess and understand demand for AI compute to inform Solution 1

PRODUCTS

Knowledge Bank Country AI Framework (cross-cutting): snapshot of AI ecosystem, strengths, gaps, recommendations

Small AI
- WBG AI Acceleration (with Applications)
- Small AI in a Suitcase (with Verticals, Applications)
- Small AI Operational Playbook (Verticals)
- AI Repository (Verticals, MDBs)
- AI Academy (MDBs)

Data ecosystem
- Digital & AI Data Program for Value Creation (partnership with all Digital & AI departments + DEC & Poverty)

AI compute
- Demand Assessment (bottom-up/top-down) (with Access)
- MDB AI Task Force, co-investments
- PCM efforts

REGIONAL ENGAGEMENT (CROSS-CUTTING)

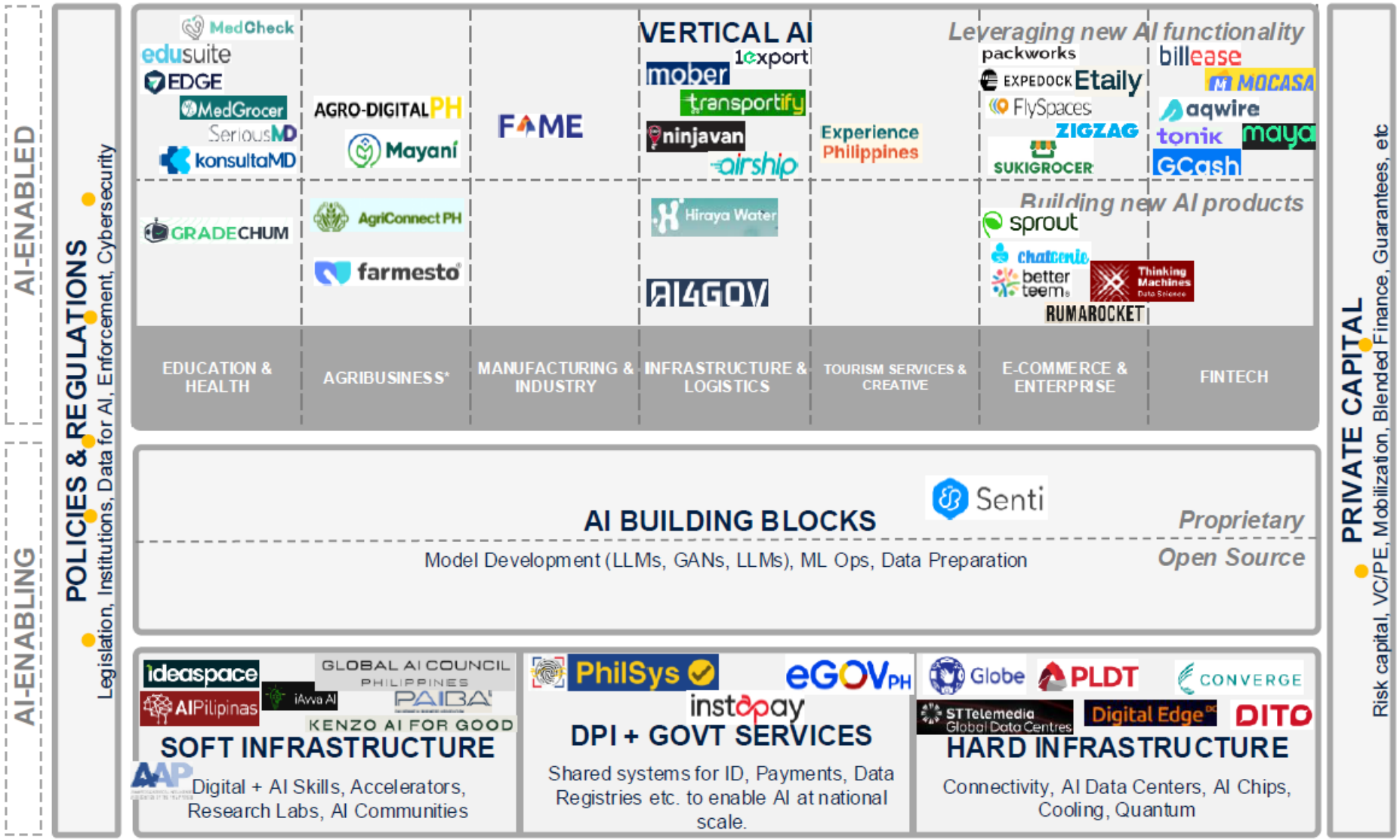
Thought leadership
Bring best practices on AI and data from across the globe to regional teams and clients

Policy and regulation (with P&R)
Improve the enabling environment for AI in client countries

Lending & Investment
Demand-driven in AI compute, connectivity, data, talent, sectoral AI

Trust is established as the foundation on which all AI work will be implemented (with DTCE).

KNOWLEDGE BANK AI FRAMEWORK - PHILIPPINES



AI ACCELERATOR

A year-round accelerator that moves the best Small AI startups from upstream to bankability and shares the pipeline with MDBs and co-investors

Year Round, Sectoral Small AI Accelerator

- **Advisory and mentorship** on scaling from WBG experts and partners
- **Co-investment and offtake**: 300+ IFC funds, 2K clients
- **Private capital mobilization**: pipeline for MDBs and partners

From Upstream to Bankability

- Identify and support the best global AI startups from upstream to commercial scale
- Share pipeline of investable companies with MDBs and co-investors for co-investment and scale.

Sectoral by Design

Run in partnership with Digital & AI Applications team

Focus on job WBG creating sectors including health, agribusiness, as well as education and MSME support

Program Differentiator

Impact measurement

Tracks job creation, service quality, efficiency, and financial inclusion.

MDB knowledge base

Supports policy advisory in client countries to enhance the enabling environment.

Partners Building on existing WBG partnerships with MDBs, tech companies, and accelerators to develop a robust program and value proposition for startups.

SMALL AI IN ACTION

Examples of developing country AI startups improving healthcare efficiency, MSME revenue, and rural medical care

Improving efficiency in healthcare

Intron · Nigeria

Problem
Rural hospitals invest in local-server EMR systems because cloud is unreliable, but clinicians rarely use them as they are not accustomed to typing notes, so the investment is underused and patient-care savings do not materialize.

Solution
Edge-deployed speech-to-text and text-to-speech AI built for African languages, letting clinicians dictate notes in local dialect.

Organization
Voice AI covering 57 African languages and 500+ accents, outperforming Google, OpenAI, and Azure on African voice benchmarks.

Increasing revenue for MSMEs

Fastagger · Kenya

Problem
Small business owners in developing countries manage finances through mobile money but cannot analyze that data to understand performance or trends.

Solution
Auni ("help" in Swahili) is an AI-powered business intelligence tool embedded in the M-Pesa Business Super App that turns M-Pesa transaction data into actionable insights.

Organization
Kenyan startup specializing in edge deployment of AI tools.

Extending medical care in rural areas

Data Science Nigeria

Problem
Rural clinics lack the specialist expertise required for complex family planning and maternal triage.

Solution
Deployment of Edge-AI Clinical Companions that provide real-time clinical support to frontline health workers.

Organization
AI and data science organization focused on talent development and sector-specific solutions.

Enabling AI-powered service delivery where there is no connectivity, bridging the digital divide in weeks instead of years.

Problem: Lack of specialists in health, education, agriculture, no connectivity to run cloud-based digital/AI tools

Solution: Micro Data Center ($4k, serve 20k ppl) as shared local AI infrastructure for last-mile, offline service delivery in health, education, and agriculture.

Ajay Guidance: position this as shared infrastructure for for decentralized service delivery and integrate into agriculture, health, and education **implementation plans**

Documenting Two Pilots in Nigeria

- AI medical transcription for doctors in a hospital → more time for patients
- Health advice for women in local language in rural clinics → more women served

Rural clinic women's health advisory, Nigeria

AI Suitcase (right) and laptop (left).

Launched in February 2026 with 100+ validated use cases, the AI Repository is expanding from applications to focus on Small AI startups

1 Phase 1 — Focus: Applications — Launched Feb 2026

Achievements

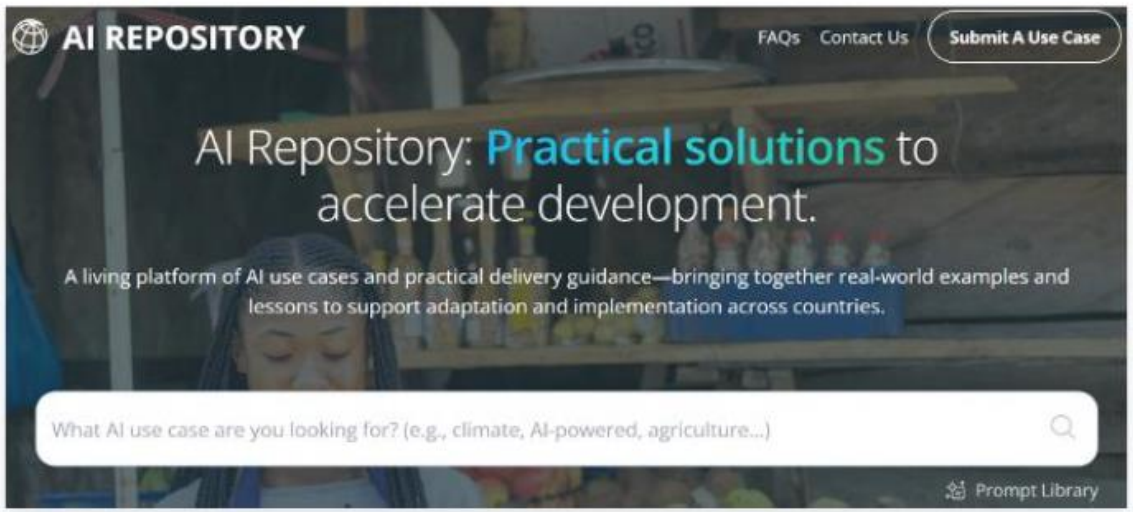
- Partnership with 8 MDBs + Collaboration with all WBG Verticals + IFC
- Collection of 100+ validated use cases
- Showcase at IsDB annual meeting, WBG Youth Summit, with clients

2 Phase 2 – Curating Small AI Startups — Launching Soon

Focus: Small AI Startup & Ecosystem

Plan: Via ***AI Accelerator***, curate a pipeline of best-in-class small AI startups as an open platform to showcase good practices on technology, application, and governance

The AI Repository platform



Internal and External Partnerships

Developing phase 2 of the AI Repository in collaboration with all WBG Verticals, MDBs, and in close collaboration with WBG lawyers (LEG)

ADB ASIAN DEVELOPMENT BANK · AIIB ASIAN INFRASTRUCTURE INVESTMENT BANK · CEB · European Investment Bank Group · IsDB Islamic Development Bank · IDB Inter-American Development Bank · New Development Bank · WORLD BANK GROUP

Aligned with the AI Framework, the AI Academy curriculum will scale up in FY27 to better support country dialogue and showcase WBG expertise

Online learning · Coursera

2 short courses on key topics	Ongoing

5 virtual sessions on key topics

May – AI Trends and Opportunities	Completed
June – Hard Infra (Compute, Data)	Completed
July – Soft Infra (Skills and Jobs)	Upcoming
September – Governance	Upcoming
October – AI & Cyber	Upcoming

In-person workshop in Seoul

Oct 15–16 – Week before Global Digital Summit	Upcoming

135+ PARTICIPANTS

25 COUNTRIES

SELECTED PARTNERS

ANTHROP\C

aws

Alpha Intelligence Capital

izifin

FY 27 SCALE UP

- AI ACADEMY in Africa & LATAM
- Leverage AI ACADEMY content for SmartAfrica Digital Academy
- Develop **Scalable AI-Enabled Courses** to be delivered **on demand**

Leveraging adaptive system strengthened through AI

Korea-WBG Partnership

1955
Korea joins IBRD

1961
Korea joins IDA

1962
First Bank operation in Korea approved

IDA credit (US$17 million) to expand and improve the Korean National Railroad

1973
Korea graduates from IDA

Over the years, the Bank (IBRD and IDA) completed 133 credit or loan projects in Korea, disbursing funds totalling US$15 billion.

1994
Korea graduates from IBRD

1997
Asian Financial Crisis

The Bank supported the government of Korea's reform programs through adjustment loans (US$7 billion in total)

2010
Korea becomes a member of the OECD Development Assistance Committee (DAC)

2014
WBG Korea Office opens in Songdo

2024
Korea hosted IDA 21 meeting as a key donor

Korea office program on innovation and technology, including GAIDKC

Global AI and Digital Knowledge Center (GAIDKC)

Purpose

- ❑ Programmatic Advisory Services and Analytics anchoring global knowledge work, with embedded technical assistance in country programs.
- ❑ Translate Korea's end-to-end digital experience into scalable, practical solutions for World Bank operations
- ❑ Leverage the World Bank's global reach to turn proven knowledge into impact
- ❑ Leverage Korean Partnerships with both public and private partnerships (e.g. Impact Evaluations of AI Policies and Programs)

Programmatic Advisory Services and Analytics (PASA) – with **AI** at its core

Digital and Data Infrastructure

Strengthening inclusive, affordable, and trusted digital systems

Digital Public Services

Supporting governments to deliver integrated, secure, and user-centered services

Inclusive Digital Economy

Driving innovation, entrepreneurship, and skills development, particularly for women and youth

KNOWLEDGE & ANALYTICS
Policy toolkits, diagnostics, applied research, and guidance for national digital strategies

CAPACITY BUILDING & LEARNING
Leadership programs, peer exchanges, and South–South learning that translate knowledge into practical results

CONVENING & PARTNERSHIPS
Global dialogues connecting governments, academia, private sector, and development partners

GRANTS

To Leverage Korea's AI & Digital Leadership

[Goals] 2030 Target Indicators

- Global Top 3, GDP boost of +12.6%, creation of 7.3 million new jobs (IMF, 2025)
- Positioning Korea as a global testbed nation for "Physical AI"
- Establishing Korea as a global hub for AI norms, technology, and talent

[Strengths] Existing Foundation

- Semiconductor global leader — ~23% of world chip exports, pioneering next-generation AI semiconductor (PIM) development
- World-class digital infrastructure — world's first commercial 5G rollout, broadband penetration ~100%, ICT exports $233 billion (2022)
- Data ecosystem — "Data Dam," an integrated public-private data platform
- Leading AI legislation — AI Framework Act (2024), the world's second comprehensive AI legislation after the EU

[Government-Led Investment] National All-Out Effort

- Government $6.9 billion + Private $48.9 billion + National Growth Fund $72 billion
- AI computing capacity expanded 15x → over 2 exaflops by 2030, 500 AI smart factories
- Training 1 million AI talent, embedding AI education across all levels from elementary to lifelong learning
- K-Chips Act: tax incentives of up to 25% for semiconductor facility investment and up to 50% for R&D
- AI vouchers for SMEs; target to increase AI-adopting companies from 1% (2023) to 30% (2030)

Programs

PASA

- anchoring global knowledge work, with embedded technical assistance in country programs.

Grants

- Innovation and implementation grants linked to ongoing and pipeline lending across GPs and region

AI-Powered Phytosanitary Risk Intelligence for Border Inspection

AI-Powered Pathways to Jobs, Matching People to Work, Finance and Economic Opportunity

AI-Powered Digital Public Employment Services (PES)

Leveraging Partnerships

- Mobilizing Korean institutions and experts to support delivery and knowledge exchange
- Public Partners: MOEF · MSIT · NIPA · NIA · KISA · PIPC · National AI Committee, etc
- Working closely with Private Sector through strategic partnership and AI solution depository

Example–Leveraging AI for Energy Sector Modernization

Digital and AI Infrastructure to reduce non-technical loss in electric utilities

Challenges: Financial and operational challenges with large system losses of approximately 30 percent compared to a 7 percent global average, a collection rate of only 77 percent, and limited digital infrastructure, Non-technical losses (NTL) — arising from electricity theft, informal connections, metering inaccuracies, and billing fraud

Activities: design and deployment of an AI-enabled Geographic Information System (GIS)

To provide a georeferenced digital map of all network assets, customer connections, and service points, integrated with AI analytics to detect NTL anomalies, prioritize field inspections, and drive smarter operations across the utility

To serve as a multi-purpose operational backbone supporting outage management, predictive asset maintenance, least-cost electrification planning, renewable energy integration, climate resilience planning, and commercial operations.

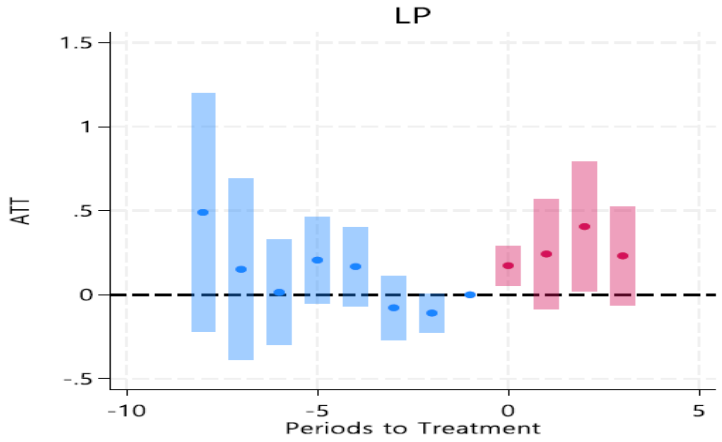
Leveraging WB lendings: Regional Electricity Market Program, Transmission Corridor Project

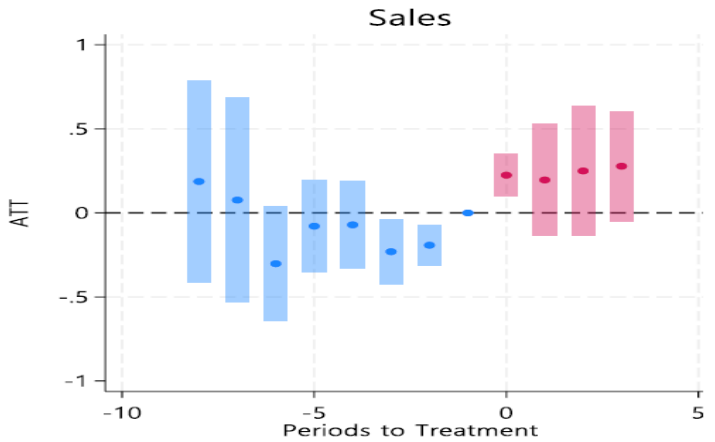
Leveraging Korea's AI expertise in utility digitalization, smart grid management, and AI-enabled infrastructure monitoring to deliver a replicable, high-impact solution

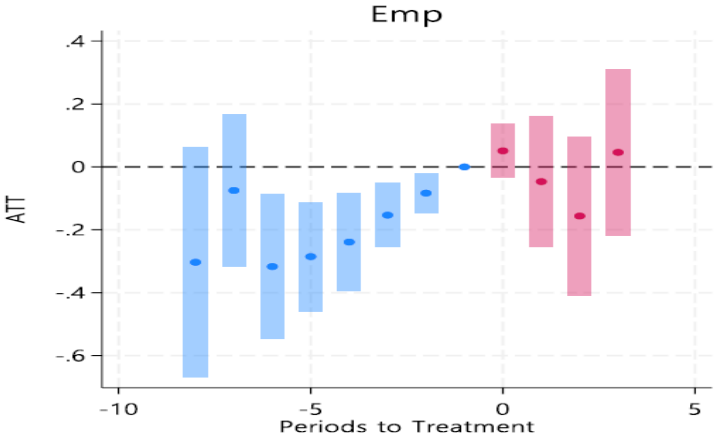
Partners: Korea Electric Power Corporation (KEPCO), Korea Smart Grid Institute (KSGI)

Example – Creating Global Knowledge

Program Overview: Promotes AI adoption among SMEs while helping AI solution providers secure early market demand. Average voucher value: KRW 200 million.
Research Methodology: NIPA data (2021–2024), KoDATA data (2005–2024); panel fixed-effects models and quasi-experimental methods including DID, RDD, JWDID, and CSDID.
Key Findings: Suppliers (Sellers): More voucher-linked clients correlates with higher revenue growth.
Buyers (Demand side): Employment declined (particularly in finance and construction), while labor productivity increased — most notably among firms in operation for 5 years or less, in ICT and distribution sectors, and becoming clearly visible two years after receiving the voucher.
Policy Implications: Outcomes vary significantly depending on "who receives the voucher" and "which industry they are in," indicating that a more refined and targeted approach to program design is needed.
International Interest: Countries such as Vietnam and Thailand have expressed strong interest in Korea's demand-side government programs of this nature, with potential linkages to technology transfer and concessional loans.







Example - Global Knowledge Platform

2026

Cybersecurity Academy (co-organized with KISA, July)

AI Academy (October)

Global Digital Summit (co-organized with the Ministry of Science and ICT, Ministry of Economy and Finance, and NIPA, October)

ANNEX

Deep dive on SLMs

Understanding differences between SLMs and LLMs helps assess when each model type should be used

Key Model Strengths

SLMs	LLMs
• Resource-efficiency on specific tasks • Small size and low latency contribute to faster response time • Lightweight enough to be deployed locally on edge devices • Composability into complex systems of multiple SLMs • Can be trained to possess very specific expertise	• Performance on complex tasks which require nuanced reasoning • Ability to generalize to new tasks or data increases model versatility • Maintain contextual understanding over large inputs • Better multimodal and multilingual support • Current technical focus of frontier labs

SLMs	Choosing between SLMs and LLMs	LLMs
Limited compute budget	**How much compute is available for training and inference?**	Significant compute budget
Edge devices, low-compute environments	**What is the planned deployment environment?**	Cloud deployment, complex infrastructures
Narrow, specialized tasks	**How complex is the task performed by the model?**	Broad, general tasks
Depth of knowledge	**Does the task require more depth or breadth of knowledge?**	Breadth of knowledge
Limited amounts of very high-quality data	**Do we have any major data constraints to consider?**	Large amounts of data with varying quality
Data should be stored locally to preserve privacy	**Are there any privacy considerations which may restrict the flow of data?**	No special privacy considerations
Can be frequently fine-tuned or retrained	**Will the model require access to frequently updated or real-time data?**	Can be solved with RAG, but more complex to implement
Real-time response needed	**Is real-time or near-real-time response critical for the use case?**	Tasks are not as time sensitive
Modular deployment allow for multiple specialized skillsets	**How many different skills must the solution possess?**	Dependent on generalized model capabilities

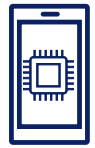
Source: Henry Evans. Llms vs. slms: Balancing comprehensiveness and smart resource-saving, 2025, https://www.velvetech.com/blog/llms-vs-slms/

Understanding different deployment options for small AI

Cloud Servers

Processing Localization

Edge Processing



Thin-Client AI

Strengths

- Quick to deploy and runs on basic phones.
- Minimal local infrastructure or specialized AI skills needed.
- Ideal for rapid results and early value recognition.

Challenges

- Dependent on internet connectivity and external providers.
- Requires pre-processing and caching to preserve privacy and data security.
- Costs tied to API usage and bandwidth.

Necessary Skills

- Mobile and web app development, API integration, data anonymization.

Best Used When

- Edge devices are memory-constrained
- Internet connection is reliable
- Workloads are large or complex

Hybrid AI

Strengths

- Increases local control and relevance (e.g., adapting to crops, dialects, or guidelines).
- Partially reduces dependence on centralized cloud providers.

Challenges

- Requires modest local data management and a small technical team.
- Partially dependent on cloud infrastructure and APIs.

Necessary Skills

- Local data curation, integration of retrieval or rules engines, light server maintenance.

Best Used When

- User demands may be variable in their compute requirements
- Local teams can optimize workloads to manage cost

On-Device Small AI

Strengths

- Fully offline, improving resiliency and preserving privacy.
- Lower ongoing operating costs once deployed.

Challenges

- High upfront demands: local data collection, labeling, training, and packaging.
- Needs mechanisms for updates, monitoring, and retraining to avoid model drift.
- Hardware constraints: limited RAM, compute, and battery on affordable devices.

Necessary Skills

- ML engineering, MLOps, model optimization, and device-specific deployment.

Best Used When

- Low latency is critical
- Edge device battery and compute capabilities are sufficient to support inference

Necessary conditions for small AI success

Illustrative sector-specific pre-requisites for deploying small AI solutions in LMICs

Dimensions	Healthcare	Education

1. Skills and human capital readiness	• Minimum viable teams for deploying a pre-built solution include:
	  • Software engineer to handle user interfaces, error handling, etc.
	  • Product manager for overseeing use case success, output quality, etc.
	  • DevOps engineer for hosting infrastructure, configuring model monitoring and logging, etc.
	• Provide practitioners AI safety training using resources such as the Coalition for Health Responsible AI Guide
	• Domain specialists who can validate model outputs for clinical accuracy
		• Engineers and compliance teams responsible for assessing solutions which may interact with children must have a deep understanding of AI safety benchmarks, content toxicity filters, and other leading guardrails
		• Administrators and teachers understanding of tactics to integrate language models into teaching workflows
		• Curriculum developers recommending AI-enhanced learning pathways
		• Local or regional support staff for troubleshooting and maintenance

2. Data readiness	• Availability of de-identified datasets, with a clearly defined lawful basis for use in AI models • Datasets which reflect country-specific case mix (e.g., co-morbidities, endemic diseases, etc.) • Data standards for datasets which will be central for AI training. These standards should consider factors such as demographic data, skin tone, social determinants of health, etc.	• Do we have the data infrastructure necessary to deliver the requisite data to geographically disperse schools? • Systems for collecting learning outcome data to measure impact • Collect datasets for all languages used across the education system to promote AI tools that function at the same level for all languages
3. Connectivity and infrastructure readiness	• Understanding of power, internet and cellular reliability, as well as the compute and data storage capabilities for hospitals and local health clinics to support informed decisions on model architectures • Encryption, firewalls, and other cybersecurity minimum requirements for protecting personal health information • Cellular or landline connectivity to support telemedicine integration	• Sufficient power supply to sustain energy flow or charge AI-enabled devices in the classroom • At minimum, internet connectivity to conduct batch content downloads/uploads during periods of lower internet use (e.g., nightly) • Local access networks for connecting devices to local mini-servers
4. Devices and edge readiness	• Compatibility of AI-enabled edge devices with existing medical devices • Secure endpoints for AI-enabled edge devices with role-based access and audit trails • Physical security controls to protect laptops, tablets, etc.	• Low-cost tablets or refurbished laptops capable of displaying a web browser or basic app • Plans for sharing devices when all students/teachers cannot access devices • Local mini-server with at least 4GB VRAM for providing compute to edge devices • Ventilation and cooling mechanisms for servers

Example - Responsible AI Governance

A shared global foundation adaptable to national contexts and development priorities

Rights & data protection

Safeguard individuals' rights and privacy across the AI lifecycle. Ensure people control how their data is used.

Transparency & explainability

Make AI decisions understandable, traceable, and open to scrutiny to foster public trust.

Accountability

Define clear responsibility for AI outcomes and establish oversight mechanisms throughout design, deployment, and use.

Inclusion & non-discrimination

Promote equitable access to AI benefits and prevent algorithmic bias or systemic exclusion.

Redress & oversight

Provide accessible remedies for harms caused by AI and ensure continuous monitoring and ethical review.

Global frameworks, including:

- the OECD AI Principles (2019)
- the UNESCO's Recommendation on the Ethics of AI (2021)
- the G7 Code of Conduct (2023)

converge around these five pillars.

LMICs can use them as a foundation for designing context-sensitive, rights-based AI policies aligned with international norms

Examples of approaches adopted by countries

Canada — Combines transparency and accountability through its *Algorithmic Impact Assessment and Directive on Automated Decision-Making*. Strong internal oversight makes this model replicable for other governments building AI governance capacity.

Korea — Integrates risk-based self-assessment into its *AI Personal Information Protection Checklist*. Shows how risk classification can operationalize ethical principles without full legislation.

Uruguay — Introduced *Algorithmic Impact Assessments* in the public sector. Demonstrates how LMICs can embed accountability mechanisms even with limited resources.

Singapore — *AI Verify framework* blends transparency and safety testing, offering a scalable sandbox model adaptable for other developing economies.

Small AI models are deliberately designed to be compact and compute-efficient

Small AI refers to simpler artificial intelligence models that are designed to perform narrow, specific tasks and can run on mobile phones, laptops, and other edge devices. Small AI can roll out faster and cheaper, reach people at the last mile, and improve services in farming, health, classrooms, and small businesses.

Key characteristics of Small AI

	Implications for LMICs
Task specific intelligence: Small systems are designed to perform a limited number of well-defined tasks rather than generalizing to new scope areas.	Enables targeted solutions for local, context-specific challenges. (e.g.- crop disease detection, maternal health).
Lightweight and resource-efficient: Small AI models are cheaper to train and often optimized to run on edge devices like smartphones, wearables and microcontrollers.	Lowers capital commitment required for developing or deploying models. Edge deployment enables use cases in remote areas.
Privacy-preserving: Because small AI often runs locally on devices, it reduces the need to transmit sensitive data to external servers.	Provides citizen and other users with more control over their personal or sensitive data.
Low latency: Models run locally, avoiding delays from communication with cloud servers.	Enables real-time support in areas where data centers may be unfeasible or over-utilized.
Composable: Due to their smaller size, small AI models can be used to perform narrow tasks as part of a broader team of small models tasked with a broader task.	Enables the development of powerful AI systems without the costs associated with training foundation models.

Policymakers should assess small AI readiness across numerous dimensions

Dimensions	Diagnostic questions	Example pilot initiatives
1. Skills and human capital readiness	• **Policymaker literacy-** Do policymakers understand the benefits of small AI and strategies for encouraging the adoption of the technology? • **Workforce readiness-** Are members of the public supportive of AI adoption? Do they have the digital skills to deploy and maintain AI-enabled solutions locally? • **Technical capacity-** Do we have domestic ML experts who understand current small AI techniques and can build or customize small AI models?	**India's national AI strategy recognized the pressing need to reskill the workforce for AI. This strategy included:** • Standardization of local informal training institutions • Creation/usage of open learning platforms • Creating financial incentives for reskilling employees • Encouraging higher education institutions to adapt curriculums
2. Data readiness	• **Domain-specificity-** Are there unique data sources we have or could feasible access which would lead to differentiated model performance? • **Data quality & useability-** Are publicly-available datasets sufficiently relevant for local context? Do we have the necessary resources to generate, label, and make data sources machine-readable? • **Data availability-** Is the necessary data infrastructure (e.g., data pipelines, warehouses, metadata catalogues) in place to support the use of small AI?	• Conduct a review of publicly available datasets frequently used for training AI models • Compare these datasets to local language patterns and norms required for widespread national adoption • Identify gaps where local-language-specific datasets need to be created

3. Connectivity and infrastructure readiness	• **Private sector optionality-** Is our infrastructure supportive of the different methods that domestic businesses or entrepreneurs may want to use small AI?
	  • **API access-** Is our national internet infrastructure sufficient to support models which rely on continuous API access?
	  • **Training & fine-tuning-** Do we have ways of accessing sufficient compute to support domestic model training or fine-tuning?
		An infrastructure readiness assessment could assess:
		• Current methods citizens and businesses are accessing AI models
		• Infrastructure gaps which prevent other model adoption/access methods (e.g., API, local hosting)
		• Cost-benefit analysis between infrastructure buildout costs and additional model access methods

4. Devices and edge readiness	• **Understanding device usage-** Which devices do our local populations interact with most frequently? • **Edge AI experience-** Do we have experience procuring IOT sensors or other edge devices? • **Incentive mechanisms-** Are there any existing funding or incentive mechanisms for IOT or edge devices? • **Secure standards-** Have we established privacy and security standards for edge devices?	**An assessment of edge device readiness should identify:** • Edge device penetration in target sectors • Best-in-class edge devices for resource-constrained environments • Compute capabilities of current devices being used versus requirements for SLMs or other AI models • Local manufacturing and import capabilities

Source: National Strategy for Artificial Intelligence, NITI Aayog, 2018, https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pdf

Immediate actions for policymakers to promote the development and adoption of small AI

CREATING AN ECOSYSTEM

a. Negotiate with universities and foreign partners to localize existing models under open licenses.

b. Create a national open-source repository for small AI models, encourage participation from academia and the private sector.

ESTABLISH INITIAL GOVERNANCE

a. Develop ethical AI guidelines and provide risk management frameworks tailored to local context.

b. Establish reporting channels for citizens to report AI abuse or misuse.

GENERATING MOMENTUM

a. Launch government-sponsored challenge grants for small AI models in priority sectors. Tie the results of the challenge grant to procurement commitments

b. Establish a use case sandbox for small AI experimentation.

LEADING BY EXAMPLE

a. Create short-term certification programs for civil servants in areas such as responsible AI use.

b. Pilot small AI models in government agencies to signal commitment to AI and allow civil servants to learn by doing

REGIONAL COOPERATION

a. Join or initiate regional AI cooperation framework which governs issues such as cross-border data transfer.

b. Explore initial appetite for shared regional compute clusters.

FINANCING AND SUSTAINABILITY

a. Establish public funding sources and mechanisms to support entrepreneurship, upskilling, and adoption.

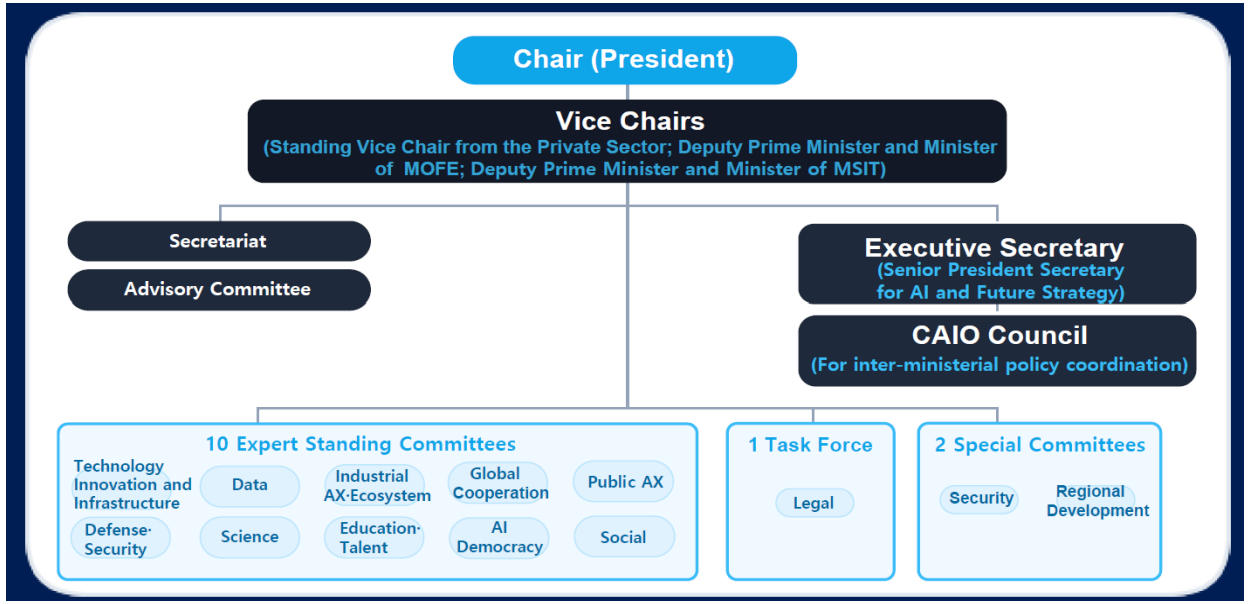
b. Identify initial partners for public-private partnerships.

Korean Case: National AI Committee

Roles

- Design the national AI master plan and vision
- Lead planning and macro-level coordination of government-wide AI policies
- Oversee implementation, inspection, and performance management of core tasks
- Strategically allocate the national AI budget
- Advance deregulation and establish safe, ethical governance

Organizational Chart



Korean Case: AI Action Plan

Pillars

- Creation of AI Innovation Ecosystem
- Nation-wide AI Transformation
- Contribution to Global AI Basic Society

Q&A

Coffee break (15:00~15:15)

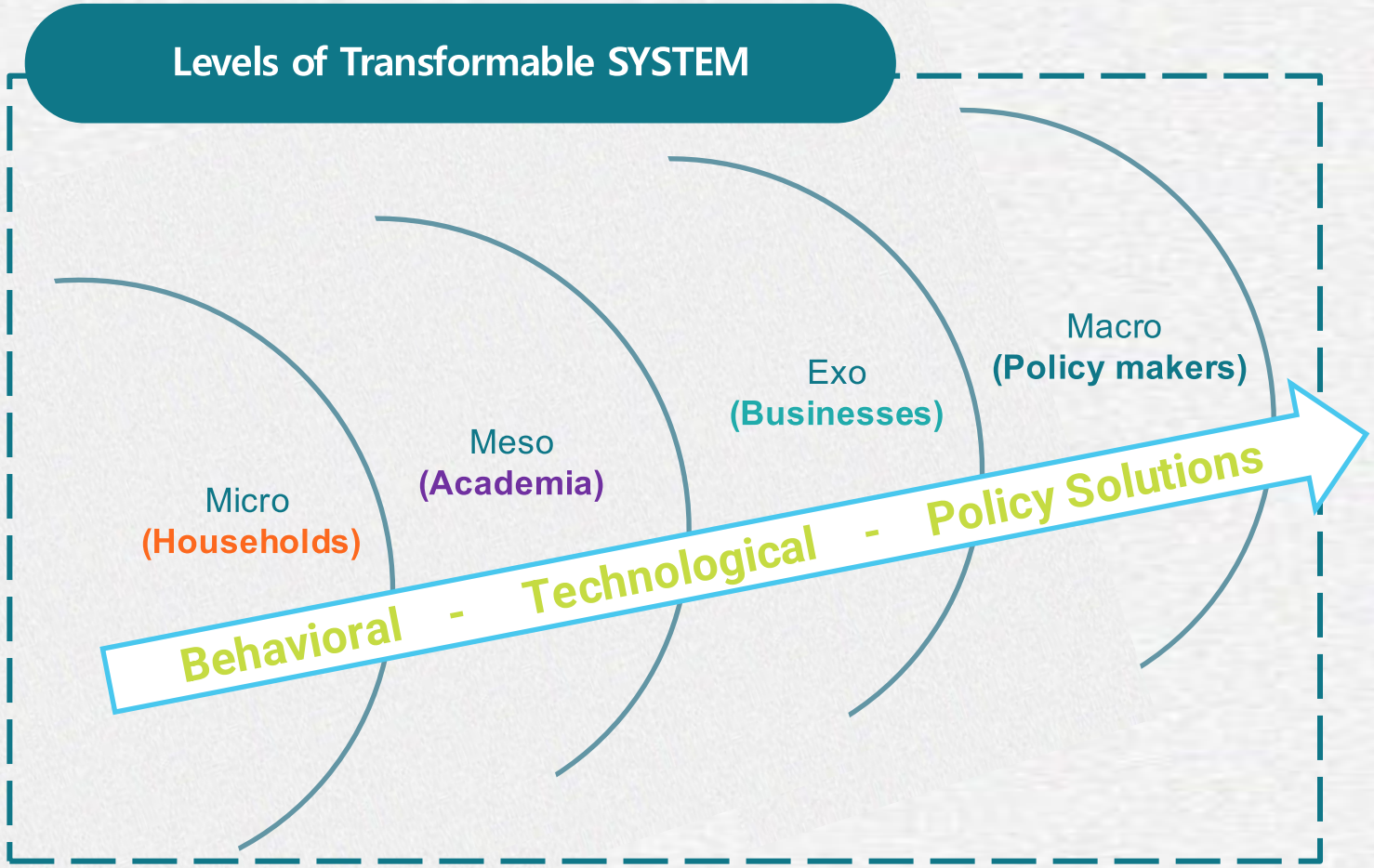
UN environment programme | CTCN UN Climate Technology Centre & Network

Session 5

Cliamte Narrative to design an energy project with strong AI components

Levels of Impact

A project linking each actor's solutions, penetrates the system



Country Status – Did I get it right?

Group	Countries	Shared priorities from the supplied materials	Energy decision-making similarity
1. Reliable energy for essential public services	Cuba, Kiribati, Naoero	Cuba: climate resilience of electricity and energy-dependent critical services; solar PV capability. Kiribati: reliable electricity for water supply, solar and storage, maintenance and outer-island services. Naoero: energy supporting water, health and integrated settlement resilience.	Public utility leadership. Government and public utilities are central to investment prioritisation, asset operation and coordination with essential-service providers.
2. Financing and operating resilient renewable energy	Fiji, Vanuatu	Fiji: renewable generation, rural electrification, agro-PV and resilient infrastructure. Vanuatu: renewable generation and storage, rural access, affordability and reduced fuel dependence.	Commercial utility decisions within public policy and regulation. Both require alignment between government objectives, utility investment incentives and commercial delivery—although their ownership structures differ.
3. Selecting and integrating new energy options	Palau, Papua New Guinea	Both presentations explicitly explore ocean energy and electric mobility, alongside renewable generation. Palau: storage, hydrogen, grid flexibility and GIS. PNG: ocean-energy pre-feasibility, solar mini-grids, off-grid hydro and rural community resilience.	Public utilities working with independent power producers and other delivery partners. Public institutions remain central to system planning and integration, while individual generation assets can involve private investment.

Phase 1

Project design: Climate Narrative for a large-scale climate project

Developing a Climate Narrative

STEP 1 (PROBLEM)

Identify a key climate change problem related to your table's theme

STEP 2 (DRIVERS)

Define the drivers of the problem

Separate climate and non-climate drivers

Connect the drivers to the problem using thread

STEP 3 (THE GAP)

For the climate-related drivers define **what still needs to be done**

Connect the missing solutions to the drivers (solutions can address multiple drivers)

STEP 4 (BARRIERS)

For the solutions identified the barriers that prevent climate solutions (**why the gap has not been addressed**)

STEP 5 (REMOVING BARRIERS)

For each barrier explain how specific activities will address the barriers (**how the project removes barriers**)

Connect with thread to barriers

Group Exercise: 30 minutes – Brainstorming

Group 1: Cuba, Kiribati, Nauru

Group 2: Fiji, Vanuatu

Group 3: Palau, Papua New Guinea

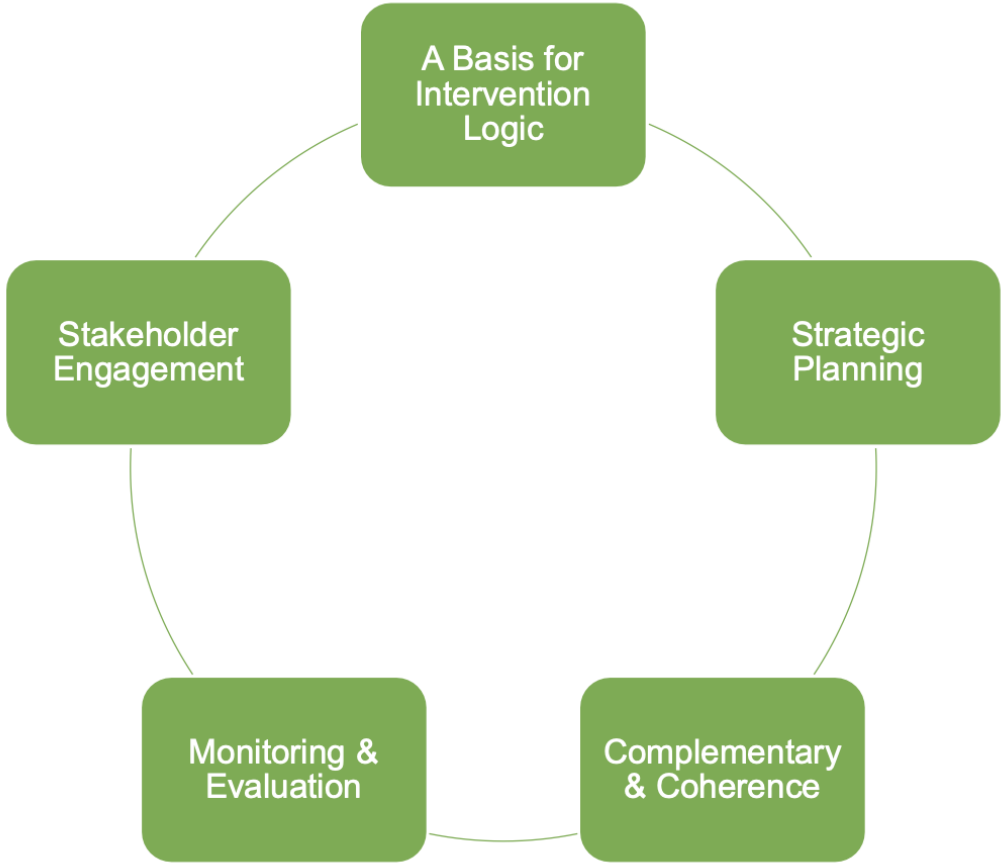
STEP 1 (PROBLEM)	STEP 2 (DRIVERS)	STEP 3 (THE GAP)	STEP 4 (BARRIERS)	STEP 5 (REMOVING BARRIERS)
Identify a key climate change problem related to your table's theme	Define the drivers of the problem Separate climate and non-climate drivers Connect the drivers to the problem using thread	For the climate-related drivers define **what still needs to be done** Connect the missing solutions to the drivers (solutions can address multiple drivers)	For the solutions identified the barriers that prevent climate solutions (**why the gap has not been addressed**)	For each barrier explain how specific activities will address the barriers (**how the project removes barriers**) Connect with thread to barriers

What is and why we use Theory of Change (ToC)

A theory of change (ToC) is an explicit theory of how and why it is thought that a social policy or program activities lead to outcomes and impacts.

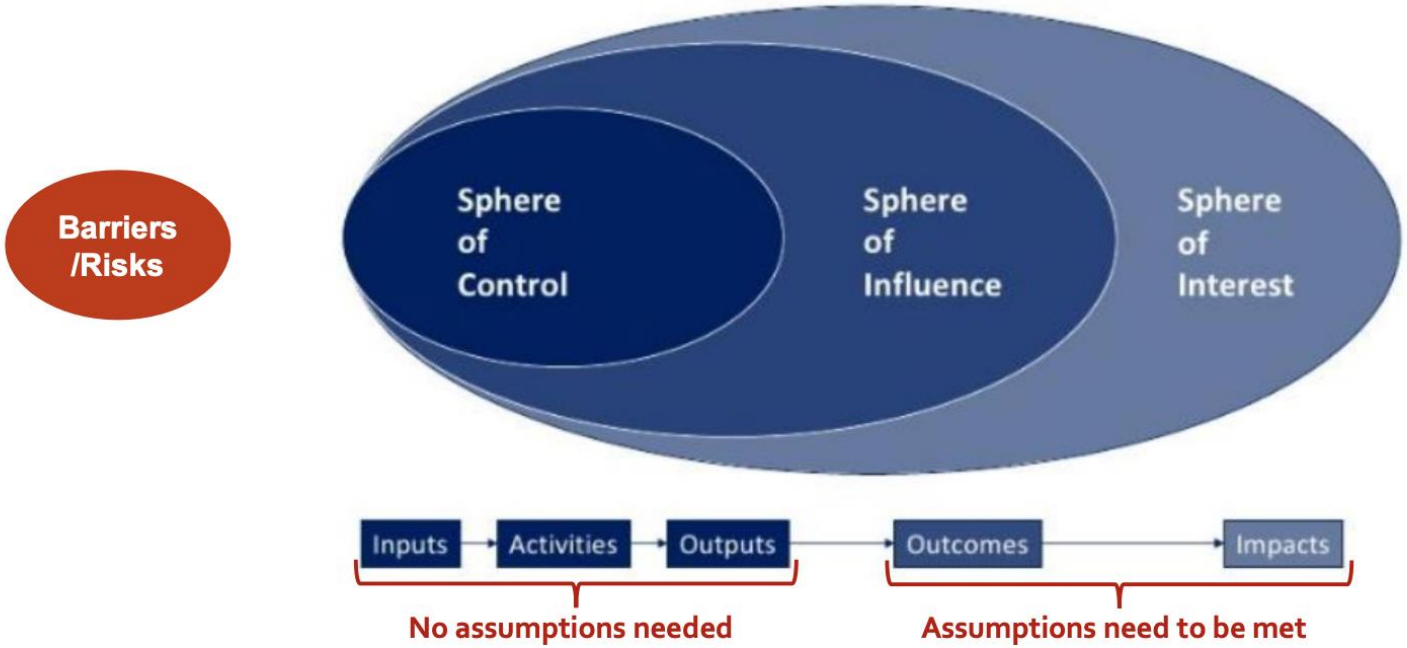
ToCs are used in the design of programs and program evaluation (particularly theory-driven evaluation), across a range of policy areas.

Climate Action

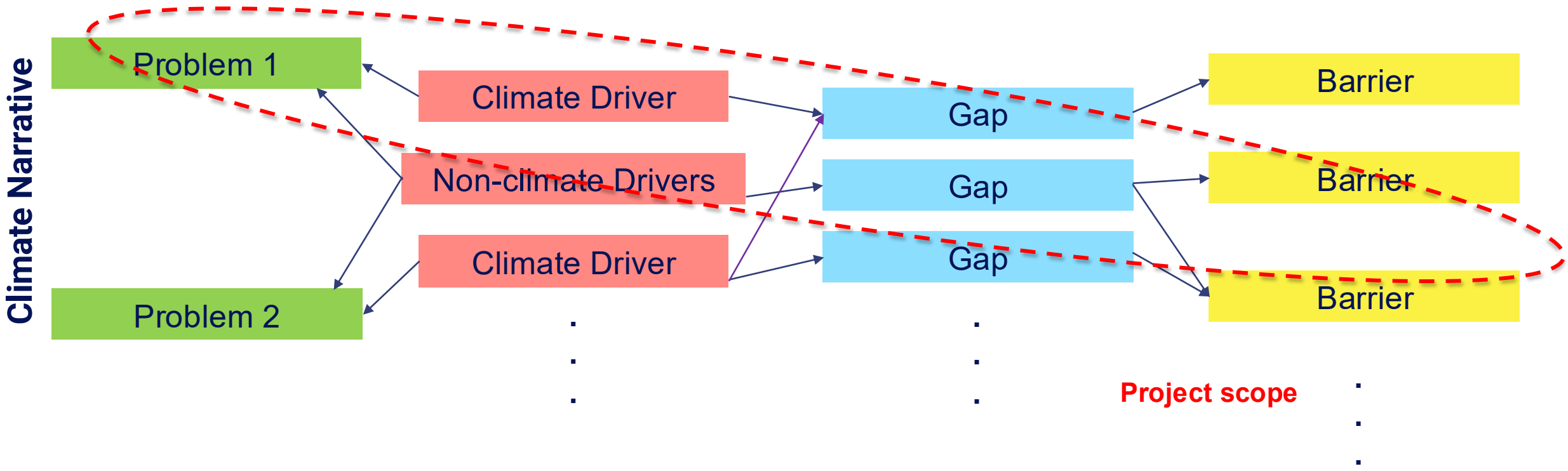


Key components of ToC

- Results can be categorized into three levels: Output, Outcome, Impact
- Activities address identified barriers and can generate changes (results).



Applying climate narrative and ToC in a project



Group Exercise: 20 minutes – Problem tree

Group 1: Cuba, Kiribati, Nauru

Group 2: Fiji, Vanuatu

Group 3: Palau, Papua New Guinea

STEP 4 (BARRIERS)

For the solutions identified the barriers that prevent climate solutions (**why the gap has not**

STEP 5 (REMOVING BARRIERS)

For each barrier explain how specific activities will address the barriers (**how the**

STEP 1 (PROBLEM)

Identify a key climate change problem related to your table's theme

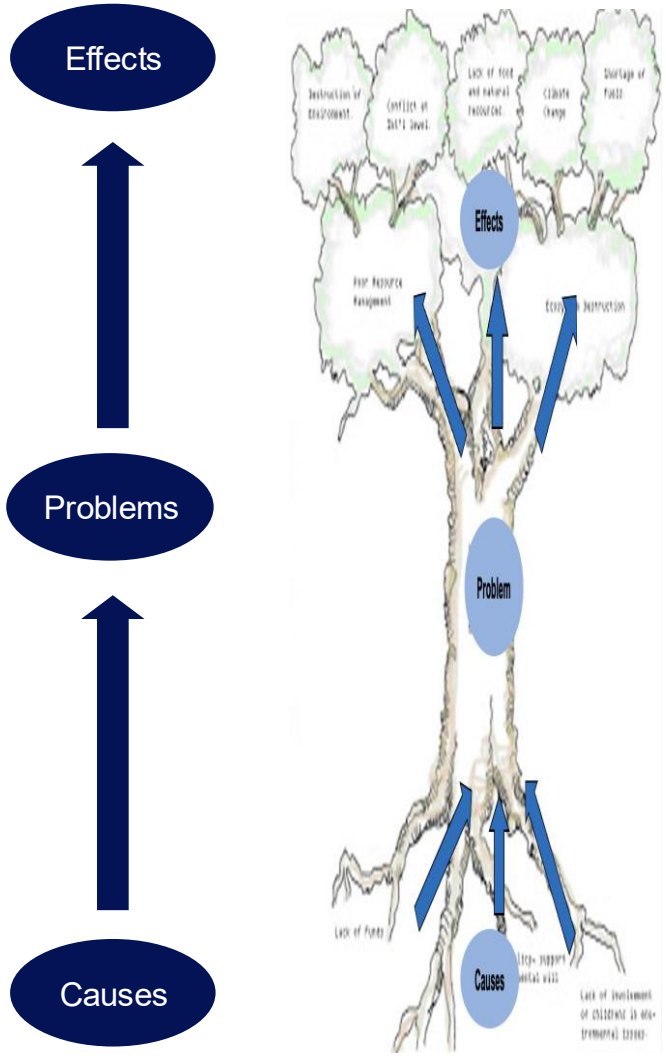
STEP 2 (DRIVERS)

Define the drivers of the problem

Separate climate and non-climate drivers

STEP 3 (THE GAP)

For the climate-related drivers define **what still needs to be done**



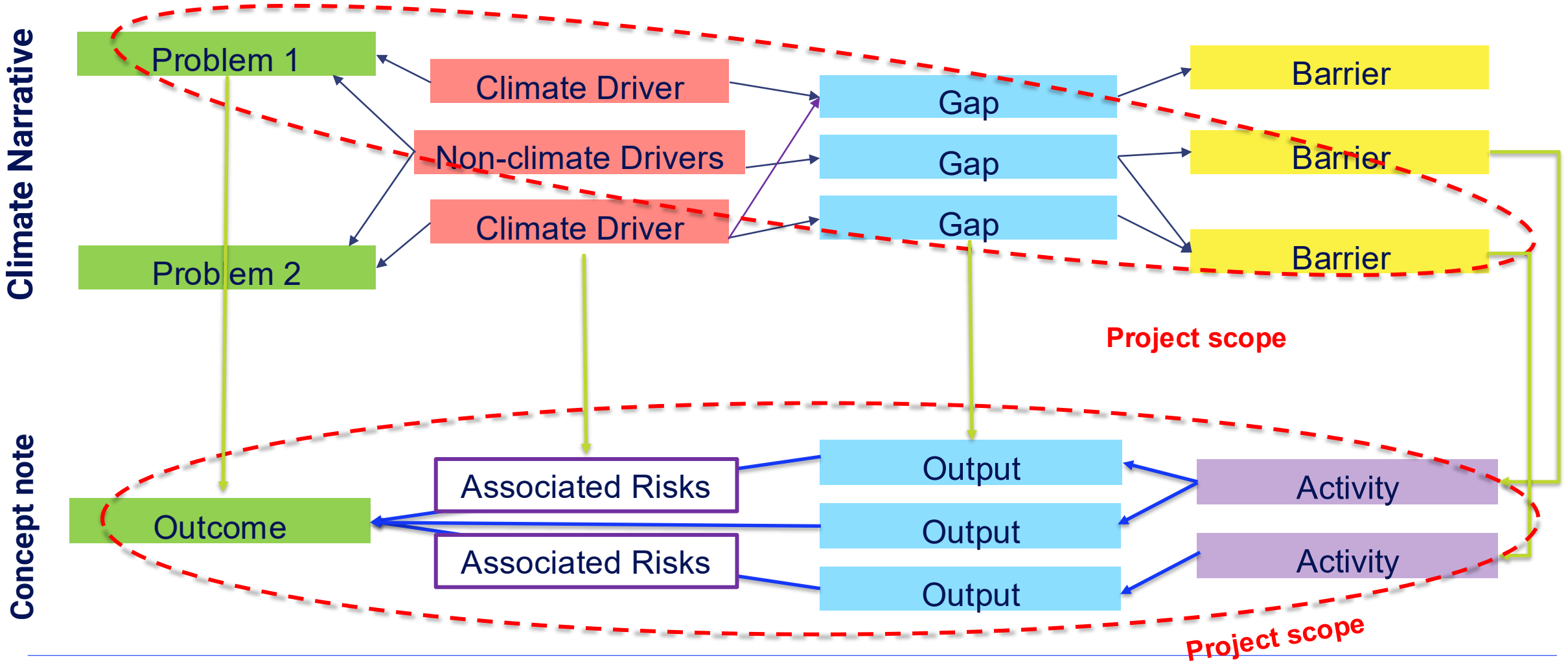
Problem tree

10-minute sharing time

Let’s check how other groups did!

NDEs from each group to share their group’s problem tree to the room

Concept: Converting Climate Narrative into ToC



Group Exercise: 20 minutes – Solution tree

STEP 4 (BARRIERS)

For the solutions identified the barriers that prevent climate solutions (**why the gap has not**

STEP 5 (REMOVING BARRIERS)

For each barrier explain how specific activities will address the barriers (**how the**

STEP 1 (PROBLEM)

Identify a key climate change problem related to your table's theme

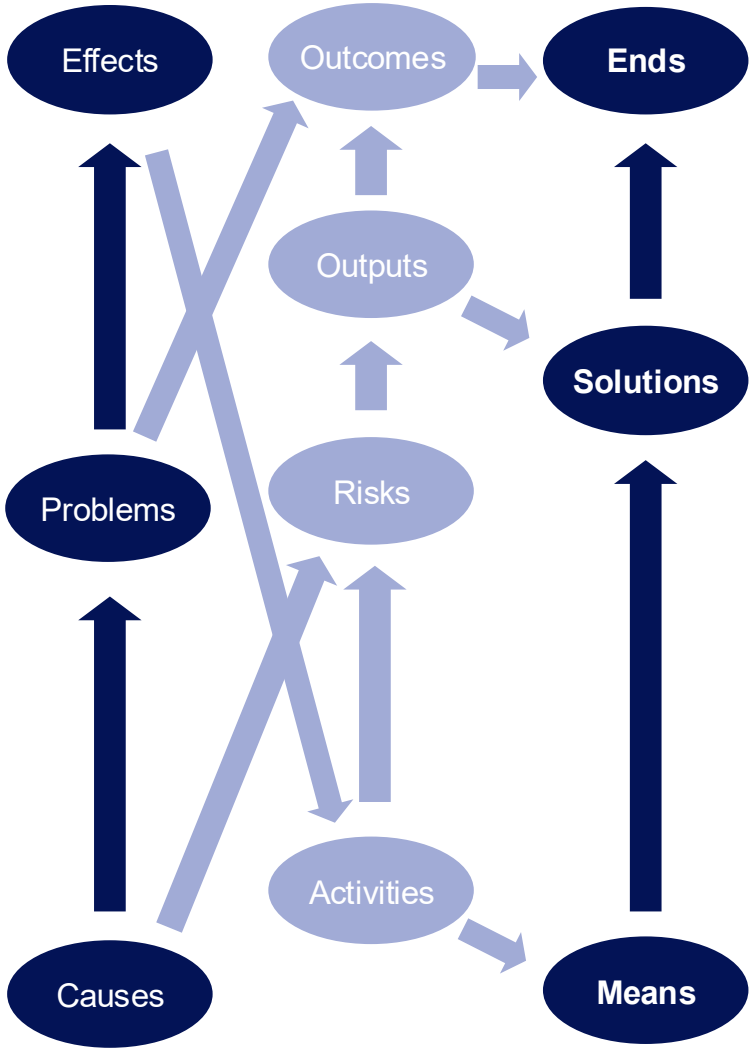
STEP 2 (DRIVERS)

Define the drivers of the problem

Separate climate and non-climate drivers

STEP 3 (THE GAP)

For the climate-related drivers define **what still needs to be done**



Problem tree

Solution tree

Step 1. Convert Problems into Outcomes

*Outcomes can be tangible/intangible benefits

Step 2. Convert Gaps into Outputs

*Outputs are direct results of activities

Step 3. Convert Drivers into Climate Risks

*Note that assumptions are outside our control

Step 4. Convert Barriers into Activities

*Try to frame barriers in a positive way

Step 5. Reconfirm the scope of a project

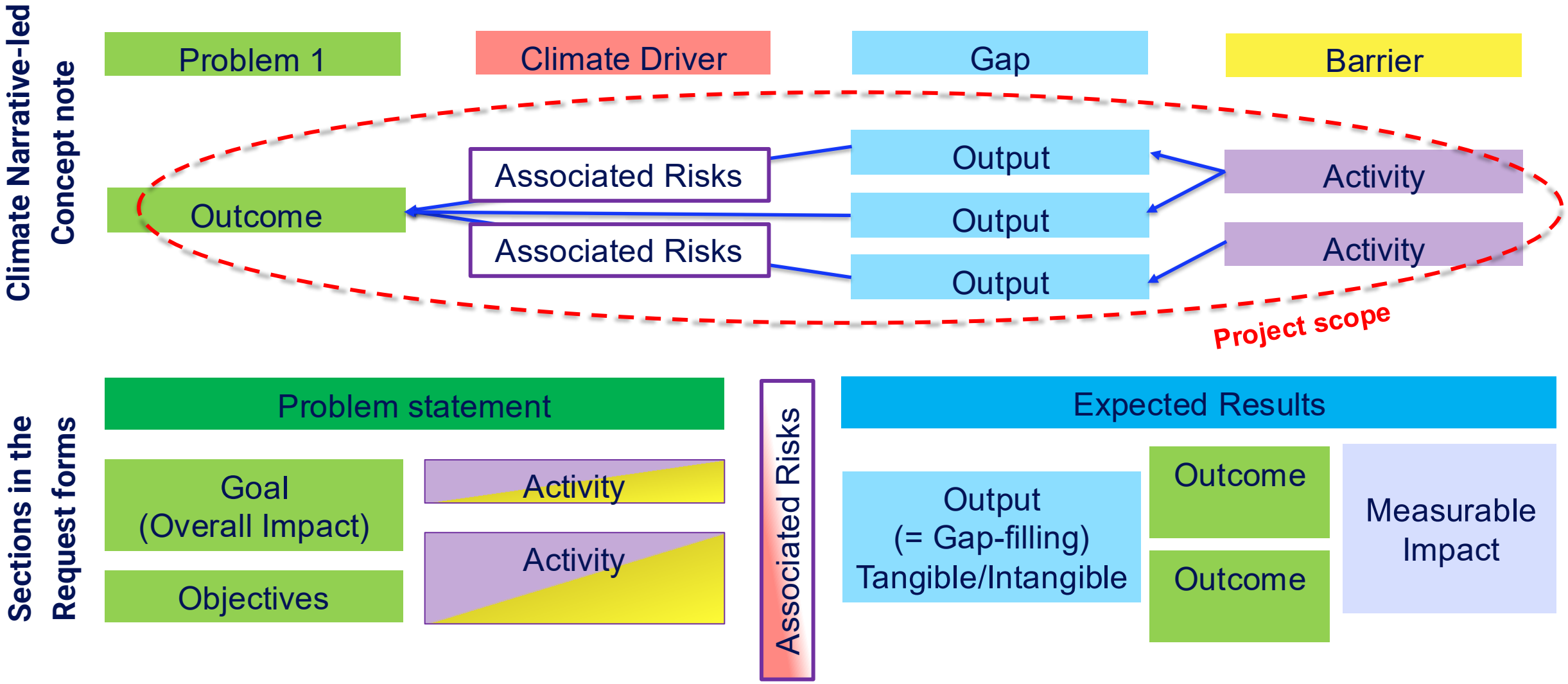
*Check if activities are speaking to the outcome

10-minute reflection time

Let’s check how other groups did!

NDEs from each group to share their group’s solution tree to the room

Additional 1: Translating into a request form



Recipe: Translating Climate Narrative-led ToC into a Request form

Step 1. Convert Problems into Outcomes

*Outcomes can be tangible/intangible benefits

⇒ **Goals and objectives**

Step 2. Convert Gaps into Outputs

*Outputs are direct results of activities

⇒ **Expected results (tangible)**

Step 3. Convert Drivers into Climate Risks

*Note that assumptions are outside our control

⇒ **Associated risks**

Step 4. Convert Barriers into Activities

*Try to frame barriers in a positive way

⇒ **Problem statement**

Step 5. Reconfirm the scope of a project

*Check if activities are speaking to the outcome

Phase 2

Project implementation: Improving the quality of project outputs

Place specific AI technology where it may resolve identified challenges

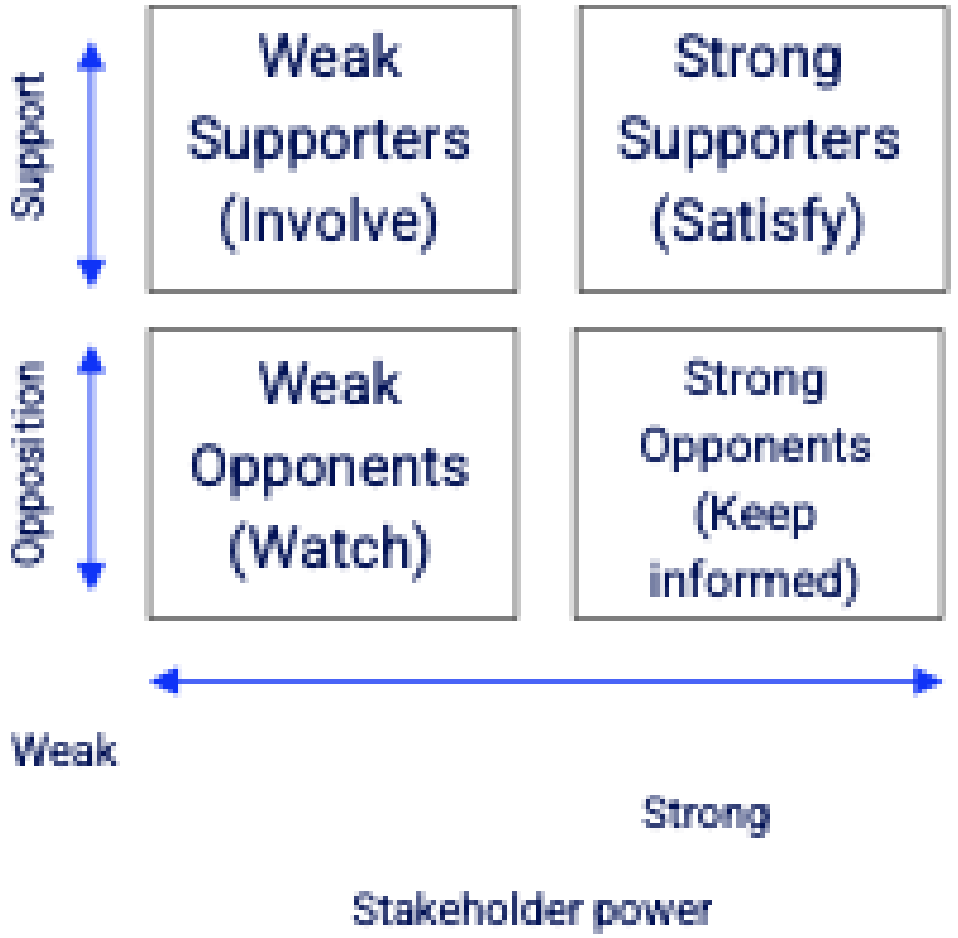
Pick one tech and place it next to an activity

A. Computer vision (crop monitoring, pedestrian detection, animal monitoring)
B. Control methods (cruise control system in vehicles)
C. Distributed AI (GPS systems, speedometers, thermostats)
D. Knowledge representation and reasoning (classification, tutoring)
E. Planning and scheduling
F. Predictive analytics (risk modelling, quality assurance, healthcare diagnosis)
G. Robotics (home assistance, manufacturing, autonomous surveillance)
H. Speech processing (Siri, Alexa)
I. Natural Language Processing (smart assistants, autocorrect, predictive text)

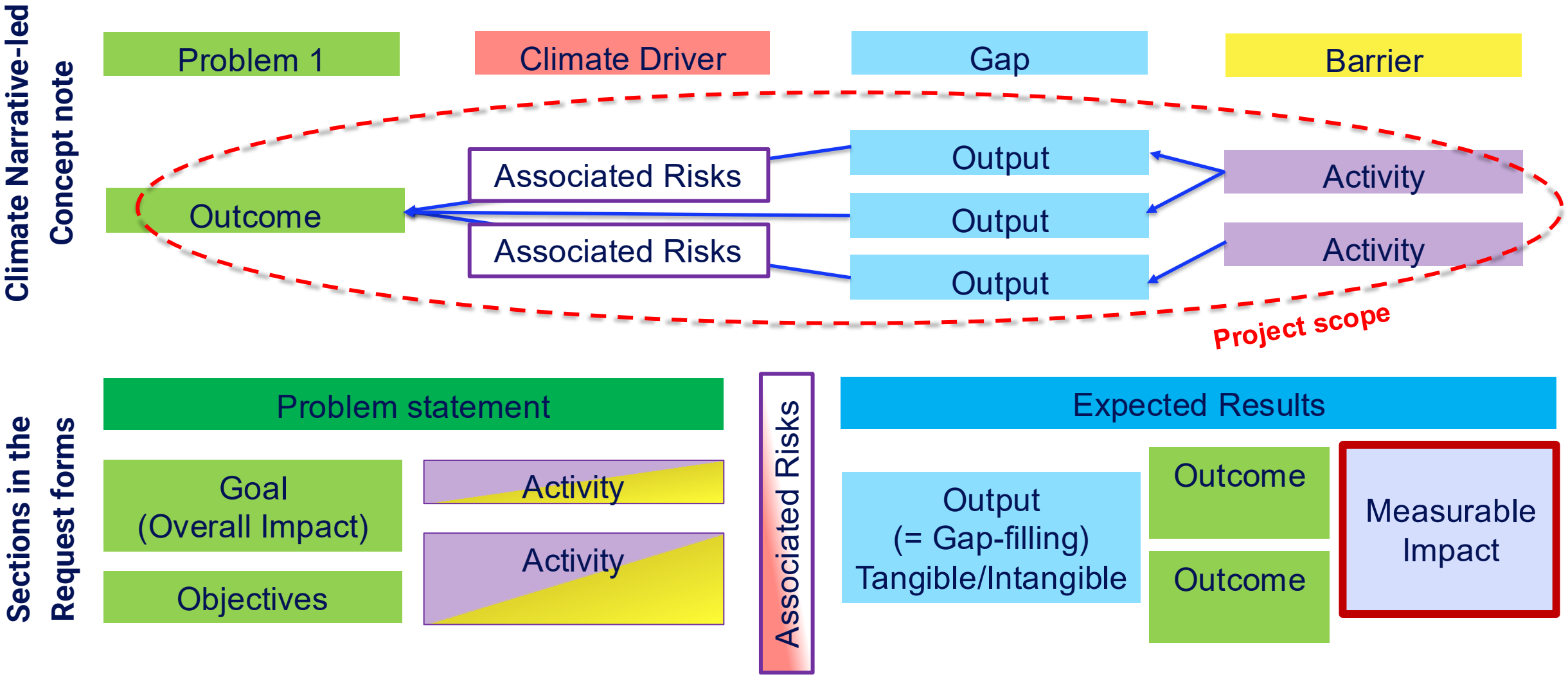
Segments and Stakeholder Orientation

Segments refer to groups of stakeholders who **share similar characteristics, roles, interests, levels of influence,** or **needs related** to the project.

Instead of treating every stakeholder individually, you cluster them into segments for more efficient analysis and engagement.



Additional 2: Translating into a request form



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⇒ **Associated risks**

Step 4. Convert Barriers into Activities

*Try to frame barriers in a positive way

⇒ **Problem statement**

Step 5. Reconfirm the scope of a project

*Check if activities are speaking to the outcome

Step 6. Use SROI to strengthen the 'Measurable Impact' section under Expected Results.

UN environment programme | CTCN
UN Climate Technology Centre & Network

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