Mainstreaming sustainable AgTech solutions

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Presentation Contents

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Primary production
Crops, livestock, fishing

Transport / logistics
Trucks, shipping, air, refrigeration

Food Service
Restaurants, cafes, takeaway, catering, cafeterias

Waste / Disposal
Landfill, pollution, recycling

Input industry
Seeds, fertilisers, pesticides

Food processing and packaging
Private food companies

Retail
Supermarkets, markets

**Individual Consumption**
At home, away from home

Simplified overview of the journey of food – stages of a food value chain

Sustainability Challenges: Life and health, prosperity and in harmony with nature

- Many of the world's food systems are fragile and not fulfilling the intended functions.
  - The trends were expedited by the COVID-19 pandemic: 20% increase in world's population facing hunger in 2020

- Triple planetary crisis of climate change, nature and biodiversity loss, and pollution and waste.
  - Annual occurrence of disaster - more than three times that of the past; 63 percent impact fell on agriculture; over $108 billion in damaged or lost crop and livestock production for agriculture sectors of developing countries in 2008-2018

  - Food systems contribute to one-third greenhouse gas emissions, up to 80 per cent of biodiversity loss and use up to 70 per cent of freshwater
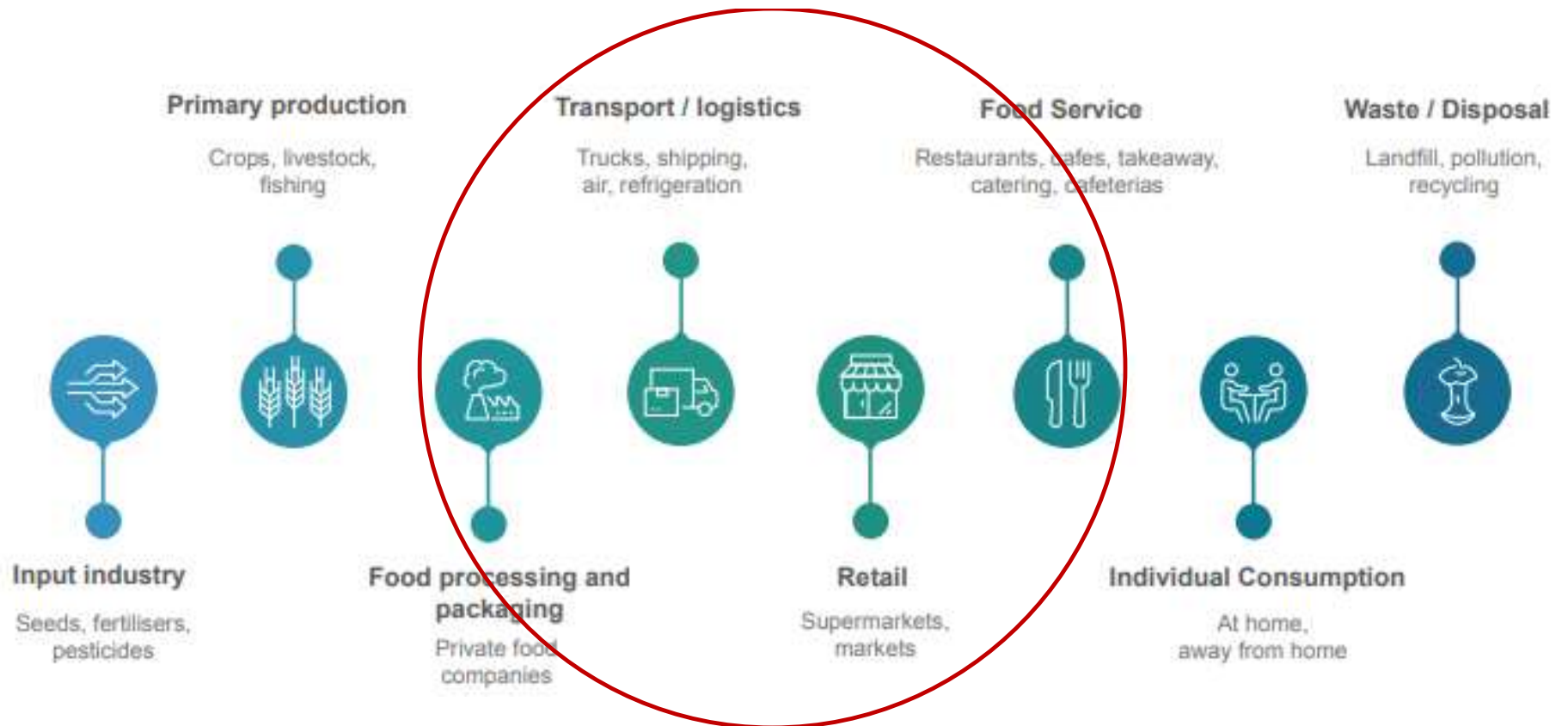
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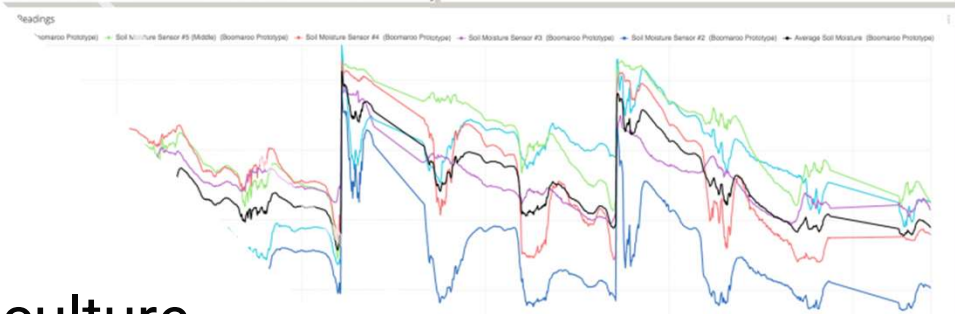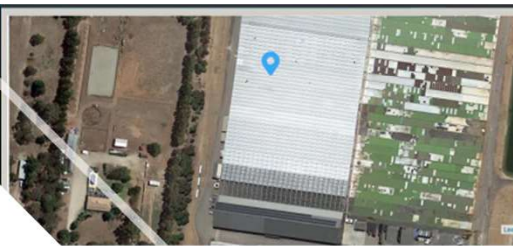
Precision agriculture

Transforming agri-food systems: technology opportunities
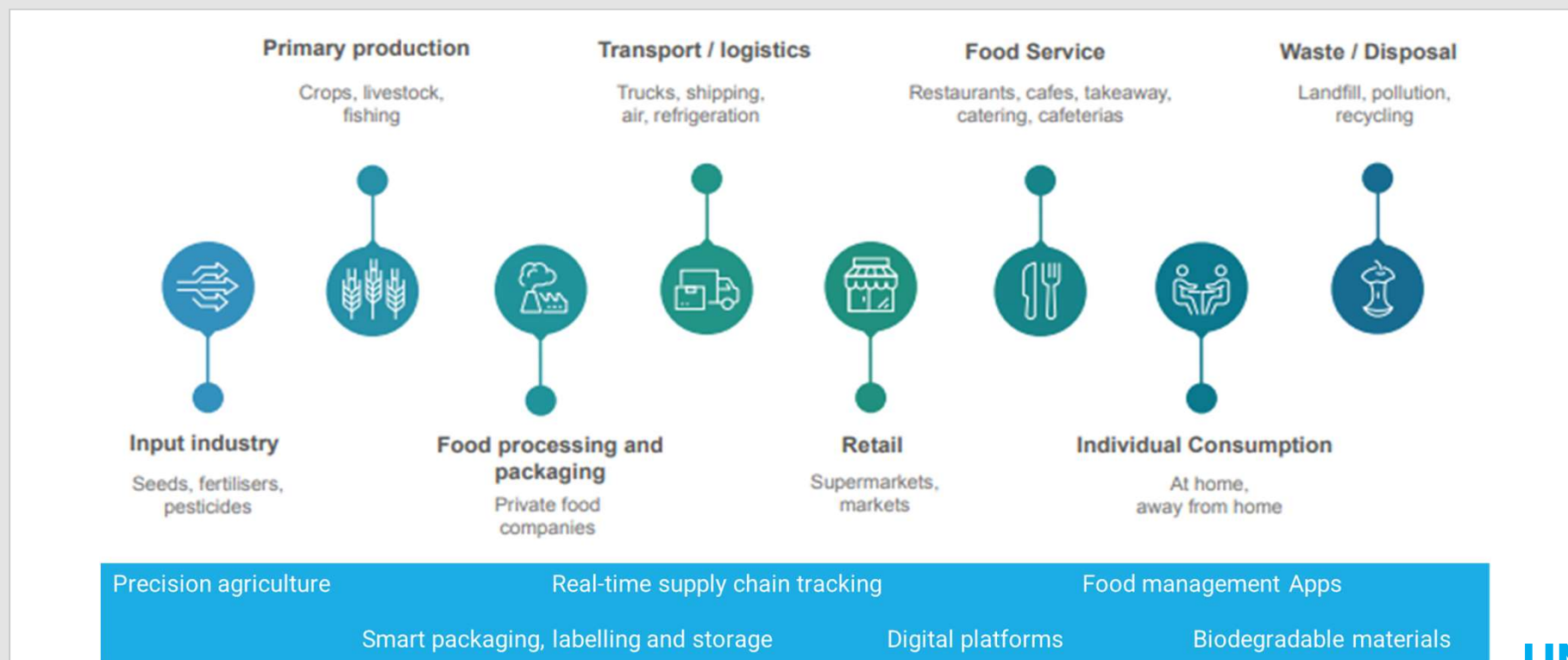
The middle stages of the food value chain are structurally powerful

Transforming agri-food systems: changing business models

- Enabling circular economy, sharing and usership-based models which can optimize processes to reduce cost, waste and environmental impacts.

- Examples:
  - Farming as a services
  - Digital credit scoring
  - Digital food waste management

Defining "AgTech"

- "AgTech"
  - the set of individual technologies or a combination of innovations that are employed in the global agri-food industry.
- The goals and objectives for deploying AgTech have evolved
  - Stage I: Efficiency gain and reduction in marginal costs – more food at lower cost
  - Stage II: Improve sensitivity to consumer demands for information, changing determinants of consumer preferences
  - Stage III: Responding to ecosystem changes – impact investment, ESG regulations and stakeholder pressure

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The Sustainable AgTech Sector

While the first and second stages of AgTech had not primarily target on their social and environmental impact, the third stage of application directly drives sustainability. The success of the AgTech sector in these aims, therefore, should be measured against the SDGs.

The **Sustainable AgTech sector** refers to the group of companies and businesses at the third stage that aim at improving people, nature and prosperity as defined by the 2030 Agenda for Development, through technologies and innovative business models.

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Can we mainstream solutions and practices of the Sustainable AgTech sector?

The LAC Sustainable AgTech Challenge

An overview of the assessment process for the Sustainable AgTech Competition can be seen below:

1. Challenge launched and application opened – June 1st 2021
The initial deadline for applications was July 7th 2021
Candidates applied through the F6S platform

2. Applications closed – July 21st 2021
The initial deadline was extended to allow a larger and more diverse applicant pool
115 applications for consideration were received before the deadline

3. First screening of candidates
115 candidates reduced to a top 20 by 15 expert judges
The judges scored the candidates on the F6S platform according to 5 key criteria

4. Second screening of candidates
The top 20 was reduced to a final 9 through a due diligence assessment by the YLI
This involved a deep dive by the Yield Lab team to reveal 'red flags' i.e. legal or financial issues

5. Final pitch to the jury – August 27th 2021
8 out of 9 selected candidates accepted the invitation to pitch to internal YLI jurors
Each candidate pitched for 20-30 minutes and received questions from jurors

6. Finale event and announcement of prizes and winners – October 26th 2021
3 distinguished projects revealed at in the live Zoom event

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The final cohort

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The final cohort and three winners

BloomsPal (Bogotá, Colombia) The company has developed software aimed at making the supply chain process easier for flower buyers.

Cladonia Bio (Buenos Aires, Argentina): The startup is developing computer vision-based soil and compost assessment software.

ClearLeaf (San Jose, Costa Rica): The startup has developed non-toxic fungicide and bactericides designed for crop protection.

Climate Sense (Buenos Aires, Argentina): The company has developed hardware, including a weather station, and software designed to help agriculture producers access climate data.

Mi Terro (Los Angeles): This startup uses agricultural waste to make packaging materials. It says its products are an alternative to plastic and paper.

SAVRpak (San Juan Capistrano, California): The company has developed technology designed to help food stay fresher while being stored inside packaging.

The Earth Says_ (Santiago, Chile): This firm uses monitoring technology to help growers strengthen pollination and boost their crop yields.

ucrop.it (Buenos Aires, Argentina): The company has created a Blockchain-based fintech app for farmers.

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Survey questions

In your country or region, do you perceive the sustainable AgTech sector to be growing?

- Yes
- No

In your assessment, what are obstacles for mainstreaming solutions of the sustainable AgTech sector in your country or region?

- Lacking awareness on the sustainability challenges of agri-food systems
- Lacking capacity for monitoring and measuring the contribution to sustainability
- Lacking access to finance
- Barriers to market entry, e.g. market concentration, high customer switching cost, regulatory burden
- Lacking science business interface for research & development
- Lacking connectivity and infrastructure
- Other factors

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Key findings

- Applicants mainly come from Argentina, Brazil, Chile, Colombia, Peru, and Mexico.

- Young companies, with highly educated people and a remarkable female participation

- The solutions locate at the ends of the value chain of LAC's agri-food system: primary production, inputs for the industry, and waste disposal

- On average, companies claim to contribute to four SDGs, but some declares eight goals. The "most voted" SDGs:

  o Sustainable Production and Consumption (18.4%)

  o Action for the Climate (16.2%); Zero Hunger (15.8%)

  o Life on land (14.5%)

  o Industry, Innovation and Infrastructure (13.6%)

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Key findings

- Most companies have no records of tracking their social and environmental impact

  - Despite of the awareness, start-ups lack knowledge on "how"

  - Conditions such as the awareness of user market, technology affordability, channels of communications with vulnerable groups could constrain the uptake

- Barriers of scaling up

  - Lacking access to entrepreneurial capital, including green funds

  - Market access barriers

  - Low interaction between the scientific and business worlds

  - bureaucratic hurdles

  - lack of connectivity and infrastructure

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The Breakout Session

- Please divide the group into **four** independent breakout groups for the following activities:
  - Design policy recommendations for peers in the LAC region

  Or,
  - Discuss your own country case 1) the status of sustainable AgTech sector, 2) obstacles for their scaling up, 3) policy actions that can be taken to remove the obstacles
- Please nominate a rapporteur at the beginning of the discussion in order to report back in the group recap
- Please feel free to use the white board function to write down your policy recommendations
- The breakout session lasts for 15 minutes
- After the breakout session, each rapporteur will have 1.5 minutes to report back to the wider group

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Establishing an ecosystem for the sustainable AgTech business

- A local innovation ecosystem serving as the base of sustainability

  - a community of interconnected actors, based in a specific place, who interact in order to create and support innovation processes, together with the infrastructure and enabling environment that allows them to develop and disseminate solutions to local challenges
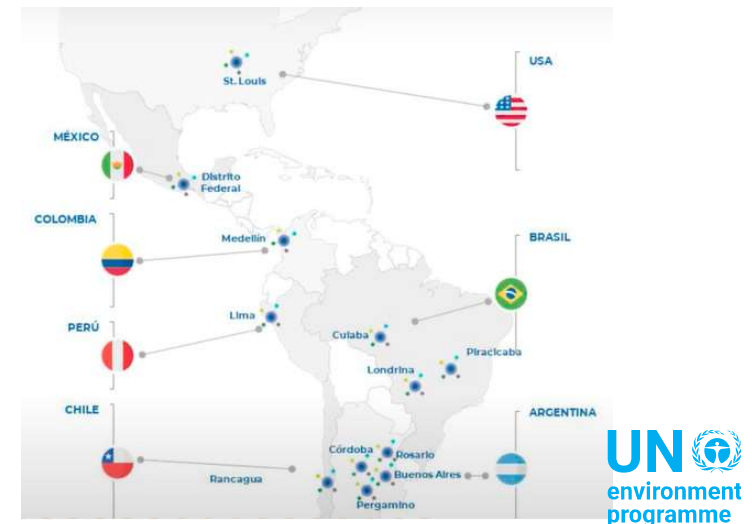
The future of farming

A snapshot of EU policies

MFF: Digital transformation in agriculture

Horizon Europe	DIGITAL programme
Digital R&I in agriculture	**Digital capacity & deployment in agriculture**
• Developing digital solutions enabling achievement of key challenges in agriculture	• Common European agricultural data space
• Increasing cost-effectiveness of digital solutions	• AI testing and experiemental facilities
• Developing technical solutions facilitating trust in data sharing	• Digital Innovation Hubs
	• Investing in skills

European Digital Innovation Hubs

The Commission will accelerate the best use of digital technologies by setting up European Digital Innovation Hubs (EDIHs). In the agricultural sector, the experiences and lessons learned from the existing DIH SmartAgriHubs and AgroRobofood will be a good reference point.

European DIHs provide technological expertise and experimentation facilities to enable the digital transformation of the industry and the public sector.

European Digital Innovation Hubs

Test before invest

Skills and training → **Digital Innovation Hub** → Support to find investment

Innovation ecosystem & networking

One of the pillars of the EU Green Deal is the Farm to Fork strategy. In this strategy, the 2030 targets for sustainable food production are challenging and ambitious for the agricultural sector, in which digital is a key to success. A successful implementation of this strategy was an IoF2020 use case on arable farming, where IoT technologies were used to optimise the use of pesticides on the land, minimising harmful chemicals in the environment and making crops safe for consumption.

Reduce by 50% the overall use and risk of **chemical pesticides** and reduce use by 50% of more hazardous **pesticides**

Reduce **nutrient losses** by at least 50% while ensuring no deterioration in soil fertility; this will reduce use of **fertilisers** by at least 20%

Reduce sales of **antimicrobials** for farmed animals and in aquaculture by 50%

Achieve at least 25% of the EU's agricultural land under **organic farming**

Thank you

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Presentation Contents

I. Extracting value from data
II. UNEP's Digital Transformation Strategy
III. Showcase UNEP's environmental data tools

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Extracting value from data: some basics of digital transformation

1960s	1970s	1980s	1990s	2000s
The first network	TCP/IP protocol	Cost reduction to host multiple users	World Wide Web Rise of Cyberspace	Digitalization

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Extracting value from data: some basics of digital transformation

Extracting value out of data: some basics of digital transformation

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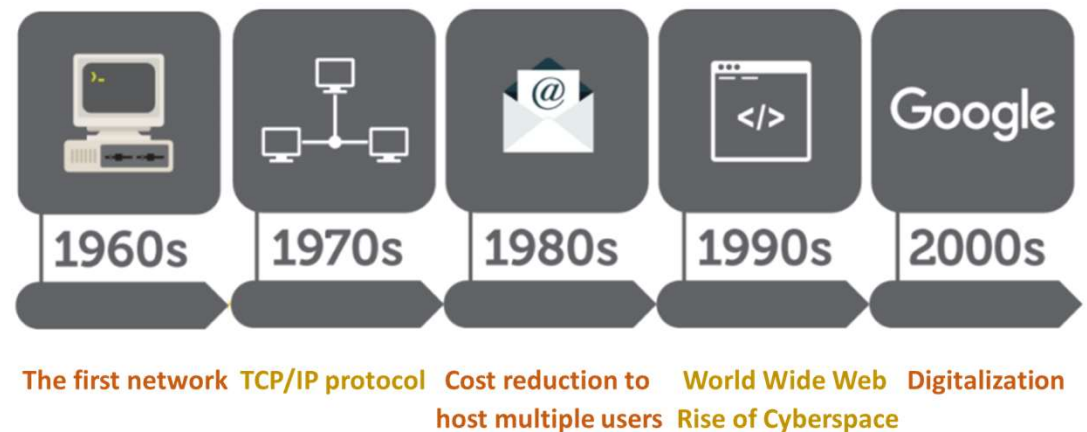
Extracting value out of data: some basics of digital transformation
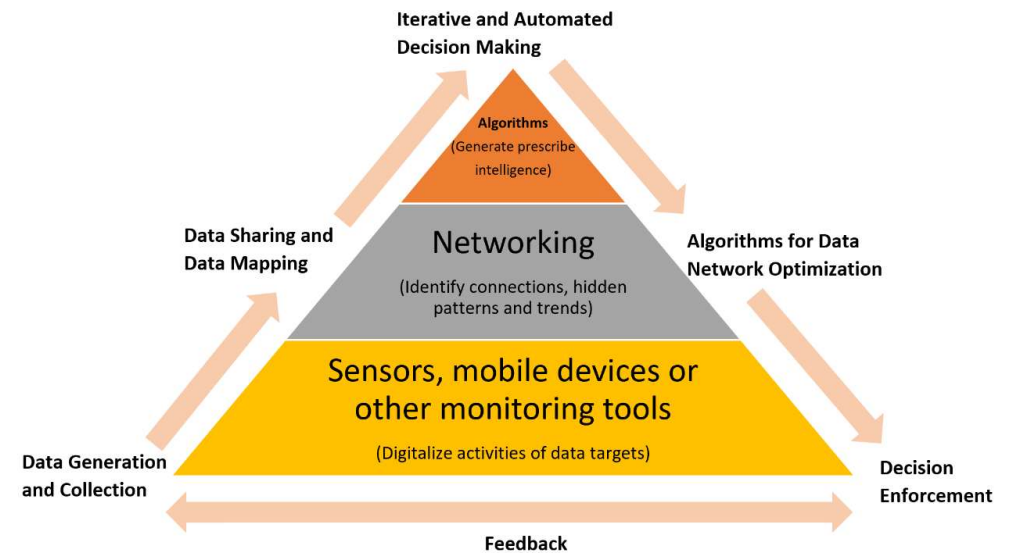
Digital transformation is not automatically sustainable

- Digital divide
- Data privacy
- Cyber security
- AI ethic
- Energy and material consumption
- E-waste

Some common elements of national policies of inclusive digital green economy

Invest in	Invest in the integrated, networks of sustainable infrastructure, which use data as infrastructure;
Create	Create an enabling environment for new business model and market mechanism such as platformization, servicification to grow in green sectors, for new profit models, job creation and innovation;
Improve	Improve the capacity of digital government, for innovative ways of stakeholder engagement;
Establish	Establish social safety net to fill the gap in green and digital skills;
Impose	Impose a green ICT policy;
Work	Work hand in hand with other policy areas in particular on the issue of data governance;

The Korean New Deal

National Strategy for a Great Transformation
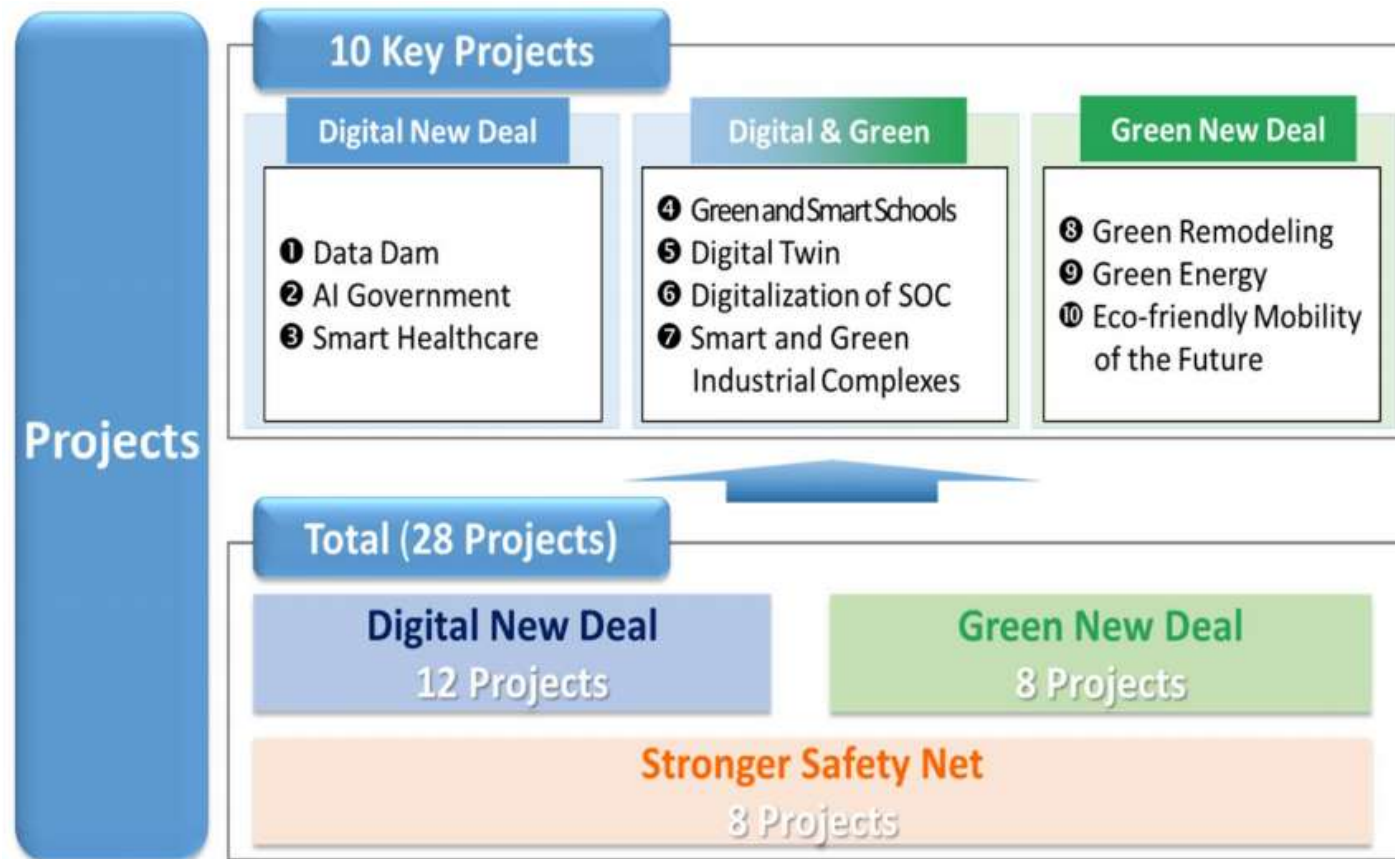
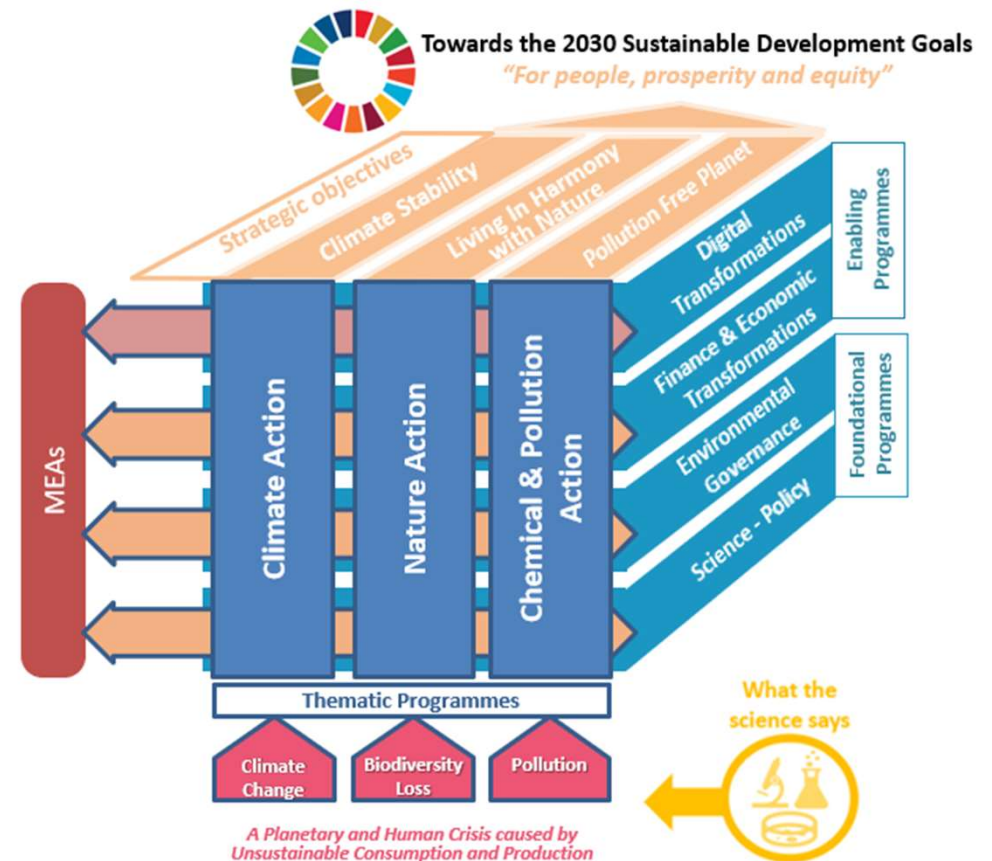# Transforming public policy making and implementation

Analysis change - Growing emphasis on data-driven approaches in analytics to extract value out of data

Process change - Digital transformation to enable a user-centered, iterative and agile policy design and process
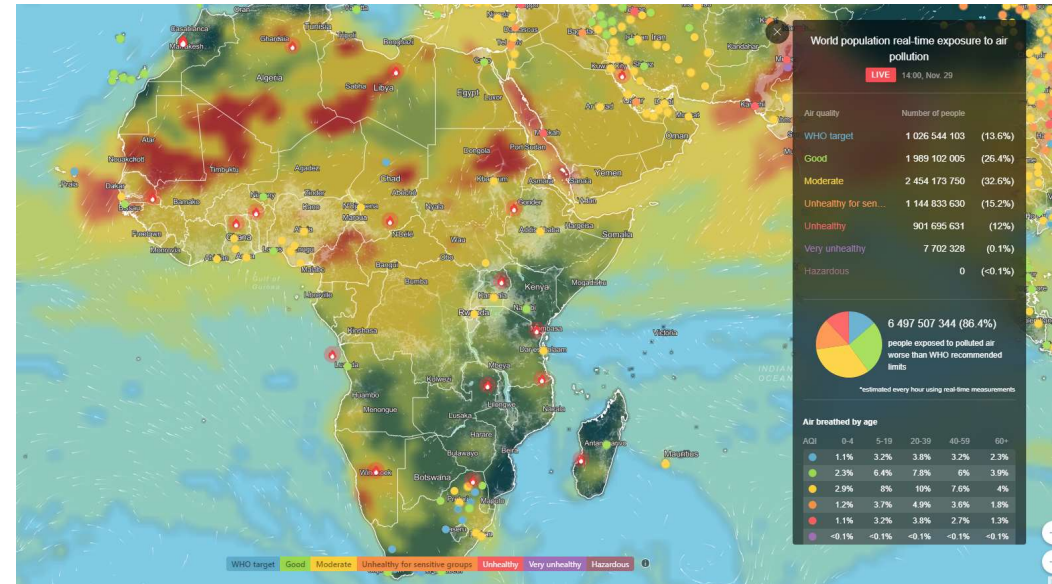
Institutional change - Governments are moving towards digital platform-based structures

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UNEP's digital transformation strategy

- Strategic actions:

  - Sustainable digital ecosystem for the planet
  - Digital transformation partnership for shifting market incentives and consumer behaviors
  - Environmental digital literacy, innovation and e-governance capacities

Towards the 2030 Sustainable Development Goals
"For people, prosperity and equity"

Strategic objectives
Climate Stability
Living In Harmony with Nature
Pollution Free Planet

Digital Transformations
Finance & Economic Transformations
Environmental Governance
Science - Policy

Enabling Programmes
Foundational Programmes

MEAs

Climate Action
Nature Action
Chemical & Pollution Action

Thematic Programmes

Climate Change
Biodiversity Loss
Pollution

What the science says

A Planetary and Human Crisis caused by Unsustainable Consumption and Production
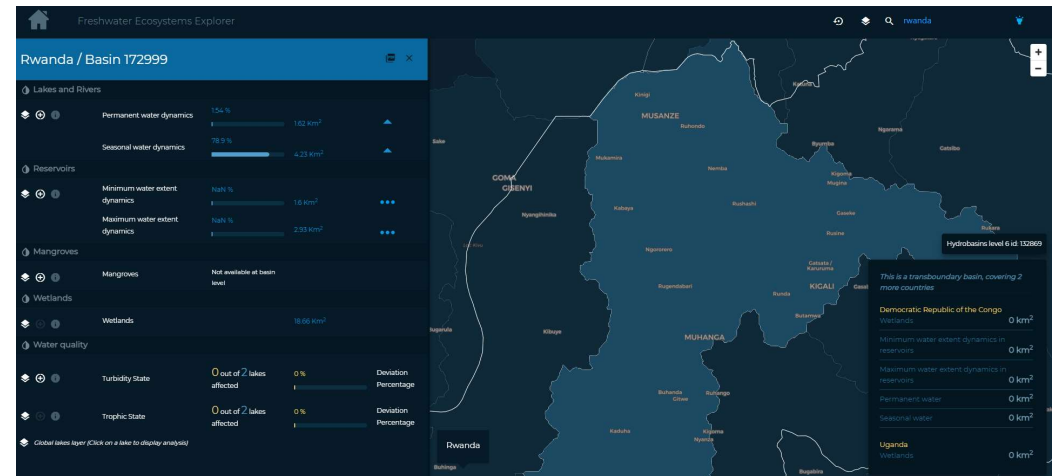
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UNEP's environmental data tools

- **IQAir**: the largest real-time air quality databank, bundling real-time air quality data for particulate matter (PM$_{2.5}$)
- https://www.iqair.com/unep

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- **Freshwater Ecosystem Explorer**: providing a detailed look at the state of lakes and rivers in every country on Earth
- https://www.sdg661.app/

UNEP's environmental data tools
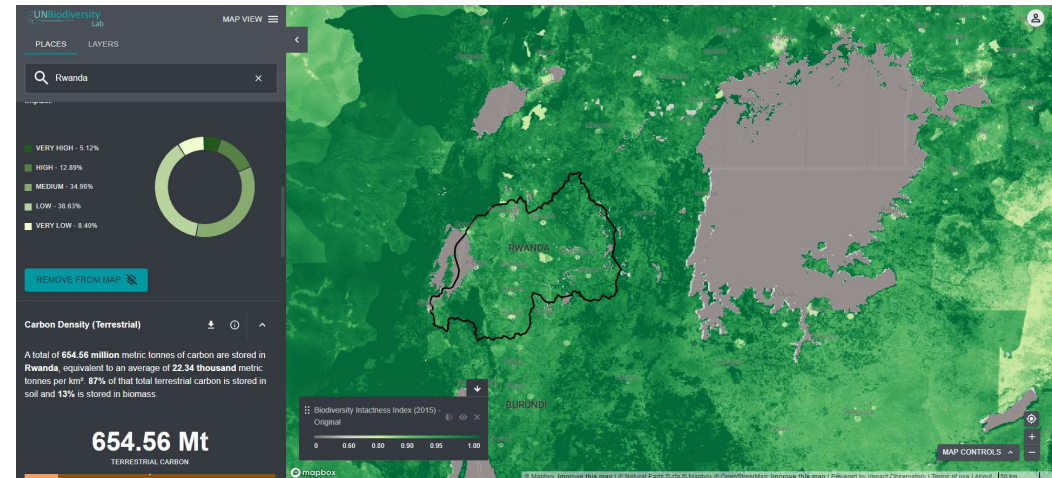
- **United Nations Biodiversity Lab 2.0**: a free, open-source platform that features data and more than 400 maps highlighting the extent of nature, the effects of climate change, and the scale of human development.
- https://unbiodiversitylab.org/

UNEP's environmental data tools
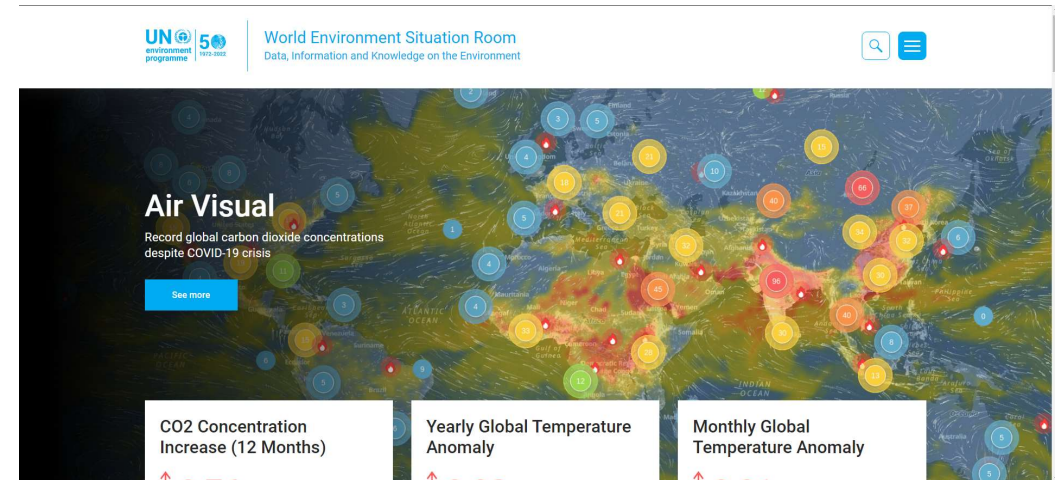
- **World Environment Situation Room**: a digital ecosystem of data and analytics allowing users to monitor progress against key environmental Sustainable Development Goals and multilateral agreements at the global, regional and national levels
- https://wesr.unep.org/

How to make use of UNEP tools and join the journey of digital transformation?

I.   Individual engagement: Join the Coalition for Digital Environmental Sustainability (CODES)
     https://www.sparkblue.org/CODES

II. Institutional engagement: Join the technical assistance programmes, such as the Partnership for Action on Green Economy (PAGE) and the UNEP-led Sustainable Infrastructure Partnership
     https://www.un-page.org/
     https://sustainable-infrastructure-tools.org

III. Data engagement: Combine UNEP environmental data with national or subnational data and encourage the development of Application Programming Interface (API) tools

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Which strategic area/s of digital transformation do you want to explore further in the future?

- Environment data and sustainable digital ecosystem for the planet
- Shifting market incentives and consumer behaviors: such as supply chain and infrastructure transparency, sustainable digital finance and sustainable AgTech
- Environmental digital literacy, innovation and e-governance capacities: such as smart government, data-driven environmental law enforcement, integrating green digital technology into infrastructure policies and plans

What kind of engagement channels do you want to explore?

- Individual engagement
- Institutional engagement
- Data engagement

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