What's Cooking: Digital Transformation of the Agrifood System

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Agriculture & Food

DIGITAL DEVELOPMENT PARTNERSHIP

WHAT'S COOKING?
Re-thinking farm and food policy in the digital age

New World Bank Report

pathways of change

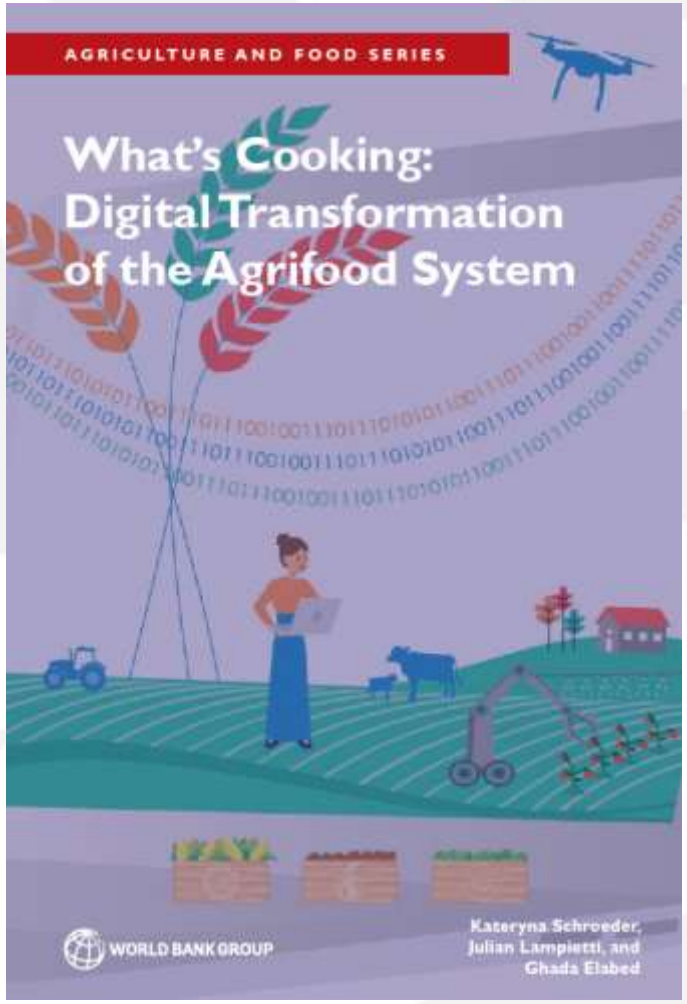
Investigates how digital technologies can accelerate the transformation of the agrifood system by improving its efficiency, equity and environmental sustainability.

policy response

Identifies the relevant public policies and instruments to facilitate the diffusion, maximize the positive impacts, and mitigate the downside risks of digital technologies in agriculture.

assessment tool

Offers an assessment tool that allows for a more systematic analysis of a country's constraints and capabilities in leveraging digital technologies in agriculture



http://hdl.handle.net/10986/35216

From Pathways of Change…

The food system is large and complex

UPSTREAM

$939.5 billion
USD in value

102,500
Enterprises in Agricultural Inputs and support

Millions
of Retailers

FARMERS

570 million
FARMS WORLDWIDE

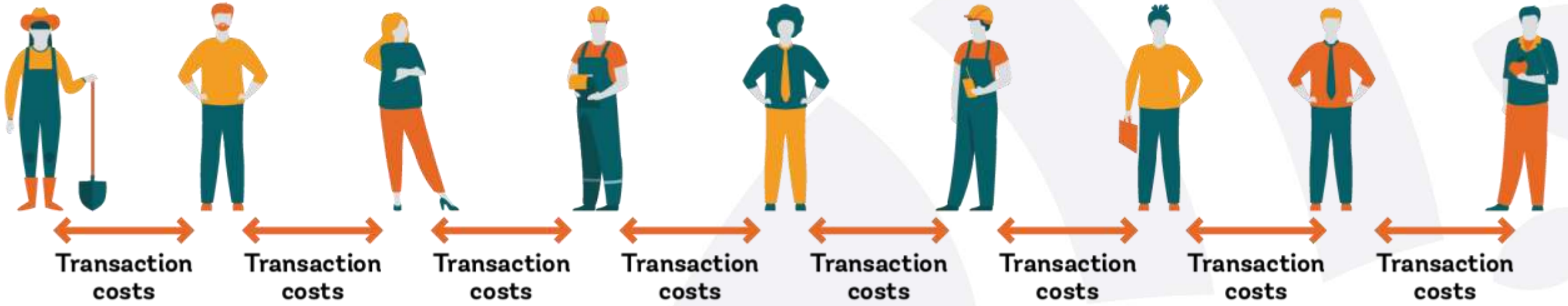
DOWNSTREAM

$3.7 trillion
USD in value

368,500
Enterprises in food processing and logistics

Millions
of Retailers

Dozens of stakeholders and transactions are needed to bring food from farmers to consumers and transaction costs are incurred each time



Search cost to find the business partner

Establishing sales parameters, volumes, quality

Negotiating a return policy

Negotiating the price

High transaction costs and information asymmetries plague the agriculture and food system

Generate market failures: prevent otherwise profitable transactions from happening

Make it difficult to identify and adopt:

- Targeted agricultural policies
- Sustainable agricultural practices

Make it difficult for consumers to :

- Identify and adopt healthy diets
- Act on their preferences (quality, social concerns)

Data and digital technologies are transforming the agrifood system

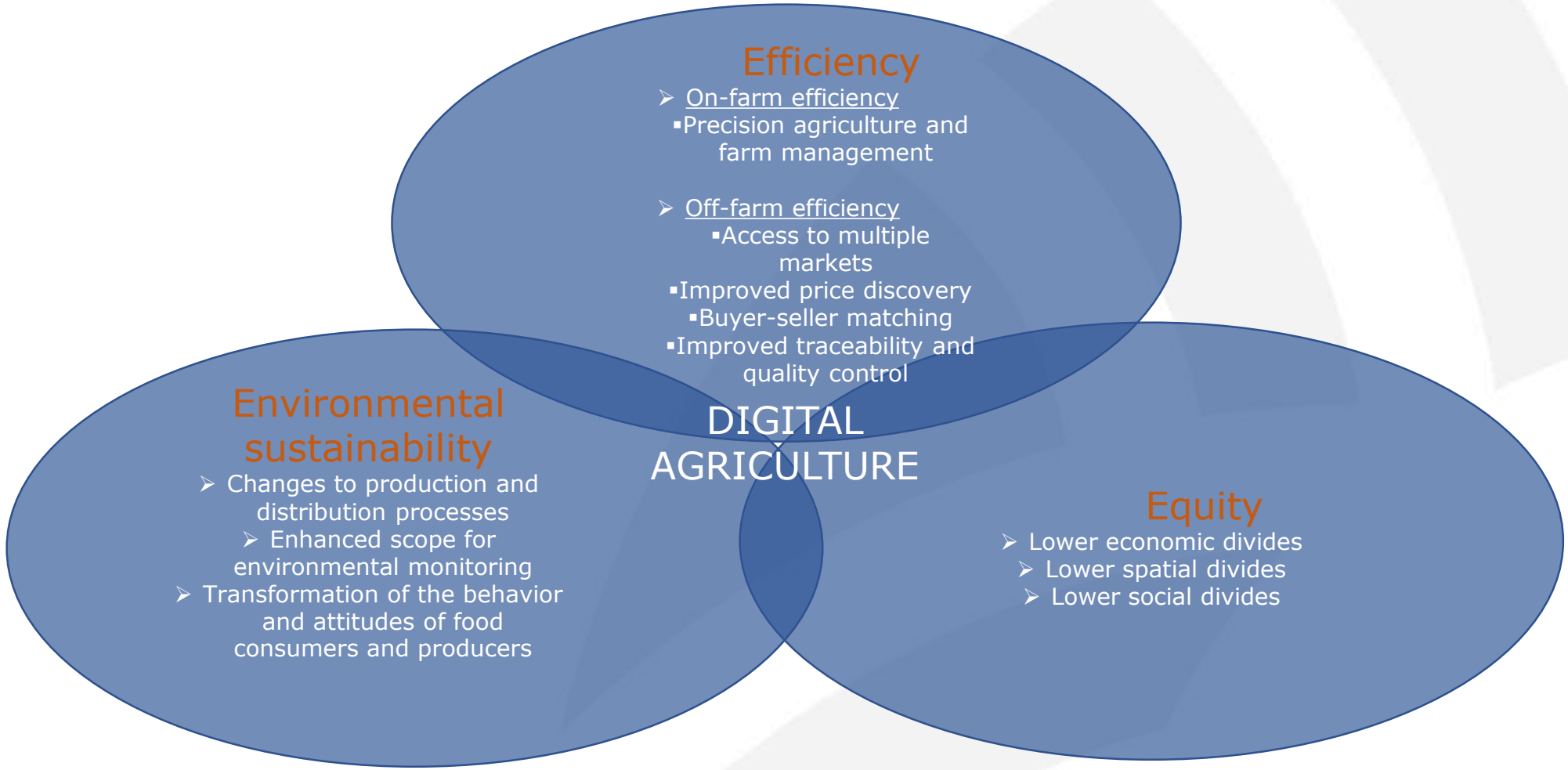
Ability to collect, use, and analyze massive amounts of machine-readable data about practically every aspect of the value chain

The emergence of digital platforms disrupting business models in the agri-food system.

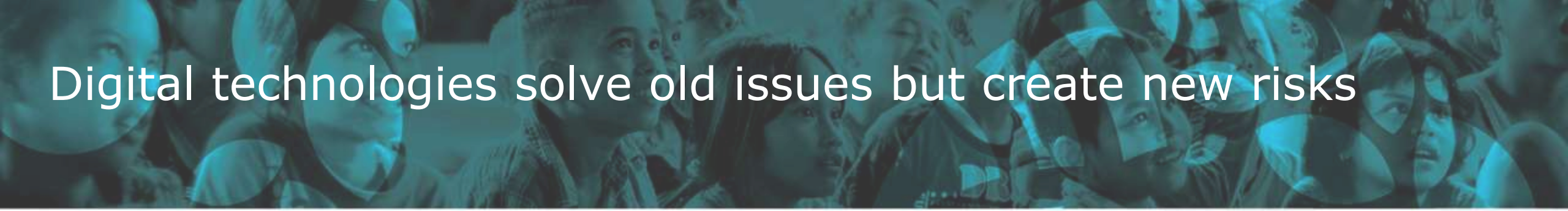
Feedback loop to inform all aspects of the value chain


»
In 2014,
190,000
data points
produced per
farm daily.
»
by 2050,
Experts predict
4.1
million
data points
daily.

Digital transformation results in economic and societal gains categorized by the three E's

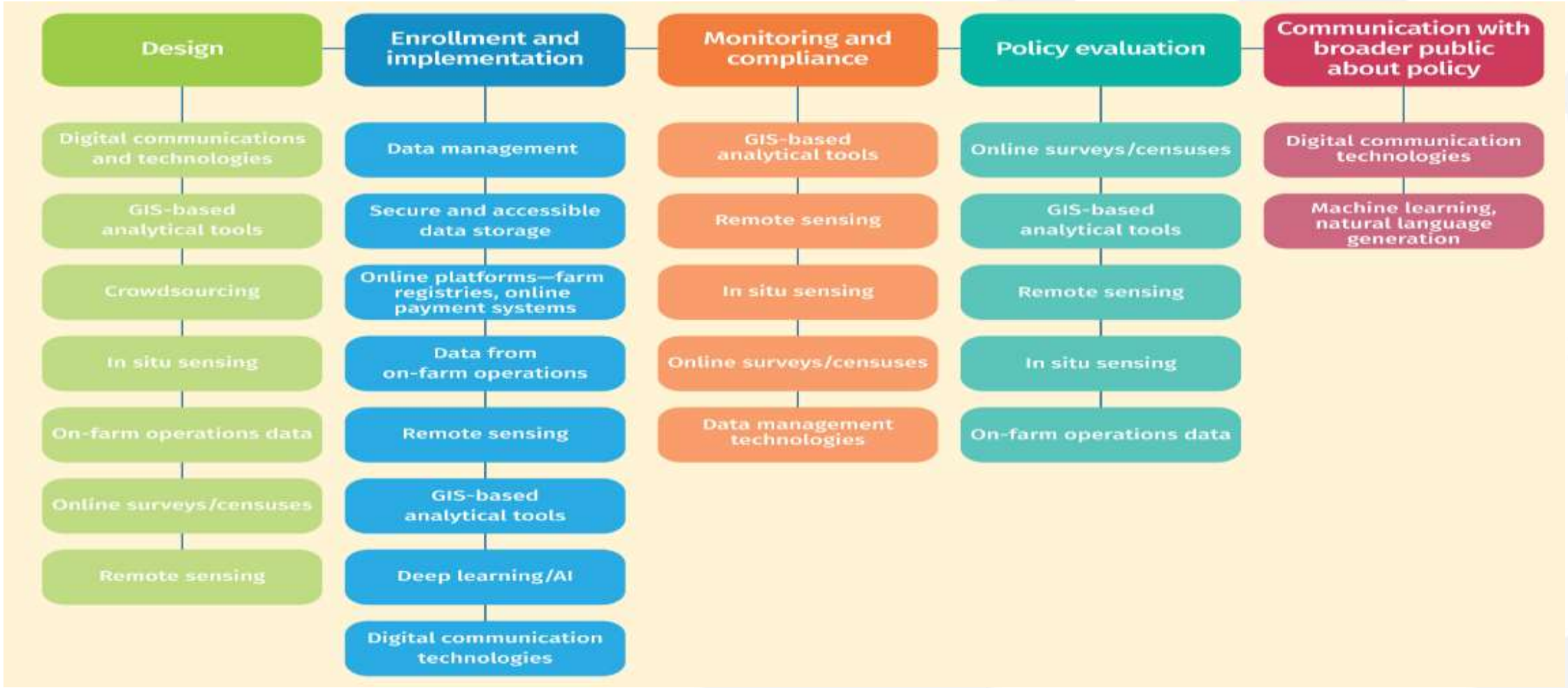


Digital technologies solve old issues but create new risks



Opportunities		Risks
Increase market efficiency and competition in the value chain	**Efficiency**	Increased market power to a few digital technology providers.
Narrowing of economic spatial, and social divides in rural areas	**Equity**	New digital divide and new social risks with of misuse of data
Better use of scarce resources	**Environmental Sustainability**	Rebound effect

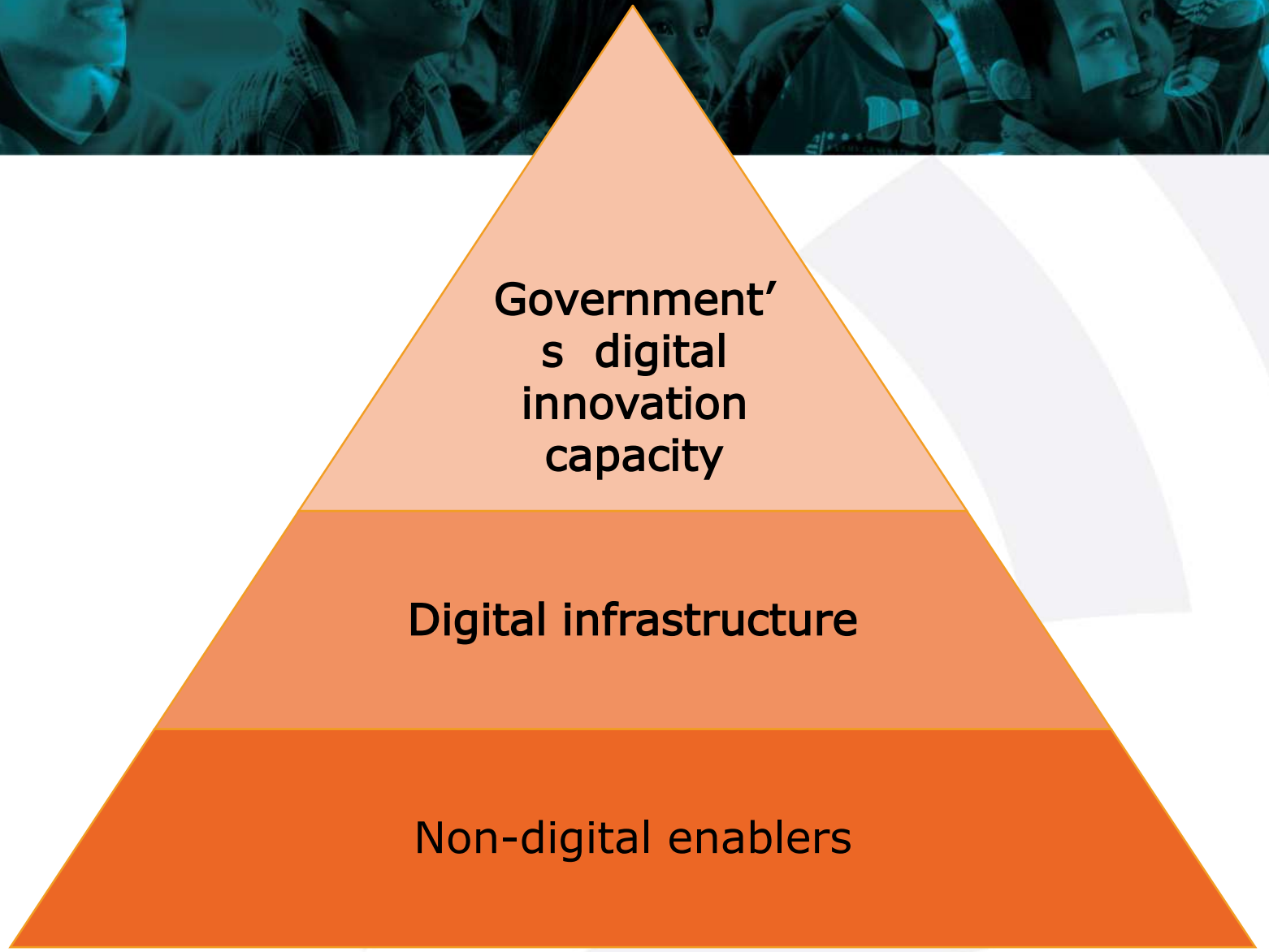
Digital Technologies for Agricultural Policies



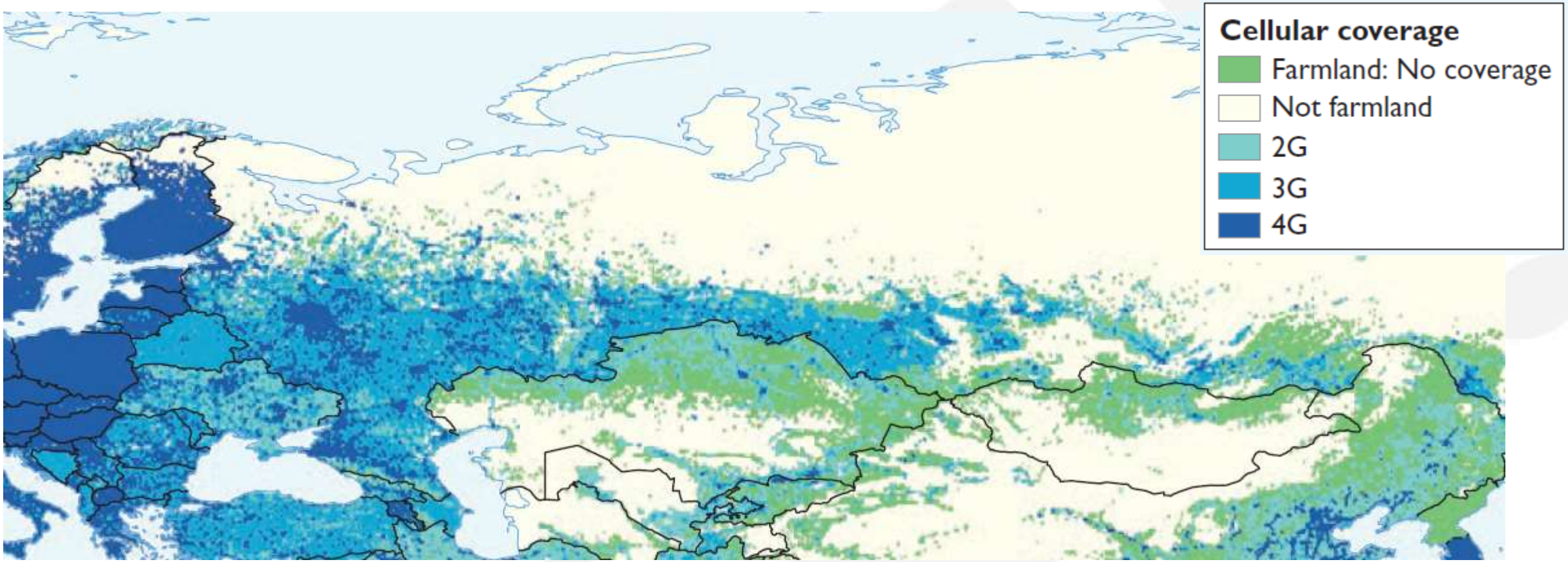
...to Policy Response

Public policies are needed to maximize the potential on *Efficiency*, *Equity* and *Environmental*

Three foundational enablers – Tier I enablers

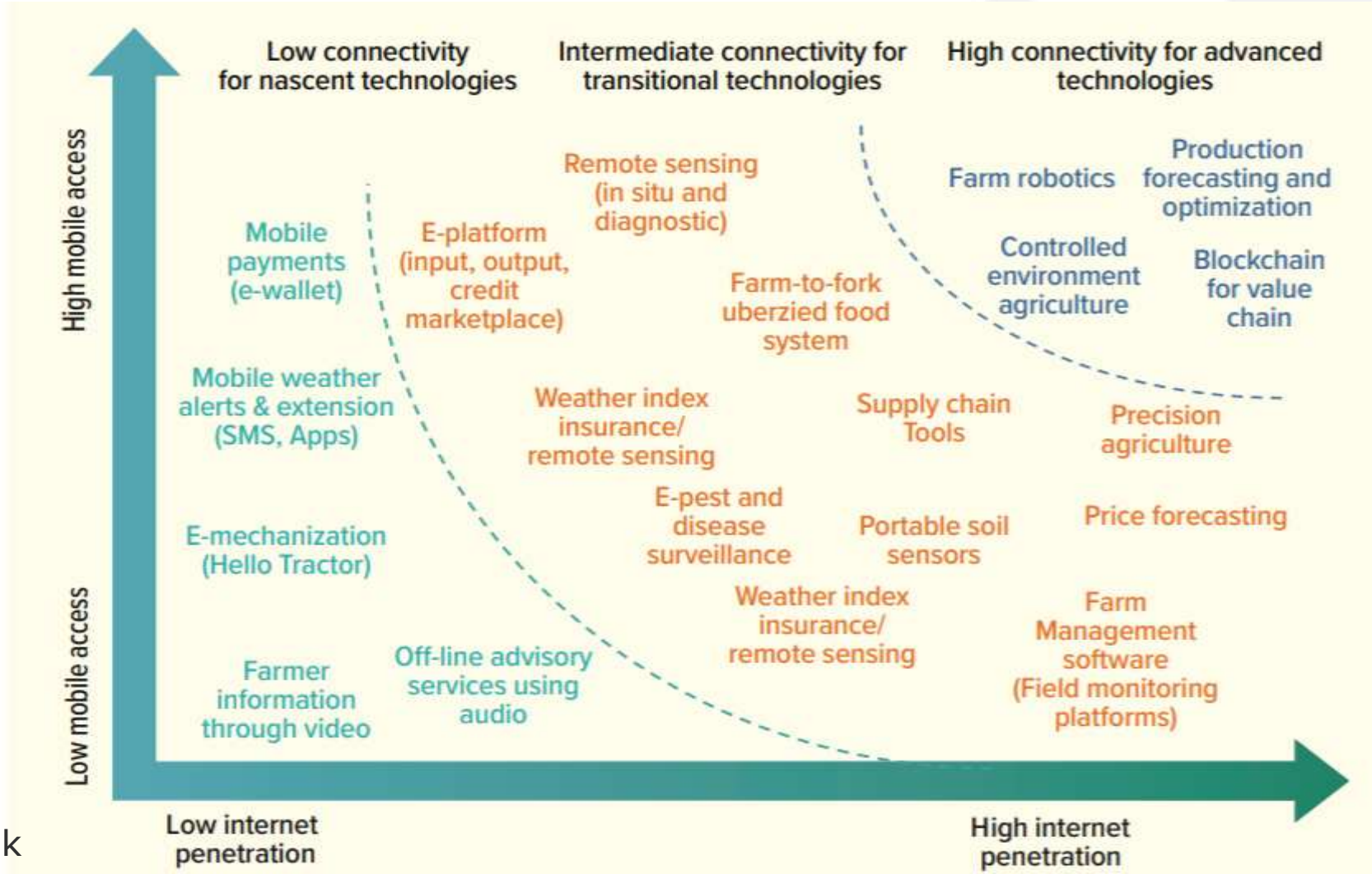


Mobile coverage in agricultural areas in ECA



Source: World Bank

Categories of digital agriculture technologies by mobile access and internet penetration



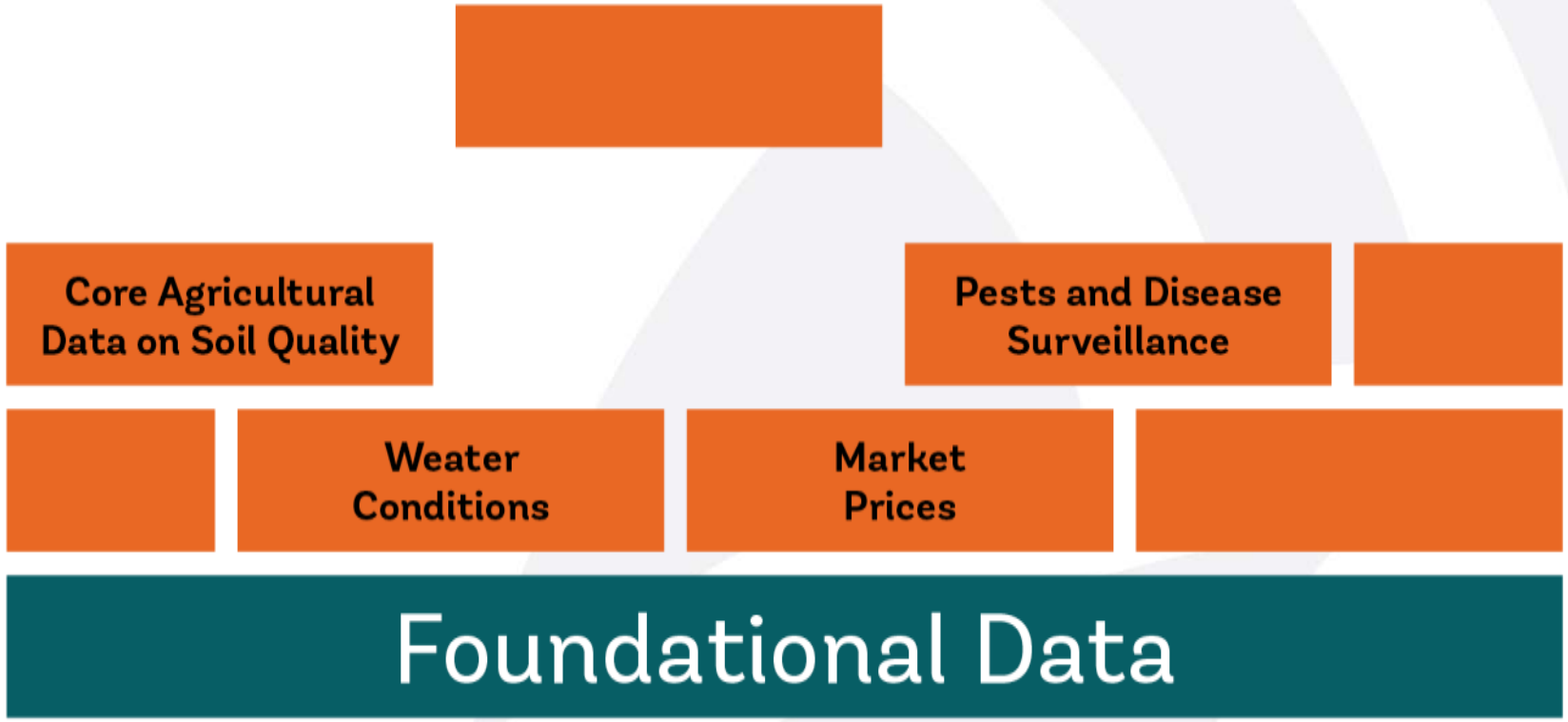
Source: World Bank

Agriculture Digitalization Index

Country	Agriculture Digitalization Index	Availability				Affordability					Enabling environment				
		2G coverage (%)	3G coverage (%)	4G coverage (%)	Digital Agriculture Availability Subindex	Mobile tariffs	Handset price	Mobile-specific tax	Inequality	Digital Affordability Subindex	Market Access Index	Access To electricity	Basic skills	Online Services Index	Nondigital Enabling Environment Subindex
Afghanistan	38.3	49.9	12.2	0.0	14.9	32.7	3.5	67.9	85.5	41.5	68.0	98.7	26.7	41.2	58.7
Albania	74.4	99.8	99.6	35.1	73.8	53.0	45.4	75.0	79.5	60.4	99.0	100.0	72.6	84.1	88.9
Algeria	57.2	100.0	53.6	2.9	42.6	50.3	32.9	74.3	84.0	56.6	99.5	100.0	62.5	27.7	72.4
Angola	32.5	30.2	2.7	0.4	7.3	45.1	31.6	82.9	40.3	47.6	40.8	43.3	37.6	48.8	42.6
Argentina	55.1	68.5	24.3	7.3	26.3	57.0	54.3	19.5	48.0	46.9	96.9	100.0	86.5	84.7	92.0
Armenia	76.4	98.4	92.0	81.2	89.0	52.2	49.4	54.3	69.0	55.1	97.8	100.0	73.0	70.0	85.2
Australia	86.6	51.4	96.9	88.8	84.6	82.5	100.0	87.5	69.3	86.1	65.0	100.0	97.2	94.7	89.2
Austria	90.5	100.0	96.2	96.1	96.9	90.2	75.0	75.0	72.8	79.1	99.9	100.0	86.9	94.7	95.4
Azerbaijan	65.7	91.6	76.7	0.7	49.3	61.3	52.8	68.2	90.3	65.9	94.7	100.0	62.3	70.6	81.9
Bahamas, The	50.3	46.3	24.1	21.7	27.6	63.7	71.2	50.3	51.3	60.8	14.5	100.0	67.9	67.7	62.5
Bahrain	85.2	100.0	100.0	100.0	100.0	57.1	73.3	93.1	52.8	68.3	99.7	100.0	70.1	78.8	87.2
Bangladesh	53.2	99.4	52.7	0.1	41.0	66.1	39.4	0	73.3	46.3	99.7	85.2	43.4	61.2	72.4
Barbados	73.7	100.0	100.0	86.2	94.5	40.8	56.0	49.1	28.5	44.5	98.9	100.0	71.3	57.7	82.0
Belarus	70.1	100.0	99.9	3.4	61.3	59.9	49.1	50.5	85.5	59.9	99.7	100.0	85.8	70.6	89.0
Belgium	90.5	100.0	100.0	99.9	100.0	70.4	100.0	73.8	84.0	82.7	99.9	100.0	90.1	65.9	89.0
Belize	50.9	92.6	80.0	7.4	53.5	27.2	44.6	53.2	17.8	35.7	69.0	99.5	58.7	26.5	63.4

"No regrets" policy actions are key to maximizing the benefits of quickly transforming the food system

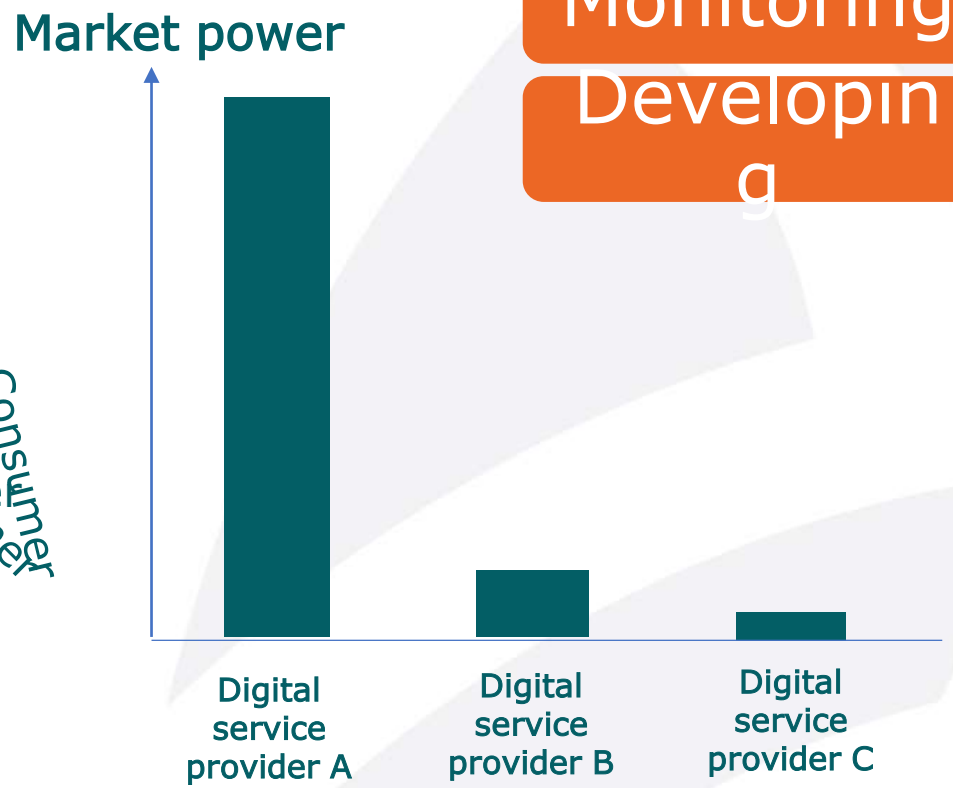
Strengthen access to foundational data and promote data sharing




Data Privacy
Data Ownership
Data Security

Review regulations that may constrain the adoption of technologies that enable precision agriculture.

Enable competition in digital markets



Enabling
- Consumer choice (avoiding lock-in)
- Consumer data protection

Monitoring
- Switching costs
- Market Structure

Developing
- Personal data markets or data trusts
- Digital data commons

Supporting development of digital payment systems.

Support digital entrepreneurship ecosystems

Regulations
Use Cases
Finance
Data

Scaling

Government action

E-agriculture policies

AgTech start-up policies

Regulatory sandboxes

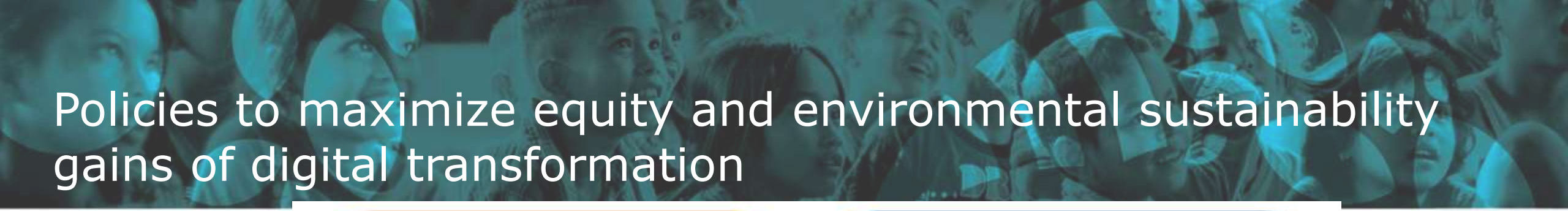
Invest in transformational research and development.

Institutional innovation for cooperation between government, publicly funded research and private sector for better commercial applicability

Businessperson

Policymaker

Researcher



Policies to maximize equity and environmental sustainability gains of digital transformation

Equity

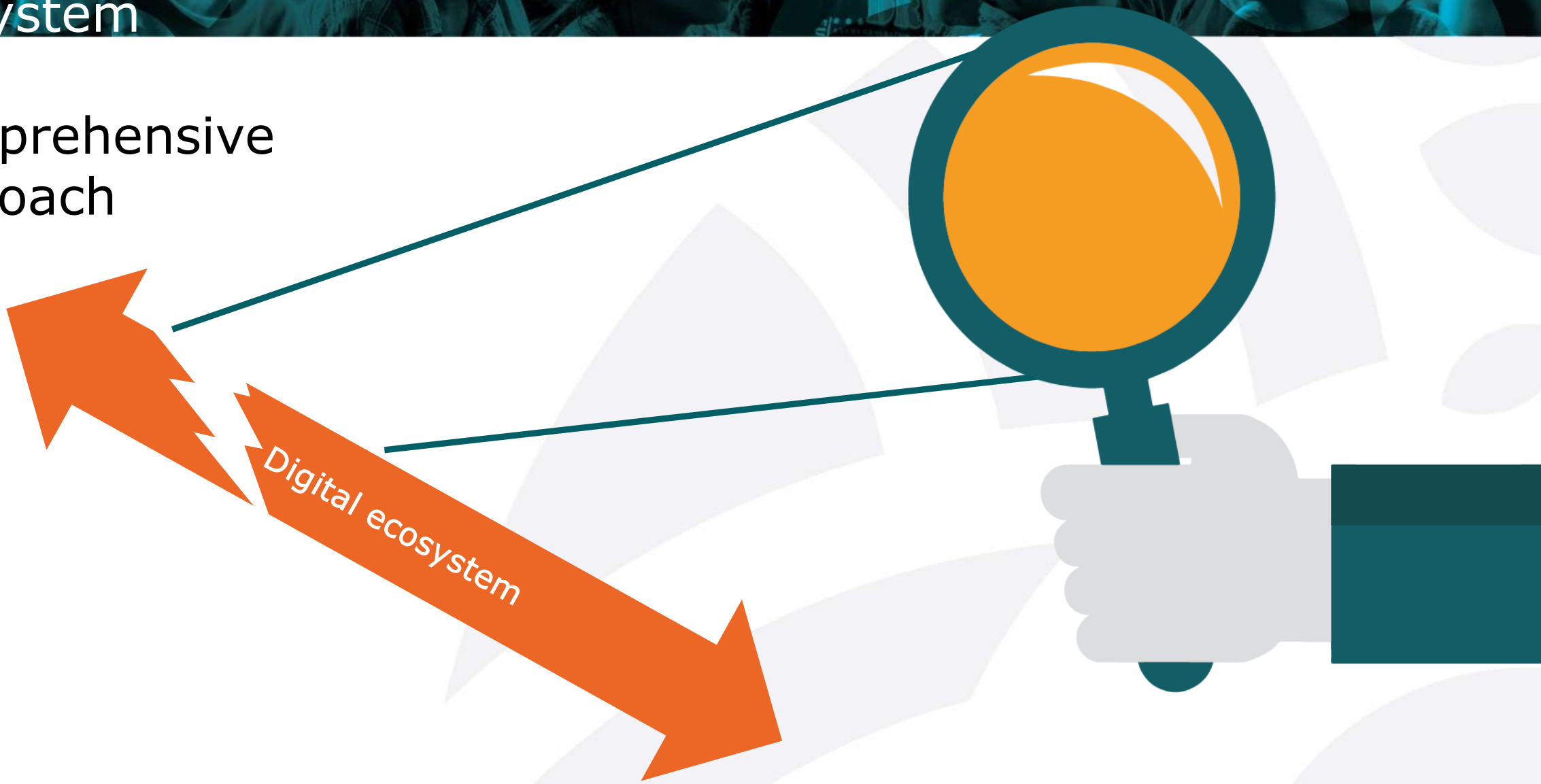
- Improving access to and use of digital technologies by marginalized groups
- Addressing data access asymmetries
- Adopting compensatory measures for potential losers of digital transformation in agrifood system

Environmental sustainability

- Strengthening digital environmental monitoring
- Incentivizing use of digital technologies for environmental sustainability by producers
- Incorporating environmental sustainability goals in agricultural policies
- Influencing behavior of consumers and producers through e-education and information dissemination

To identify effective policies and to prioritize interventions, governments need clear objectives and analysis of gaps in the system

Comprehensive approach



Digital Agriculture Profile

Vietnam

Digital Agriculture Profiling tool is designed to evaluate the state of agricultural and digital development in a country to identify policies and technologies that promise the highest impact solutions to the existing problems.

Join us for launch on July 1

What’s Cooking Learning Series

https://olc.worldbank.org/content/what%E2%80%99s-cooking-digital-agriculture-learning-series


FOODSYSTEMS
2030
Thank you!