Fueling New Economic Growth through Resilient Food Security – ADB's Approach

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ADB's commitment on food security and climate

Invest in nature, build water and food resilience, and vitalize rural economies

- Commitment to provide at least $14 billion over 2022-2025 to address the escalating food crisis in Asia and the Pacific and enhance long-term food security

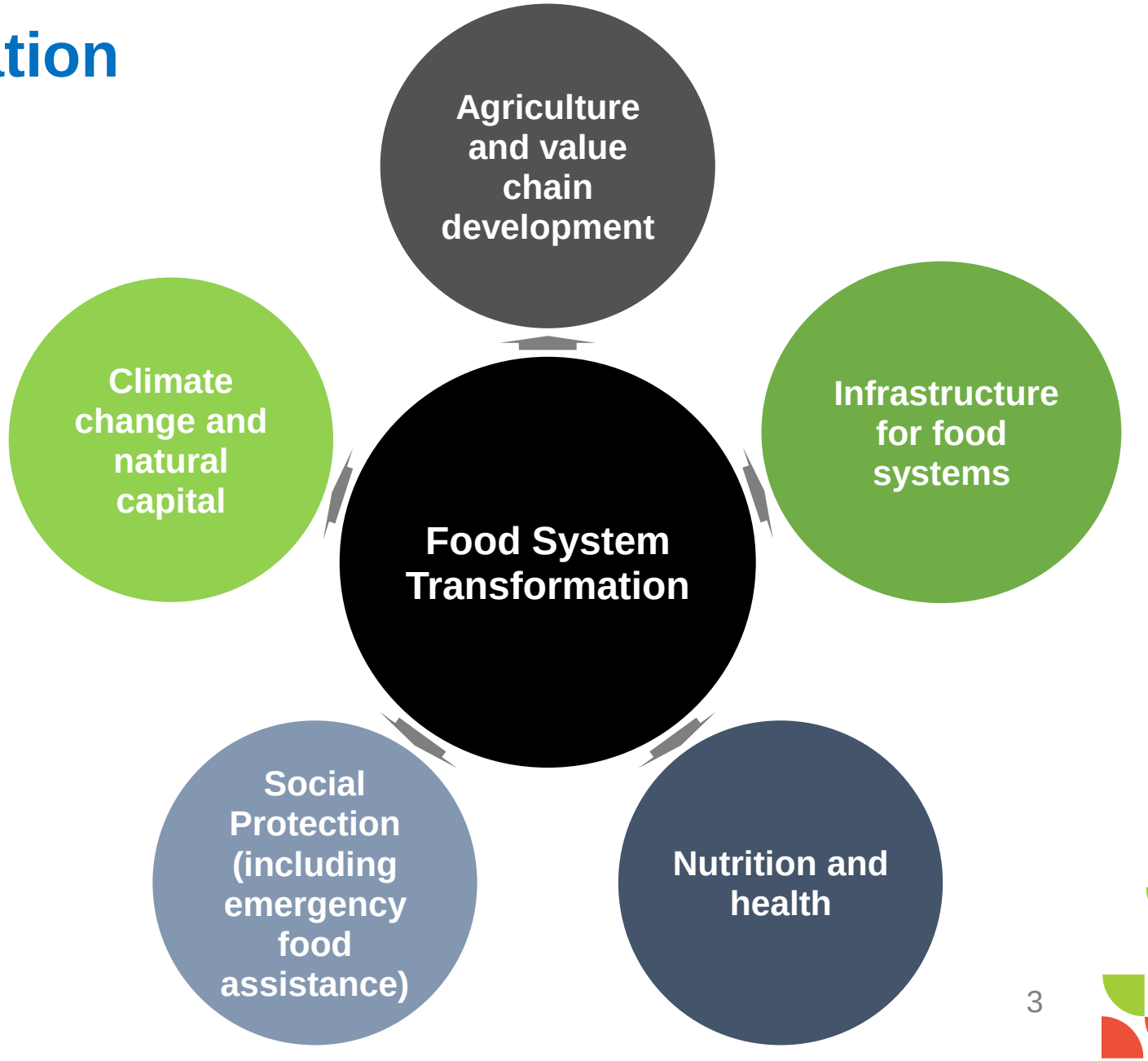
- Commitment to provide $100 billion in cumulative climate financing from its own resources to its developing member countries in 2019-2030

Food System Transformation

To sustain food security and resilience,

we need to a holistic food systems approach

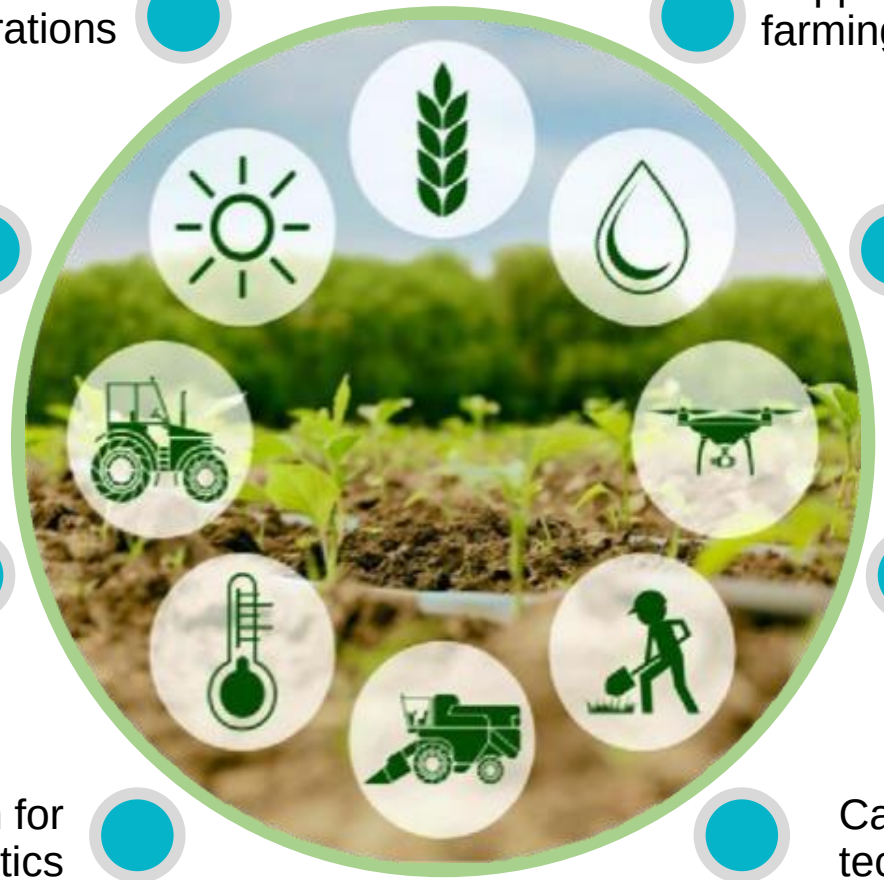
The **5 elements** necessary for food systems transformation also provide the basis for tracking financial flow towards food security.



Integrated Approach to Food Security and Rural Vitalization

Rethink Infrastructure

- Optimizing water management at river basin level with climate change considerations
- Adopting climate smart irrigation systems and production and post-harvesting facilities with adequate operations and maintenance
- Maximizing potential of new and existing dams
- Intermodal transport and cold chain for efficient logistics



Transform Farming Systems

- Supporting farmers adopt more productive farming practices suited to local conditions
- Promoting environmentally sustainable and climate adaptive / low carbon agriculture (including agroforestry)
- Leveraging partnerships with private sectors
- Catalyzing use of high-level and digital technologies

Farmers need better and more comprehensive support systems

Indonesia's AgriTech ecosystem has seen particularly rapid growth, helping transformation of the production, supply chain, market access, and transaction to financing solutions,

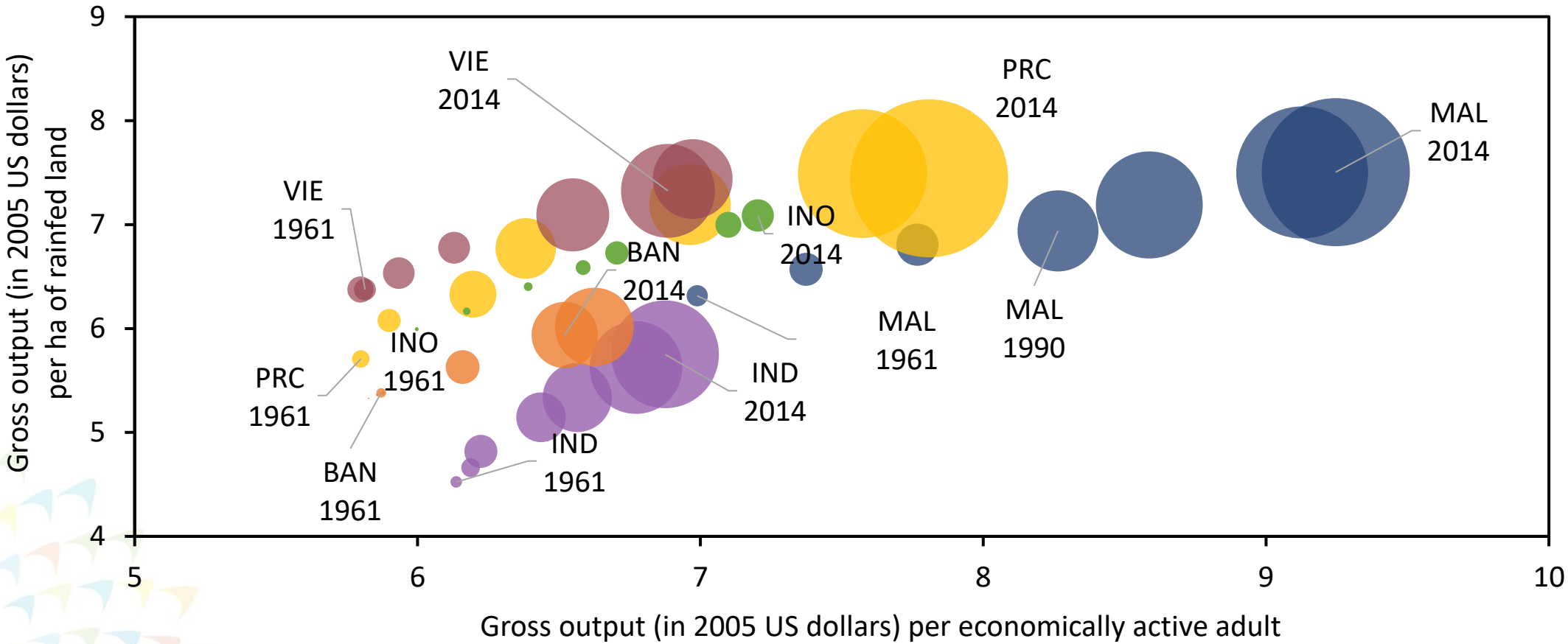
however, more is to be done to improve productivity and sustainability

- With 1.68 hp/ha in 2018,mechanization in Indonesia is still low. 1/
- Agroecology is still at early stage of adoption, with farmers relying on conventional farming approaches
- The know how in applying modern technology for production, post harvest and transformation is not fully absorbed by the aging farmers population

1/Thailand mechanization rate stands at 2.5 hp/ha and Japan at 16 hp/ha

Agricultural mechanization increased labor productivity but countries have a large gap to catch-up

Agricultural land productivity, labor productivity, and mechanization, 1961-2014



BAN = Bangladesh, IND = India, INO = Indonesia, MAL = Malaysia, PRC = People's Republic of China, VIE = Viet Nam.
Note: Dots represent 1961, 1970, 1980, 1990, 2000, 2010, and 2014 data points. Circle size represents rate of mechanization as measured by the ratio of machinery (in metric horsepower) to the number of economically active adults in agriculture.
Source: USDA (2019)

Mechanization can drive the future of agriculture

Benefits

Boosts production, reduce labor intensity, and alleviate seasonal labor shortages

- Mechanized transplanting practices for the main crop season decreased the seed rate by 40% and reduced pesticide application by 30%–40%.

Increases off-farm employment of household heads

Enablers

Land scale is a key factor in realizing the full benefits of agricultural mechanization, but not only.

- policies promoting mechanization must align with land policies to encourage land consolidation and large-scale farming while advancing mechanization

Access to credit and awareness is pivotal to give access to farmers

Investing in training and education programs is vital for improving farmers' understanding on the effective use and maintenance of agricultural machinery and the adoption of best practices for integrated farming systems.

Mechanization under the Sustainable Rice Production Initiative

Transition to low-carbon agriculture and increased food security

Model of low carbon and water saving rice production with mechanization

Alternative Wet and Drying Water Management Practice to reduce methane emission by 30-70%

Investment in irrigation and drainage infrastructure to **enable farmers to control water**

Policy reform to introduce water pricing system

Digital technology to monitor and verify GHG emission and reduce pesticide use

Make use of rice straw for fertilizer, feed and energy to develop bio-circular model and reduce crop burning

Mechanization for land preparation, planting and treatment of rice fields

Major challenges in rice sector

- Global rice demand is expected to increase by 30% by 2050
- Rice yield is expected to decrease by 10% with every 1 degree increase in temperature
- Rice paddy is responsible for 10% of global methane emissions
- Rice irrigation consumes more than half of freshwater resources in Asia
- Rice crop residue burning is a major source of air pollution

INO – Horticulture Development in Dryland Areas Project

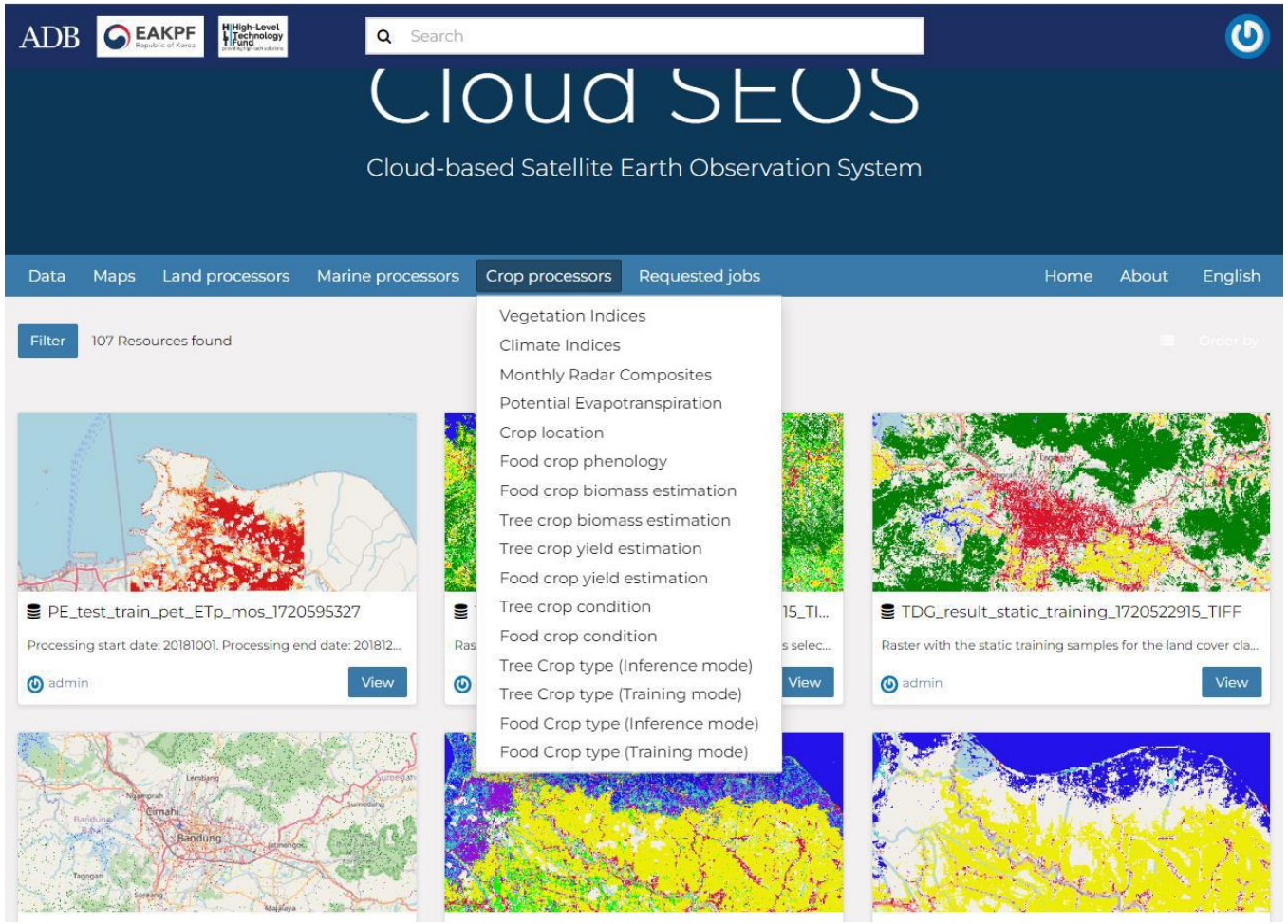
The project promotes biopesticides, organic fertilizers and regenerative agriculture through an integrated farming system approach

- Improving land, water, and connectivity infrastructure
- Introducing precision agriculture and climate-smart water management practices
- Strengthening of agribusiness systems and institutional architecture

Implementation: 2023 - 2028
Financing: $85 million (ADB)/ $40 million (IFAD)

Cloud-based Satellite Earth Observation Service -SEOS

- In partnership with Research Center of Geoinformatics, National Research and Innovation Agency (BRIN), ADB supports earth observation services for better planning and monitoring of water resources, agriculture, and infrastructure.
- This involves geo-analysis to aid farmers in improving crop production by monitoring and managing fields, detecting changes in vegetation, crops, infrastructure, land types, use, and biomass health indicators over time using mapping products.



User Interface of Cloud SEOS – Crop Processors

THANK YOU

Achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific