Engaging with Academia and Research Institutions (ARIs) to support Family Farmers and Food System Transformation During and Post COVID-19 Pandemic in Asia

SEAMEO SEARCA

Asian Farmers' Association for Sustainable Rural Development

UNESCO unesco

cirad
AGRICULTURAL RESEARCH
FOR DEVELOPMENT

GRET
Professionals for
Fair Development

With technical assistance from the FAO Regional Office for Asia and the Pacific

Initiatives for development of integrated coffee system under market forces in the Central Highlands of Vietnam

Hue Tran, Maria Burkiewicz, Senthil Nathan - **Enveritas**.

Hoi Pham - CARES

Contents

Large-scale and real-time surveys on coffee farming performed in three harvest seasons by Enveritas in partnership with leading Vietnam institutions.

Enveritas

- An US-based NGO founded in 2016 with main mission of ending poverty in coffee sector by 2030.
- Operating in 20+ countries. **Lead in the VN project** of verification

CARES

- A R&D center within Vietnam National University of Agriculture
- **Co-ordination of the project** in VN.

- Dalat University – located in Central Highlands
- **Leading the field coordination, recruitments and field-related administration** in the project in VN.

Background

- Coffee is an important commodity and **originally grown under shade** trees

- In the 1990s/2000s: **cut-off of shade trees to maximize yield** due to demand and price increase.

- Recent years: **more intercropping** due to low price, low production efficiency and newly emerging fruit market.

- In the recent 2 years: coffee market price has increased again, and fruit-crop market dropped, some farmers started to **cut down fruit crops again**.

- Market-driven farmer's practices: uncertain future for integrated coffee systems if **no adequate initiatives undertaken**.
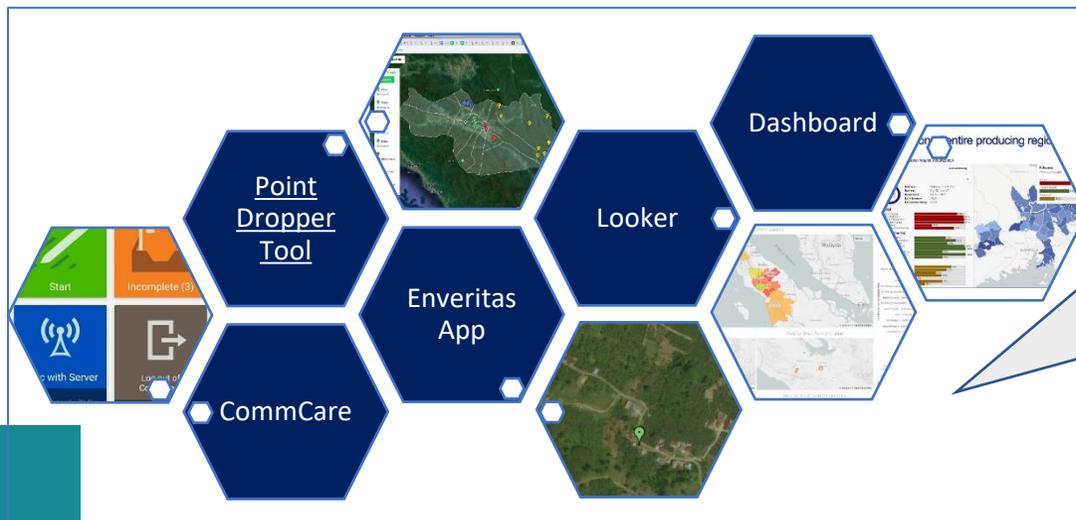

Photos: mono vs diversified coffee farms

Research methodology

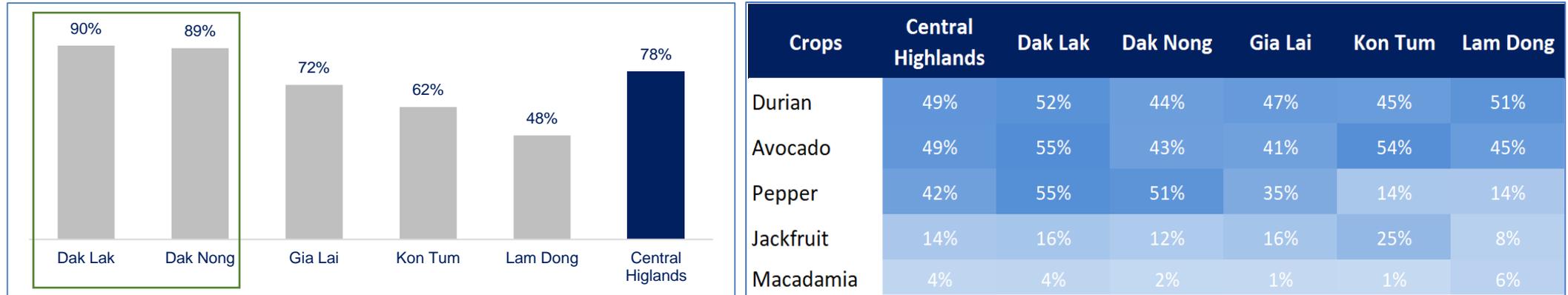Artificial intelligence algorithm identifies farm sample using satellite imagery

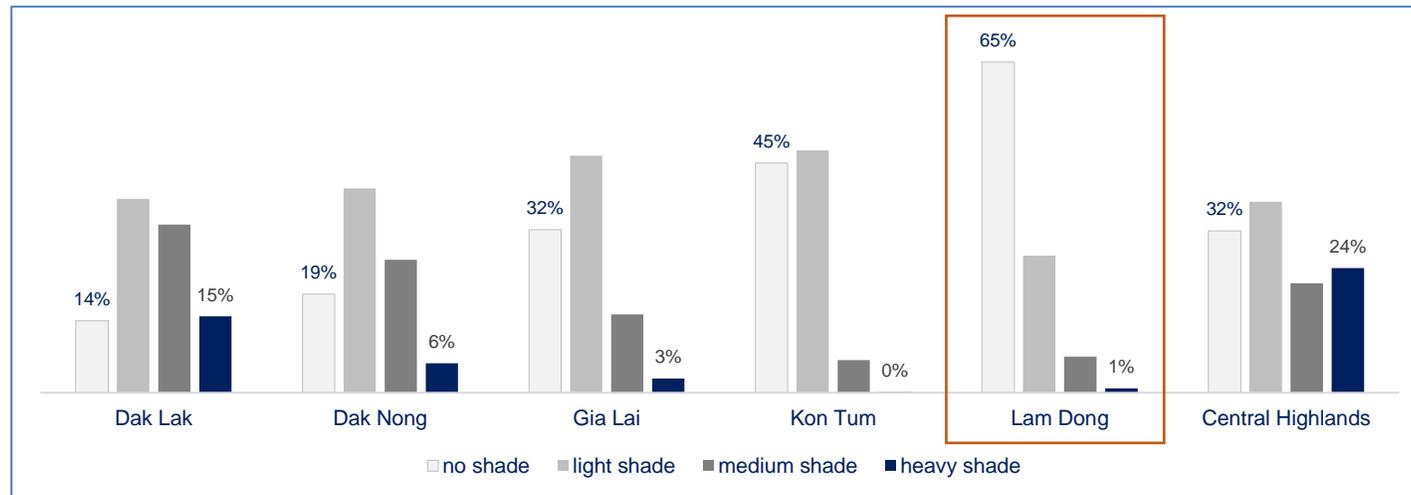Data collectors travel to points and use app-based survey tailored to local conditions

- Point Dropper Tool
- Enveritas App
- CommCare
- Looker
- Dashboard

. Pin dropper & **randomization**
. Statistically robust
. **Real-time survey**
. Survey conducted at harvest time
. **Backcheck**
. **Bigdata** & Multi-layered QA checks

Intercropping is popular in CHs but varies greatly across regions. Light shade dominates in coffee farming

Popularity of intercropping on coffee farms in Central Highlands

Crops	Central Highlands	Dak Lak	Dak Nong	Gia Lai	Kon Tum	Lam Dong
Durian	49%	52%	44%	47%	45%	51%
Avocado	49%	55%	43%	41%	54%	45%
Pepper	42%	55%	51%	35%	14%	14%
Jackfruit	14%	16%	12%	16%	25%	8%
Macadamia	4%	4%	2%	1%	1%	6%

Shade levels breakdown by provinces in Central Highlands

no shade ▪ light shade ▪ medium shade ▪ heavy shade

n= 7310, data of 2 harvests 2019/20 and 2020/21

The two farmer groups: intercropping & monocropping have different profiles in terms of demography & farm characters
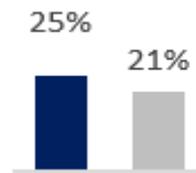
Farmer's age
Average Farmer Age [NS]

48   47

Farmer's experience
> 15years experience growing coffee.
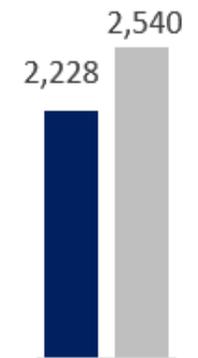
67%   62%

Education level
high school, vocational, grad, postgrad [NS]

25%   21%

Farm size
Median farm size (ha) [NS]

1.1   1.0
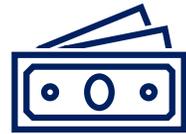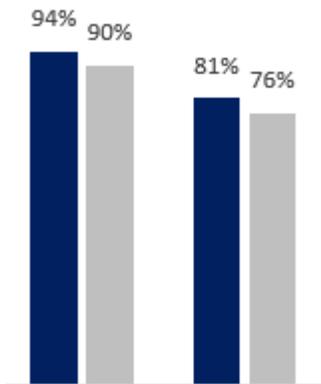
Yield
Median yield (kg green bean/ha)

2,228   2,540

G1 = integrated coffee farms
G2 = mono coffee farms

… and other social aspects as well as farming practices
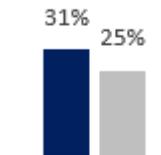
Above poverty (AP)

AP1: $1.90
AP2: $3.10

94%   90%
81%   76%

Key source of income

Coffee is the main source of income
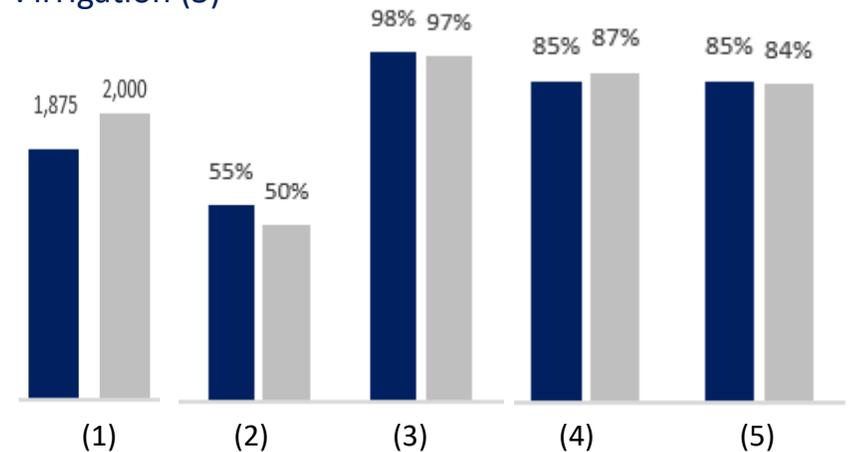
55%   61%

Training access

Training access in the past two years

31%   25%

Farming practices

. Inorganic fertilizer use (1)
. Organic fertilizer use (2)
. Irrigation (3)

. P&D problems (4)
. Pesticide use (5)

1,875   2,000   (1)
55%   50%   (2)
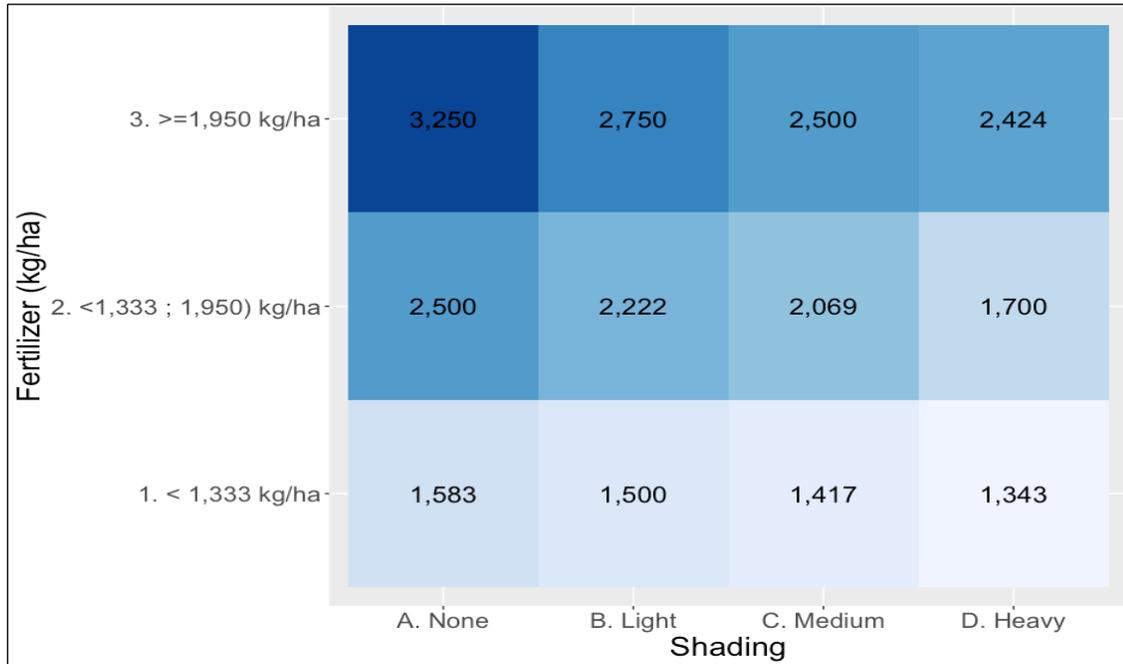98%   97%   (3)
85%   87%   (4)
85%   84%   (5)

AP1&2: Coffee farming families have a standard of living that is above the poverty line of $1.9 & $3.1 by United Nation's using Progress out of Poverty Index (PPI)

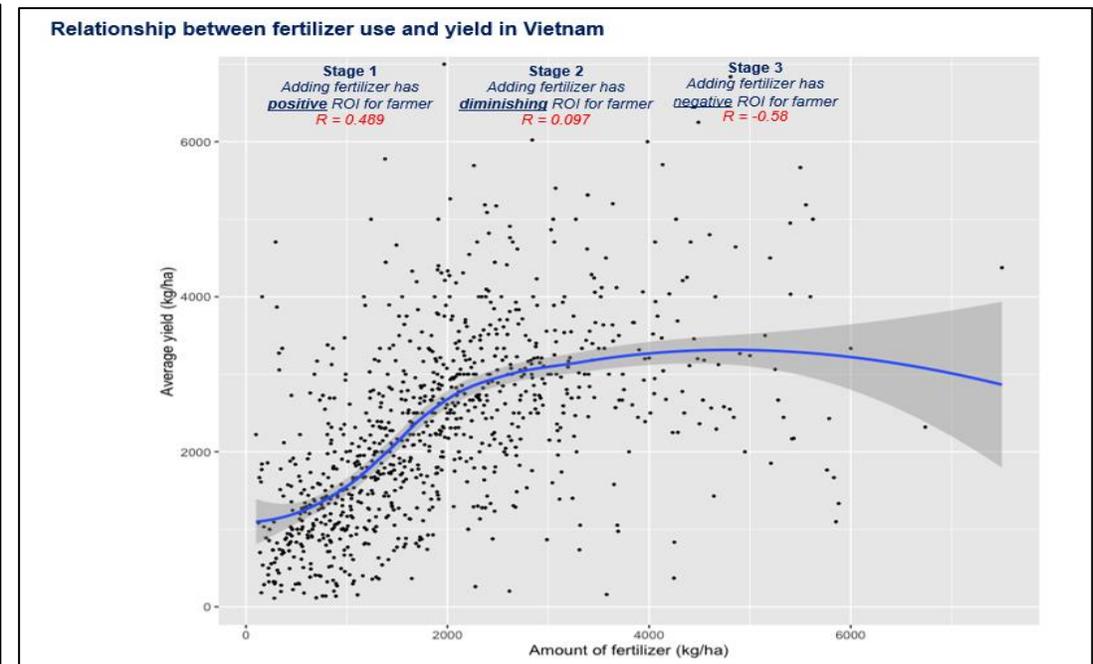All are significant difference at the confidence level of 95%

G1 = integrated coffee farms
G2 = mono coffee farms

9

Shade, fertilizer are strongly correlated with yield, but high fertilizer use leads to diminishing returns

Shade vs fertilizer vs yield correlation

Fertilizer (kg/ha)	A. None	B. Light	C. Medium	D. Heavy
3. >=1,950 kg/ha	3,250	2,750	2,500	2,424
2. <1,333 ; 1,950) kg/ha	2,500	2,222	2,069	1,700
1. < 1,333 kg/ha	1,583	1,500	1,417	1,343

Shading

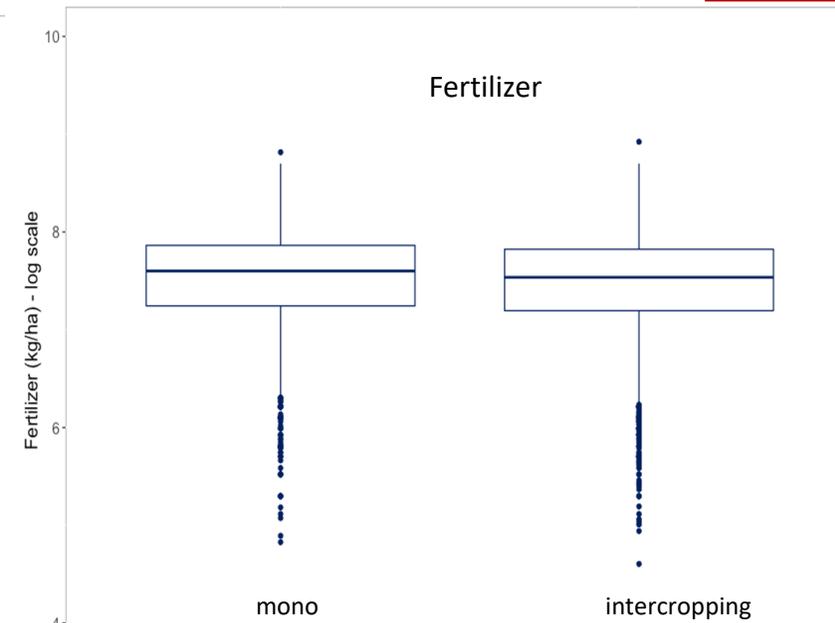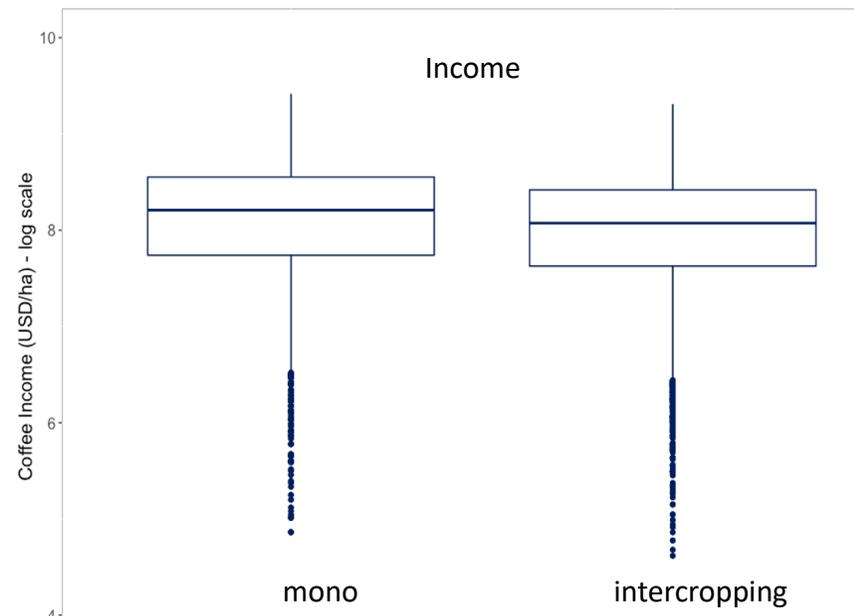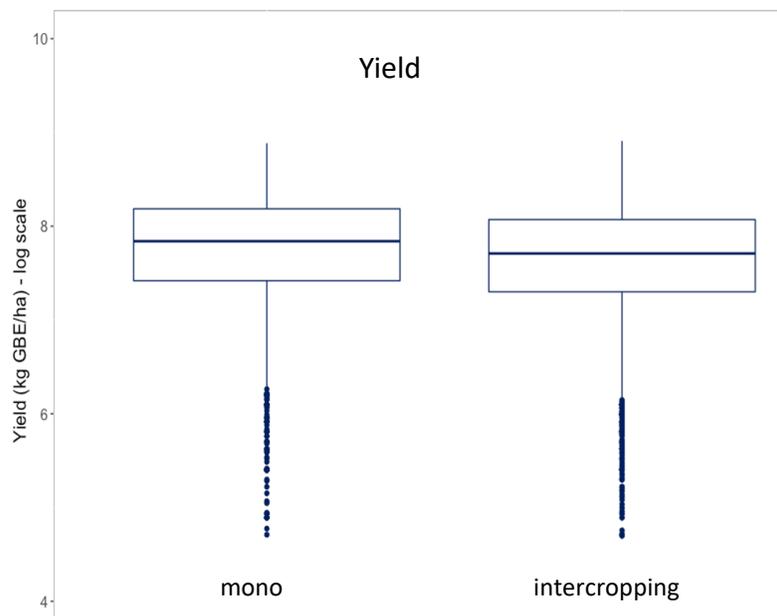### High fertilizer use leads to diminishing returns

Relationship between fertilizer use and yield in Vietnam

- Shade level and yield are in a **negative** relation
- Fertilizer level and yield are in a positive relation. However, ROI analysis shows that at some level of amount of fertilizer applied the **positive relation of yield and fertilizer changes**.

Total household income is higher for integrated farmers

Yield

Income

Fertilizer

Income from coffee: G1 farmers 3,010 / G2 farmers 3,940
Income from whole farm: G1 farmers 4,314 / G2 farmers 3,940

- G1 farmers
- G2 farmers

Unit: US$

- Intercropping farmers achieve **lower coffee yields** thus lower income from coffee.

- However

  - Intercropping farmers apply significantly less chemical fertilizers
  - **Total household income** of intercropped farmers is **significantly higher** than mono-cropping.

11

Market driven making changes with uncertainties

The **targets** of development of ''**crops of good cash return**'' without attention to and understand of biodiversity roles /ecosystem services.

The **crops restructure** towards fruit trees at the expense of annual crops negatively influencing food/feed sovereignty and farming sustainability (at national and local levels).
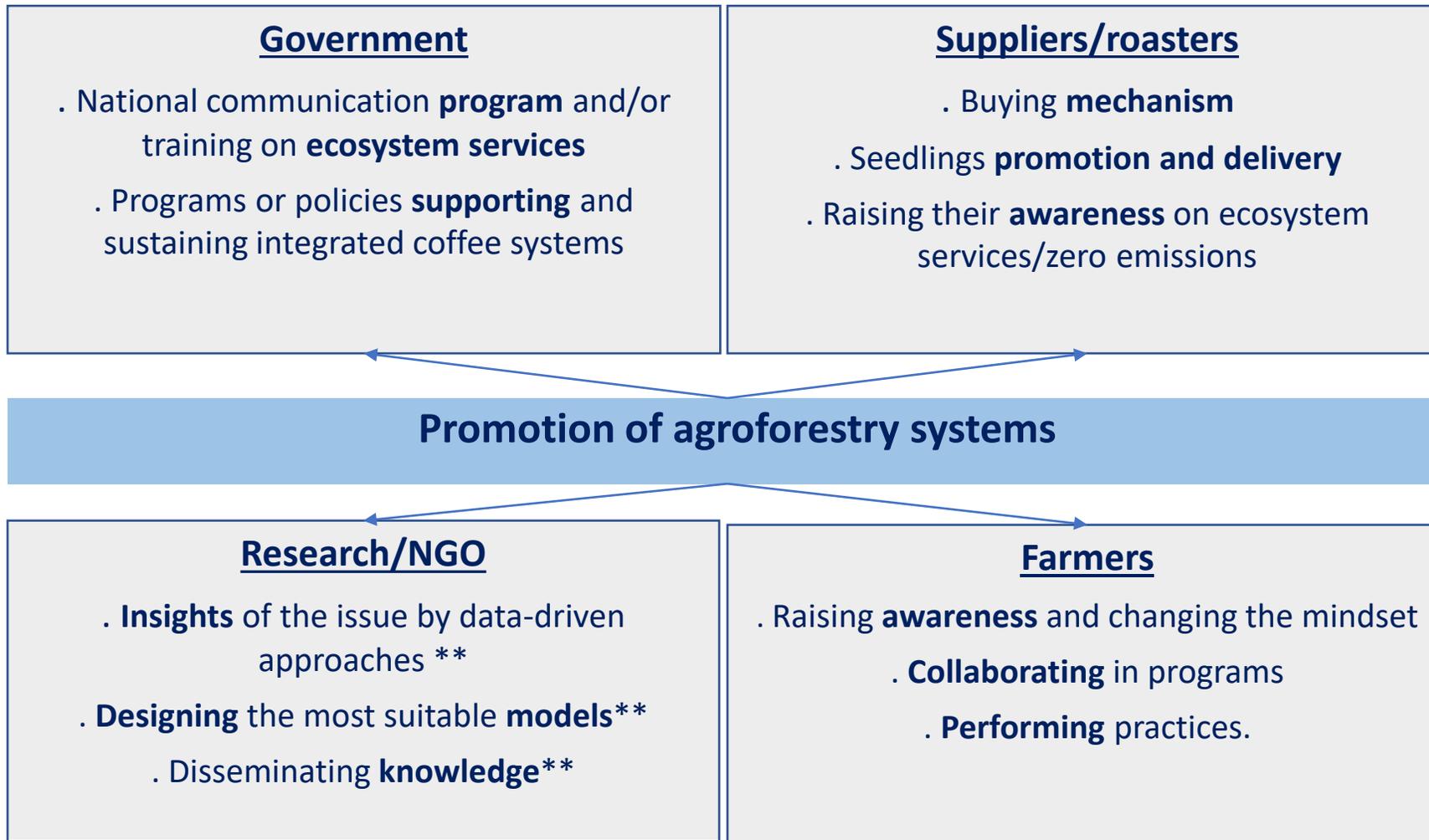
The return to integrated coffee systems mainly **driven** by low coffee **market** and high market potential for other crops

There is thus uncertain farming future: either farmers continue with integrated systems or return back to mono-coffee.

12

Coffee system transition toward integration required PPP approach.

Government

. National communication **program** and/or training on **ecosystem services**

. Programs or policies **supporting** and sustaining integrated coffee systems

Suppliers/roasters

. Buying **mechanism**

. Seedlings **promotion and delivery**

. Raising their **awareness** on ecosystem services/zero emissions

Promotion of agroforestry systems

Research/NGO

. **Insights** of the issue by data-driven approaches **

. **Designing** the most suitable **models****

. Disseminating **knowledge****

Farmers

. Raising **awareness** and changing the mindset

. **Collaborating** in programs

. **Performing** practices.

Specific initiatives for ARIs

Data-driven approach and agroecological transition monitoring

- o Farming practices will be further **driven by markets**, **climate changes and pandemics.**

- o Agroecological measurement **promotion and assessment** (i.e by FAO-TAPE) → local adaptation, farming efficiency & resilience.

Participatory designing locally **suitable integrated systems** (pivoted on biodiversity and circular farming).

Educating on the **ecosystem roles** in the **economic** benefits and **health** impacts on coffee sectors & stakeholders, incl. consumers.

Disseminating agroecological **knowledge** & local successful case studies though ARIs network, mass media and policy dialogue.

Thanks for your attention!