PREPARED BY AYANA WITH CPPM SBM ITB · QUARTERLY SITUATION REPORT

Smallholder Farmers at a Juncture

Lost farming knowledge, a vanishing advisory workforce, and the paperwork that keeps adaptation finance out of reach

Indonesia · Independent oil palm, cocoa and coffee smallholders who also grow food for their own households · Reporting period: July to September 2026

Highlights

01 · ON FINANCE

The obstacle is paperwork, not money

A national replanting scheme has offered independent oil palm smallholders a grant of IDR 60 million per hectare since 2017, capped at four hectares per farmer. Nine years on, roughly 400,000 hectares have been replanted against 2.8 million hectares of stands older than twenty-five years: about one hectare in seven. The grant is not the constraint. Farmers work the land but rarely hold formal title, and the cultivation registration certificate that can stand in for it is still charged for in many districts. A further 1.7 million hectares already carrying formal title has since been designated as state forest area.A

SO WHAT Capital for adaptation already exists but is disconnected from the village. Fixing documentation and giving farmers a village-led platform to reach it is the fastest and cheapest way to draw it down.

02 · ON KNOWLEDGE

Farmers are losing the calendar they farmed by

Qualitative research commissioned for this programme found that inherited knowledge, the planting calendar and the reading of the seasons, is no longer reliable for farmers. Nothing has replaced it. The meteorological agency runs a climate field school, but North Sumatra had eight automatic weather stations for the entire province. In one commodity group's own farmer research, 98 percent reported they had already been affected by climate change.A

SO WHAT More forecasting will not help until someone translates it into a decision on a specific plot. The translator, not the data, is the investment.

03 · ON THE WORKFORCE

The people who taught adaptation have gone

Integrated pest management field schools worked because trained guides taught season detection and ran simulations alongside farmers. Those guides have largely disappeared through generational turnover with no replacement, and the role has been folded into a general extension service whose numbers have fallen to around 40,000 nationwide. In one palm oil training scheme about 30 percent of trainees were themselves government extension officers. On current trends Indonesia is projected to face a severe farmer shortage within fifteen years.A

SO WHAT Without an advisory layer there is no one to carry any of these practices to the field, which makes rebuilding it the precondition for every other recommendation.

04 · ON GENDER

Women hold the value-adding steps and the least authority

In cocoa, women lead flavour innovation and post-harvest work such as fermentation, the step that decides whether a lot sells as bulk or by origin, and in some programmes around 80 percent of participating farmers are women. Authority does not follow. Women without land of their own carry a double burden and narrower access to technology, and mechanisation is sharpening this: in rice it cuts labour from roughly twenty people per hectare to one, and the operator is usually a man.A

SO WHAT Titling and machinery decisions taken in the next few years will fix women's economic authority for a generation. The rule has to be written before the machines arrive, not after.

2.6 : 7.6
Tonnes per hectare, independent smallholders against estate and scheme plantations in oil palm

1 in 7
Share of ageing oil palm area replanted since the scheme opened in 2017

40,000
Public extension officers remaining, after the one village one officer policy lapsed

3×
Spread between government and industry estimates of national cocoa output

1.7m ha
Titled smallholder and concession land subsequently designated as state forest area

HOW THIS REPORT READS THE SITUATION

Environment
Rainfall that no longer follows the inherited calendar, and pest and disease pressure that now persists across seasons.

Economy
A yield gap held open by ageing stands, finance that stops at an eligibility test, and buyers that rarely pay for better practice.

Faith
Religious and customary authority, where trust and obligation towards land and water still sit in village life.

Politics
Tenure, documentation, and a policy frame calibrated to production volume rather than to resilience or risk.

SOURCES AND METHOD

A **Findings marked A come from the programme's own consultation rounds.** AYANA and CPPM SBM ITB convened four closed, structured consultations with institutional participants from commodity associations, processors, financial institutions, philanthropy, development partners, farmer organisations and civil society: **Round I** (11 June 2026) took stock across rice, oil palm, rubber and cocoa; **Round II** (12 August) validated the problem statement and mapped actors; **Round III** (4 September) designed the ecosystem's value proposition and business model; **Round IV** (25 September) prioritised quick wins and candidate villages. Figures marked A were presented by the institution holding the data and are reproduced as given; participant identities are withheld.

B Household values research and the survey referenced on page 2 were commissioned by AYANA as Phase 1 of this programme and presented in Round II.

The Questions This Report Answers

Questions three and four are treated as primary; the others frame them. Each is read across the four dimensions set out on page 1.

Q	Question	Dimension	Where
1	What actually prevents smallholders from reaching existing finance, and which lenders already reach them despite those barriers?	Economy, politics	Page 3
2	Which districts offer the strongest entry point for a village and agriculture pilot, and on what stated criteria?	All four	Page 4
3	**How does the erosion of inherited ecological knowledge affect environmental stewardship?**	Environment, faith	Page 2
4	**How does an ageing and shrinking agricultural workforce affect the adoption of climate-resilient practice, and what can be done?**	Environment, economy	Page 2
5	How does the unequal distribution of adaptive labour and land ownership affect women's agency, and what is gained by changing it?	Economy, politics	Page 3
6	How do religious and customary institutions, and the policy environment, enable or block what smallholders can do?	Faith, politics	Page 4

QUESTION 3

How does the erosion of inherited ecological knowledge affect environmental stewardship?

Dimensions read here: environment and faith

The knowledge was a working system, not folklore. Households read wind, rain and season through a body of inherited knowledge that told them when to plant, when to hold and when to harvest. Phase 1 research for this programme found that this heritage knowledge, the planting calendar above all, is no longer reliable for farmers.B The same research found that people interpret climate disruption through moral and religious frames and rarely connect it to formal climate actors, which is why the loss registers as a crisis of obligation towards land rather than a technical problem. Local ecological knowledge tends to be lost precisely when the variability it encodes becomes most extreme, which is when it is most needed.1

Stewardship degrades as the knowledge goes. The consequences reported in consultation are practical, not abstract. Pesticide is applied unwisely and worsens climate damage. Extension officers sent to disaster-prone areas often do not know the seed varieties, and farmers receive pesticide without fertiliser or adequate land preparation. Heat-tolerant seed introduced without advice triggered conflict with a farmer group in one East Java district, where farmers still paid for seed described as subsidised.A Tenure compounds it: most rice farmers are tenants exposed to rising rent, with no incentive to protect soil they will not hold next season.

What could replace it is not reaching the field, but it need not start from zero. The meteorological agency runs a climate field school and a public app, yet local data is too sparse to act on, with eight automatic weather stations serving the whole of North Sumatra, and farmers need help decoding forecasts into a decision about this plot in this week. In that group's own farmer research, 98 percent said they had already been affected by climate change.A Participants in the final round proposed early-warning systems that pair inherited signals, such as cicadas and earthworms read as signs of the coming rains, with verified information delivered through field schools.A That treats inherited knowledge as an input to combine, not a relic to replace; closing the usability gap requires a trusted translator, not more data.2

QUESTION 4

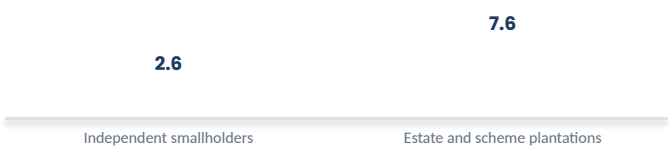
How does an ageing and shrinking workforce affect the adoption of climate-resilient practice, and what can be done?

Dimensions read here: environment and economy

The advisory layer has thinned at every level. The one village one extension officer policy last operated under an earlier administration; the field extension service has since fallen to around 40,000 officers. Those who remain have been generalised without specialisation and pulled back towards central administration. Pest observer staff have been posted to unrelated offices under regional autonomy, and one international buyer's farmer support centre runs a single junior agronomist per province.A Adoption suffers directly, because the measured effect of farmer field schools depends heavily on guide quality and on whether knowledge spreads beyond the graduates themselves.3

Young people are leaving, but not everywhere, and markets decide where. Participants described a generation unwilling to do dirty work for uncertain prices. Yet regeneration has succeeded where the commodity carries a clean or modern image and a downstream story: a South Sulawesi coffee district drew young people back as far as processing, and millennial millers have moved to electric drying.A Regeneration follows margin and dignity, and margin depends on a buyer who pays for better practice. That market pull is what turns training into income.5

WHAT ACCOMPANIMENT IS WORTH: OIL PALM YIELD, TONNES PER HECTARE



Presented in Rounds I and II.A On scheme plantations a controller posted from head office works alongside growers, and participants attributed part of the gap to that presence; where accompaniment is absent, so is the yield.

FOUR SOLUTIONS THAT ALREADY HAVE FUNDING, INFRASTRUCTURE OR BUYERS BEHIND THEM

Redirect a scholarship pipeline that already exists

The plantation fund agency finances degree scholarships for 5,000 children of farmers and workers across 42 universities. Participants proposed that recipients return to their home districts as field advisers. The cadre is already funded; only the pathway back is missing.A

Formalise village training centres

Self-reliant rural training centres exist in many villages and act as local aggregators, but they are informal and cannot legally handle money or goods. Converting them into cooperatives with a business unit turns advisory work into a service that earns its own operating cost.A

Use champion farmers as first responders

Farmer groups already have recognised leaders who take the first risk on a new practice and are followed voluntarily. Positioning them as the first point of contact, escalating to an agronomist only when needed, is the cheapest functioning substitute for a lost extension cadre.A,4

Connect village practice to buyers who reward it

Craft cocoa makers already pay for fermentation quality and origin; in the final round the coffee association offered to map new exporters to their village suppliers; and participants judged certification worth pursuing only where a buyer rewards it and the farmer keeps a net gain. Buyers engaged in good agricultural and handling practice are the pull that makes advisory work pay.A,5

NOTES AND REFERENCES

1 Berkes, F., Colding, J. & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological Applications*, 10(5), 1251-1262.
2 Lemos, M. C., Kirchhoff, C. J. & Ramprasad, V. (2012). Narrowing the climate information usability gap. *Nature Climate Change*, 2, 789-794.
3 Feder, G., Murgai, R. & Quizon, J. B. (2004). Sending farmers back to school: The impact of farmer field schools in Indonesia. *Review of Agricultural Economics*, 26(1), 45-62.
4 BenYishay, A. & Mobarak, A. M. (2019). Social learning and incentives for experimentation and communication. *The Review of Economic Studies*, 86(3), 976-1009.
5 Barrett, C. B., Bachke, M. E., Bellemare, M. F., Michelson, H. C., Narayanan, S. & Walker, T. F. (2012). Smallholder participation in contract farming: Comparative evidence from five countries. *World Development*, 40(4), 715-730.

A, B See the source note on page 1: A marks material from the four consultation rounds, June to September 2026; B marks AYANA Phase 1 research.

QUESTION 1

What prevents smallholders from reaching existing finance, and who already reaches them anyway?

Dimensions read here: economy and politics

Most of what smallholders need already exists. It is disconnected, not absent. Across four consultation rounds, participants did not describe an empty field. There is a plantation fund whose mandate covers replanting, roads, training, certification and audit costs; village training centres, farmer groups, cooperatives and village-owned enterprises; a funded scholarship cadre; insurers piloting rainfall-indexed cover; regional banks; zakat-based philanthropy; and buyers willing to pay for quality. What is missing is the connection between them at village level.A Starting from existing assets rather than deficits is also what makes community-driven development durable.6

Why the pieces do not connect: legibility. The links break at documents. Farmers work land without formal title, the registration certificate that could substitute is still charged for, titled land has been reclassified as forest, cocoa holdings are too micro for bank legality tests, and village training centres are informal, so there is no entity to lend to or contract with. The final round put it plainly: policy is largely in place, but implementation stalls on land title and inconsistent regulation.A,7

The response is a village-led platform, not a new lender. Round III converged on a village-based collaboration and knowledge hub, built on the farmer groups, cooperatives and village enterprises already working, that smallholders use to plan and execute their own climate-related agriculture initiatives, and through which outside capital, advice and buyers connect.A

WHAT THE DOCUMENTS GATE: OIL PALM, PERCENT OF AREA REACHED

Replanting delivered to smallholders — **14%**

400,000 ha of 2.8 million ha of stands over 25 years

Sustainability certification, smallholders — **5%**

335,000 ha of 6.9 million ha held by 2.5 million growers8

Sustainability certification, estates — **75%**

of 7.9 million ha of corporate area; mandatory from 2029

Figures presented in Round II.A Certification also requires an environmental undertaking and worker facilities, which raises the documentary threshold rather than easing it.

WHAT TYPE OF CAPITAL FITS WHICH VILLAGE PRIORITY, AND WHO CAN MOBILISE IT9

Village priority	Capital that fits	Who can mobilise it	What the consultations showed
Starting the hub, training and local cadres	Grants, CSR, crowdfunding, zakat-based productive finance	Philanthropy, crowdfunding platforms, corporate CSR	A zakat-funded programme gives productive grants with bottom-up accompaniment to farm labourers; income gains of 30 to 40 percent appeared after about two years, not twelve months.A
Replanting and farm investment	Plantation fund grants and subsidised credit, routed through cooperatives	Fund agency, banks, district government	The grant exists at IDR 60 million per hectare but has reached one hectare in seven, mostly through individual borrowers.A
Climate and harvest risk	Rainfall-indexed insurance, blended finance with regional banks	Insurers, regional banks, donors, meteorological agency	Index cover pays on a measured trigger rather than loss assessment; uptake depends on basis risk and trust.A,10
Working capital and market access	Offtaker advances, contract farming, closed-loop finance, warehouse receipts	Buyers, processors, agribusiness	One closed loop covers 17,000 ha with IDR 2.8 trillion of bank finance; warehouse receipts fail where warehouses sit far from production.A
Keeping services running after donors leave	Service fees, aggregation margin, impact-based incentives, commodity fund	The hub, cooperatives, village enterprises, impact investors	Proposed in Round III; impact-based payment needs agreed metrics and verification before it can be used.A
Household liquidity	Savings and credit records through branchless banking agents	Banks, women-run village agents	Builds the record that clears the national credit check. Traders remain the default lender and should be brought in gradually, not displaced.A

Credit is one row of six. Each priority is matched to the capital designed for it and to the actor able to mobilise it, rather than routing every need through a loan.

QUESTION 5

How does unequal adaptive labour and land ownership affect women's agency, and what is gained by changing it?

Dimensions read here: economy and politics

Authority does not follow the work

Women lead the steps that create value. In cocoa they drive flavour innovation and post-harvest processing, above all fermentation, which separates a bulk lot from an origin lot; in some programmes around 80 percent of participating farmers are women. Authority does not follow: women without land of their own carry a double burden, their access to technology is narrower, and rice mechanisation cuts labour from roughly twenty people per hectare to one, usually a male operator.A The gap is one of access to land, inputs and technology rather than capability, so it closes through titling, membership rules and machinery access, not training alone.11

What is gained. Participants reported that a stronger role for women in institutions improves transparency, financial accuracy and trust, and that capital programmes designed for women attract participation more readily. Entry points already exist: a village cooperative in South Sumatra chaired by a woman, women-run village banking agents, and a village in Central Lombok put forward in the final round specifically for its women's institutions. Safeguarding against gender-based violence risk belongs in programme design, not evaluation.A

Case evidence: coffee cooperative, Solok, West Sumatra

Problem. Growers sold red cherry individually at IDR 4,000 to 5,000 per kilogram, so the trader set the price.

Model. Farmer groups, training on selective red picking, then a cooperative that processes and sells green and roasted bean. Five years on, the cooperative still receives financial literacy support.

Outcome. The cooperative's purchase price reached IDR 11,000 per kilogram.A

Who holds the bargaining power? It moved from the individual trader to the cooperative, but only as far as the cooperative controls aggregation and a buyer is willing to pay for quality. Buyer commitment, price stability and contract terms still decide how much of the premium stays at farm level, and traders persist through kinship and ease of transaction.A,12

NOTES AND REFERENCES

6 Mathie, A. & Cunningham, G. (2003). From clients to citizens: Asset-based community development as a strategy for community-driven development. *Development in Practice*, 13(5), 474-486.

7 North, D. C. (1990). *Institutions, Institutional Change and Economic Performance*. Cambridge University Press; Besley, T. (1995). Property rights and investment incentives. *Journal of Political Economy*, 103(5), 903-937.

8 Participants also cited about 1 percent for certified smallholders; the difference arises from the denominator, area against number of growers.

9 Scoones, I. (1998). *Sustainable Rural Livelihoods: A Framework for Analysis*. IDS Working Paper 72. Livelihoods draw on several forms of capital, not financial capital alone.

10 Jensen, N. & Barrett, C. B. (2017). Agricultural index insurance for development. *Applied Economic Perspectives and Policy*, 39(2), 199-219.

11 Doss, C. (2018). Women and agricultural productivity: Reframing the issues. *Development Policy Review*, 36(1), 35-50.

12 Bellemare, M. F. & Bloem, J. R. (2018). Does contract farming improve welfare? A review. *World Development*, 112, 259-271; Bernard, T. & Spielman, D. J. (2009). Reaching the rural poor through rural producer organizations? *Food Policy*, 34(1), 60-69.

QUESTION 6

How do religious and customary institutions, and the policy environment, enable or block what smallholders can do?

Dimensions read here: faith and politics

Faith institutions enable, and are already being used. Phase 1 research found that villagers trust local religious figures more than formal climate actors and interpret climate disruption through moral and religious frames.B Where field school guides disappeared, one approach now works through village religious figures because farmers listen to them; in oil palm areas, a joint commitment by the customary head, the village head and the religious leader not to sell village forest land has held land in place and redirected it towards eco-tourism; and Round III listed the mosque pulpit alongside village deliberation forums as a channel for the hub.A Stewardship depends on maintained local institutions rather than training intensity.13

The policy environment mostly blocks, but offers vehicles. Oil palm governance is spread across four coordinating ministries and thirty-seven bodies, with overlapping regulations and district levies such as a rainwater charge of IDR 1,700 per tree per month; farmers described receiving formal title only to find the land redesignated as forest. Policy is calibrated to production volume, very little to resilience. Yet vehicles exist: district and village plans and budgets, provincial oil palm bodies in two provinces, and current national village programmes that participants urged quick wins to align with from the start, so that support survives a change of leadership.A

QUESTION 2

Which districts offer the strongest entry point, and on what criteria?

Dimensions read here: all four

Selection criteria derived from what the consultations showed determines whether an intervention holds:

- An institution that can be formalised
- A buyer within reach
- A tenure gap a district can solve
- Trusted faith or customary leaders
- A baseline per commodity and productivity
- An entry point for women

Candidate village, put forward in Round IV	What the consultations established	What a pilot there would test
A nagari in Payung Sekaki, Solok, West Sumatra	Coffee cooperative operating for about five years; purchase price rose from IDR 4,000 to 5,000 to IDR 11,000 per kg; financial literacy support still ongoing.	Whether a proven cooperative can host the hub's services and carry them after facilitation ends.
Rambitan, Central Lombok	Put forward specifically for its women's institutions.	Whether women-led institutions can anchor titling, membership and machinery rules.
Compreng, Subang, West Java	Put forward alongside the recommendation to begin with a single seasonal commodity such as rice.	Whether one seasonal commodity can show visible results within twelve months.

Only attributes established in consultation are shown; this report sets out criteria and a shortlist and does not select the site. No oil palm or cocoa village was put forward in the final round, so an estate-crop site remains open. For replication, one company's fire-prevention village programme already works across around 400 villages.A

From Findings to Action

What is already working

- Cooperatives converting quality into price at farm level
- Craft buyers paying for fermentation quality and origin
- Closed-loop structures delivering bank finance without farmer collateral
- Zakat-funded productive grants with bottom-up accompaniment
- Women-run village banking agents building credit records

What gaps remain

- No baseline per village, commodity and productivity
- No reconciled production dataset across institutions
- No legal entity in most villages able to transact or contract
- No advisory cadre, and no path back to the village for those trained
- No gender rule attached to mechanisation

What AYANA will do next

- **Set a baseline** per village, commodity and productivity before fixing twelve-month targets
- **Start in one shortlisted village** with one seasonal commodity, then replicate
- **Convene government early** and write quick wins into district and village plans and budgets, so agricultural transformation takes place at village level and survives a change of leadership
- **Bring AYANA's partners** into one policy brief built on People, Perspectives and Politics

Strategic Implications for Ecosystem Building14

01

Treat documentation as climate work

Titling, registration and a reconciled production dataset are the programme's first climate intervention, because every instrument downstream is gated by them.

WHO NEEDS TO COME TOGETHER

District land and plantation offices, village government, cooperatives and the plantation fund agency

02

Identify and connect trusted local actors with technical expertise

Religious and customary leaders, champion farmers and remaining public advisers are the main agents of change. Pair them with agronomists and returning scholarship graduates rather than build a parallel cadre.

WHO NEEDS TO COME TOGETHER

Faith and customary leaders, champion farmers, extension staff, universities and the fund agency's scholarship programme

03

Match capital to village priorities, and quality to buyers

Route capital through the village platform, treat credit as one instrument of six, and pair every quality investment with a buyer who pays for it.5

WHO NEEDS TO COME TOGETHER

Cooperatives and village enterprises, the fund agency, regional banks and insurers, philanthropy and offtakers

04

Set the gender rule before mechanisation

Joint titling, cooperative membership and machinery access decide women's authority. Training alone will not move it.

WHO NEEDS TO COME TOGETHER

Women's farmer groups, cooperatives, village government, machinery providers and safeguarding partners

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NOTES AND REFERENCES

13 Pretty, J. & Ward, H. (2001). Social capital and the environment. *World Development*, 29(2), 209-227.

14 Jacobides, M. G., Cennamo, C. & Gawer, A. (2018). Towards a theory of ecosystems. *Strategic Management Journal*, 39(8), 2255-2276. Ecosystems need an orchestrator because complementary actors cannot be coordinated by contract alone.

- **Outstanding verification.** The certified smallholder share and national cocoa output rest on single institutional sources and should be verified by direct farmer interview before external citation.
- **Currency.** IDR 60 million is of the order of USD 3,700 and IDR 2.8 trillion of the order of USD 170 million, both indicative conversions by the authors.