DISCUSSION STARTER

JANUARY 2026

Repurposing Public Policies for Smallholder Farmers and a Just Rural Transition

A just rural transition in the Global South is primarily about poverty reduction and enhancing food security

Bruce Campbell; Gabriel da Silva Medina; Stephen Whitfield; Aditya Alta; Holly Foster

Poverty remains entrenched amongst rural households in the Global South. This is even the case in upper middle-income countries. For example, in the Caatinga biome of northeastern Brazil – home to 1.4 million smallholders – over half of the population lives with less than half a minimum wage.[1] More that 70% of family farmers in the Northeast Region are poor or extremely poor, with subsistence agriculture predominating.[2] In another upper middle-income country, Indonesia, c. 12 million people live in poverty in rural areas, representing 11% of the rural population – compared to 7% in urban areas.[3] Rural poverty is even more pronounced in poorer countries. In Tanzania – a lower middle-income country – c. 50% of people live in extreme poverty (below the International Poverty Line of $3 per day) and in Malawi (a low-income country) this is c. 75%.[4] Poverty rates are nearly three times higher in rural areas compared to urban areas in Malawi.

Poverty and food insecurity are deeply interconnected. The north and northeast regions of Brazil have the highest incidence of food insecurity and the highest concentrations of families living in poverty and extreme poverty.[5] In Indonesia, stunting is frequent (a third of children under age five in the late 2010s), more so in rural areas than urban areas.[6]

Such stunting rates are usually only seen in low-income countries. In a survey in Lushoto, Tanzania, only 33% of households were above the poverty line, 15% were below the poverty line and above the calorie line, while 52% were below the poverty and calorie line.[7]

Vulnerability is also influenced by gender and ethnicity. In the poverty-entrenched Caatinga, smallholdings are dominated by mestizos/brown farmers and the frequency of female heads of households is greater than the national average. Female producers are responsible for 24% of smallholdings but they only control 15% of the land.[8]

While there are many contributing factors to poverty and food insecurity in rural areas, one such factor is climate change, given the strong dependence of agricultural production on rainfall and temperature. The Brazilian Caatinga, with its semi-arid climate, is highly vulnerable to climate change.[9] In Indonesia, climate modelling estimates that the deficit of husked rice will be 90 million tons by 2050.[10] In Tanzania, severe and frequent climatic extremes (drought, heavy rainfall, temperature variations, strong winds, reduction of growing season) have reduced the productivity of crops grown by smallholder farmers, negatively impacting local food supplies.[11]

'Just transition' comes from the global imperative to decarbonize the economy (climate change mitigation). 'Just transition' refers to the need that this environmental objective must go together with protecting livelihoods, creating work opportunities, and preventing social and economic disruption for those most vulnerable yet least represented in policy and decision-making processes. For a just rural transition in the Global South, the overall goal is less about the environment and more about poverty reduction and enhancing food security, and thus also about climate change adaptation. Nonetheless, there are also environmental concerns. The Caatinga boasts a unique Brazilian vegetation (dry tropical forests, shrublands and savannas of varying densities with and without succulents). The Caatinga has undergone and continues to undergo loss of natural vegetation, e.g., the region had the second highest recording of deforestation alerts in Brazil in 2022.[12] This is primarily due to the expansion of livestock ranching and cropping.[13] In 2025 the region stood out in terms of a significant increase in wildfires linked to drought and agricultural expansion, contradicting the downward trend in other Brazilian biomes. Much of the negative impact is driven by large-scale commercial farmers rather than smallholders.[14] Globally, rice production is a major source of GHG emissions (c. 10% of total agricultural emissions). In Indonesia, it contributes about a third of agricultural emissions. Soil resources in parts of Tanzania are rapidly being depleted by increased rates of soil erosion.[15] In Africa, Tanzania has one of the highest rates of forest loss.[16]

The role and limitations of agri-cultural subsidies

When it comes to repurposing policies for a just rural transition, plenty of the global focus is on agricultural subsidies as these are large and can inadvertently drive negative environmental outcomes. Globally-focused research suggests that repurposing a portion of government spending on agriculture each year to scale-up more emission-efficient technologies for crops and livestock could reduce global emissions from agriculture by more than 40 percent.[17] There are many good reasons for using subsidies that differ depending on country context and intended objectives, such as to increase price stability, enhance food security, support farmers' incomes, reduce rural poverty and improve environmental outcomes. However, there is a huge international literature on the challenges in, and negative impacts of, subsidy programs.

In earlier research in Sub-Saharan Africa, the evidence indicated that the costs of the programs generally outweigh their benefits.[18] Many programs do not have the intended impacts on productivity, food security and poverty, while at the same time being politically entrenched and a huge burden on the national treasury. Subsidies also often drive soil degradation and reduce diversification through incentivising monocropping and input systems, thus undermining climate resilience. Through these incentives and land conversion, subsidies can also increase GHG emissions and forest loss. In addition, many suffer logistical and administrative challenges and crowd out of the private sector. As an example, 30% of Malawi's agricultural budget was earmarked for subsidised inorganic fertiliser in the fiscal year 2023/24 but soil degradation continues, and outcomes for yields, livelihoods, food security and agricultural development are disappointing.[19] With more than 29 tons of topsoil lost per hectare annually, Malawi's soil degradation rate is 10 times the global average.

Countries allocate large amounts to subsidies. In many countries in the Global South, these are directed toward making inputs more accessible to farmers, particularly inorganic fertilisers. In Brazil, c. US$ 100 bn goes to agricultural subsidies, in the form of credit channeled through national banks, but only 13% of that goes to family farmers.[20] Smaller allocations by government go to agricultural insurance (c. US$ 1.3 bn) and government procurement programs (c. US$ 0.7 bn). In Brazil, around 80% of family farmers remain unmet by the current agricultural policies.[21]

In Indonesia, nearly US$ 3 bn is allocated to fertiliser subsidies, nearly US$ 600 m more than the entire budget of the Ministry of Agriculture.[22] The subsidy operates through the state-owned Pupuk Indonesia Holding Company (PIHC); the government paying PIHC to produce and deliver fertiliser at a discounted price. This can then be bought by eligible farmers. Despite many adjustments to the subsidy program over the years, the subsidies have not increased agricultural productivity or ensured farmers' livelihoods. Challenges are compounded by misallocations and delays in delivery of subsidized fertiliser.[23]

In less wealthy countries, the amounts are smaller but still significant, the bulk going to inorganic fertilisers – in Tanzania US$ 147 m goes to subsidies, nearly 30% of the agricultural budget. In Zambia the amount is US$ 320 m, nearly 60% of the agricultural budget. In Tanzania, the government provides a partial subsidy on key fertilisers.

A national audit report found the presence of fertilisers of questionable quality in the market and limited access of fertilisers to farmers. In five regions surveyed, only 25-42% of agrodealers were selling subsidized fertilisers and 75% of registered farmers in the subsidy program did not access subsidized fertilisers.[24]

Directions for repurposing agricultural input subsidies

Incentivizing integrated soil fertility management (ISFM)

The dominant focus of subsidies on inorganic fertilisers (and often only a minimum number of blends) has disincentivized a broader approach to soil management, such as organic matter management, intercropping and rotations (especially with legumes to fix nitrogen), applying soil and water conservation practices and area-specific fertiliser recommendations.

A number of governments are broadening the scope of what is on offer to farmers as subsidies. In Tanzania, less soil acidifying blends are now included in the subsidy program. In Indonesia, organic fertilisers have now been added to the subsidy program, but the biggest gap between subsidised fertiliser supply and demand is still organic fertilisers.[25]

Other governments are giving inorganic fertiliser subsidies but with soil management conditionalities. In Zimbabwe, the subsidy program supports maize production through a standard input package but requires recipients to adopt conservation agriculture principles, and some of the output is required to go into the strategic grain reserve if the recipient is to qualify for the subsidy program in the subsequent year.[26] In Malawi, a pilot is being conducted where farmers are required to apply soil and water conservation practices, a diversification practice and an ISFM nutrient management practice. In other countries, better targeting of fertiliser blends to local conditions is also being advanced by, for example, greater attention to soil testing and soil mapping.

Promoting diversification

Subsidy programs often focus on the dominant crop (for calories and/or export), such as maize in Southern and Eastern Africa, rice in South East Asia and soyabean in Brazil.

Subsidy programs often focus on the dominant crop (for calories), such as maize in Southern and Eastern Africa and rice in South East Asia. Farm diversification can be promoted by allowing a range of eligible fertilisers (e.g. for legumes) and seeds. In Malawi during the late-2000s, legume seeds were added to the subsidy package, with positive impacts on household nutrition.[27]

Agricultural credit

Subsidies to support agricultural credit – managed by banks – are well advanced in Brazil. With credit (at subsidized interest rates) farmers can decide what they need. Mostly it is spent on seeds, fertilisers and agrochemicals. To a lesser extent, credit is also used for long-term investments, such as acquiring tractors or improving farmland. The challenge with credit is that it favours the larger farmers, as farmers have collateral and risks are lower for banks. The other challenge is, of course, that it needs to be repaid with interest. Recent economic pressures in Brazil have led to a growing number of credit defaults and an increasing number of farmers selling their land. Rural credit defaults reached historically high levels (7.9%) in the first quarter of 2025.

Credit can also come with conditionalities, which is important when considering repurposing. In Brazil, there is an effort to link credit to the adoption of sustainable agricultural practices, as encouraged by the Brazilian Agricultural Policy for Climate Adaptation and Low Carbon Emission (ABC+ Plan). This national strategy aims to prepare the sector for the impacts of climate change.

Direct payments to farmers

As with credit, direct payments give farmers the opportunity to choose what they use the subsidy for. This is being suggested as an approach in Indonesia, where it is proposed to eliminate the fertiliser and seed subsidy program and replace it by direct payments to Farmer Cards.[28] This would open-up private sector competition and increase input choices for farmers. A key question is how such direct payments can be linked to ensuring that sustainable practices are implemented.

Payment for ecosystem services (PES)

Farmers can be rewarded for practices that provide public ecosystem services. The concept has been around since the 1970s with some of the best examples for agriculture coming from Costa Rica. Protecting biodiversity and water catchments have dominated the literature, but recently there has been an upsurge in interest in carbon markets. PES would involve shifting subsidies (or a portion thereof) from inputs to nationally desirable outcomes.

Extension, R&D and market development

Given the huge budget allocation to fertiliser acquisition, many crucial components for agricultural development are crowded out. Funds allocated to subsidies could be shifted to help develop a better supply of climate-resilient and high-yielding seed varieties and to making them more available to farmers.[29] Advisory services can be greatly improved to build capacity in ISFM and crop management. For example, in the Caatinga only 8% of smallholders receive technical assistance.[30] Without markets, farmer are unlikely to adopt higher-yielding practices, given they come with considerable risks, so resources are also needed to improve market conditions (infrastructure, policies) and increase farmers' entrepreneurial capacity. New sources of income for smallholder farmers can also be developed through concentrated R&D, extension and market development efforts for niche products.

Going outside the agricultural sector to repurpose agricultural support

Farming employs as much as 86% of the labour force in developing countries,[31] so any agricultural transformation must be just and equitable.

Farming employs as much as 86% of the labour force in developing countries so any agricultural transformation must be just and equitable.

But a strong case must be made for going outside the agricultural sector if a just rural transition is to be achieved. Most farms across nine sub-Saharan countries are less than 2 ha. Such farms would need to generate a minimum of US$ 1,250 per hectare per year to reach the poverty line.[32] But in Mozambique, Zimbabwe and Malawi, for example, the mean values are only $78/ha, $83/ha and $424/ha, respectively. At locations in four SSA countries, land is so constraining that only 42–53% of households achieve food self-sufficiency, and only a small proportion of households can achieve a living income.[33]

Households with small farms are also characterized by constraints other than land area, e.g. limited livestock (and thus limited manure for soil health) and limited labour (in the face of the need to find off-farm work, generally low-paid). Repurposing agricultural subsidies using the tools of agricultural ministries is not going to deliver on poverty and food security; actions outside the agricultural sector will also be needed, including growing rural non-farm employment and providing the necessary training schemes for new livelihood opportunities. The following directions for action go outside the agricultural sector, but agricultural ministries would still be important contributors.

Unconditional cash transfers

The example of the Farmer Cards represents a conditional cash transfer in that the money can be used for agricultural inputs. Unconditional cash transfers go further, with households able to purchase anything. While this may be regarded as too radical by an agricultural ministry, such cash transfers have been met with much success. In Zambia, cash transfers have increased food security and a range of productive outcomes for the poorest households. After three years, household spending is nearly 70% higher than the cash transfer received, a result of increased non-farm activity and agricultural production.[34] Unconditional cash transfers, while partly incentivizing agricultural development, are also the ambit of social welfare ministries as they are a key tool for poverty reduction and social protection.

Brazil is advanced in using cash transfers.[35] About 50% of households in the Caatinga receive cash transfers from the Bolsa Família Program, indicating significant economic hardship, as this program earmarks the poorest households.[36] A key question would be whether unconditional cash transfers would incentivize sustainable agriculture practices, such as applying greater attention to soil health.

Public works programs

Public works programs are another form of social protection for the most vulnerable households, where households are offered food or cash for manual labour, directed to such issues as catchment management, soil erosion and flood control, road maintenance, building of schools, amongst others. A good example comes from Ethiopia's Productive Safety Net Programme (PSNP) which has been running for nearly two decades.[37] PSNP has positive impacts on food security. There are also positive impacts on fertilizer use, terracing and crop yields but only when the program was combined with complementary programming (e.g. enhanced extension services, group formation, financial literacy and entrepreneurial training). There is also some evidence of improved schooling outcomes and reduced child labour.

School feeding programs

Ministries of health and education can also be a tool for repurposing. School feeding programs are central to healthy diets and good nutrition but can also be a key means of driving rural transitions through procurement processes that target smallholders and sustainably produced nutritious products. In the context of family farming in Brazil, government procurement programs such as the National School Feeding Program (PNAE) and the Food Acquisition Program (PAA) have been successful in providing reliable markets for fruits and vegetables produced by small farmers, while simultaneously ensuring fresh and nutritious food for students in public schools.[38] Procurement can also be linked to sustainable agricultural practices.

Enhancing the digital economy

Given rural differentiation, national farmer databases are needed to better target farmers with context-specific climate-informed advisories, and to better connect farmers to subsidised inputs through e-vouchers or farmer cards. While agricultural ministries may be key players in the development and operation of such systems, ministries that lead digital development would also be key given the challenges in this sector (e.g. connectivity, accessibility, common data standards, digital literacy). In addition, social assistance, poverty and farmer databases should be integrated to ensure appropriate and transparent beneficiary targeting.[39] Cash transfers, farmer cards, and e-voucher systems all require digital financial inclusion and literacy. This will require agricultural extension officers cooperating with bank and mobile money agents to help farmers apply for and use the systems. Digital systems may also support in promoting transparency and reducing corruption.

Power and voice

Government officials primarily shape policy but their perspectives may not align well with those of rural communities. Policies may focus on specific classes or regions within rural communities, or speak better to agribusiness interests than to farmer interests. Input markets for farmers (fertiliser, seeds, agrochemicals) are driven by large companies that can exert powerful influences on national policies and repurposing agendas.[40] In some cases, the powerful agricultural organisations of the large-scale producers have considerable influence on policy through their lobbying efforts.

On the other hand, family farmers have limited voice compounded by a limited capacity to effectively engage.

This is also why the dominant science, technology and innovation paradigms privilege certain products and ways of knowing over marginalised knowledge systems. In the context of agri-support measures, this manifests in how, for example, chemical fertiliser and other industrial solutions have been a constant part of the support package over locally-sourced alternatives for soil health. While a just transition in the Global South is primarily around poverty and food security, different repurposing options benefit different objectives, and because there are often multiple competing priorities, any repurposing effort will inevitably come with trade-offs. This is a strong part of the argument for why we need to include diverse voices and different stakeholders in dialogue on policy processes.

Given the size of subsidy programs, these programs additionally provide fertile ground for rent-seeking behaviour by public officials and unscrupulous businesses, and are also used as means towards buying votes. In Ghana, where fertilisers are subsidised at 50%, a large illegal market has developed to divert fertilisers to neighbouring countries.[41] In a much earlier study in Malawi, fertiliser distribution was linked to organised crime.[42] Farmers and other stakeholders in Tanzania have many negative perceptions about the subsidy program: distrust in suppliers and officials, bribery, nepotism, fake fertilisers, lack of clarity in processes, access issues and bureaucratic delays.[43] In Indonesia, empirical findings reveal challenges in distribution, including corruption and leakages into black markets.[44]

Because of these issues and local realities that are underrepresented, and in cases repudiated, in policy fora, repurposing activities must give voice to farmers and other rural dwellers and stakeholders. It is important to engage with and listen to those that are most at risk in a rural transition to ensure that outcomes are just and trade-offs are balanced equitably along the food value chain. Empowerment, capacity development and retooling will also be crucial.

Graduations and exit strategies

One crucial element of a smart subsidy program is an exit strategy. Households should graduate from one state to another (e.g. from food insecure to food secure; from input assistance to full market mechanisms). There is not much attention to 'exit strategies' in the literature, probably because subsidy programs tend to become permanent, and are, politically, very difficult to end. Exit strategies need more attention. One issue is that tracking graduations is difficult because of weak monitoring and evaluation mechanisms. That is why there are explicit calls in subsidy repurposing to have goals, indicators, and deadlines that will allow users assisted by the program to become independent of it and allow the government to determine when interventions are unsuccessful or require adjustment.[45]

Conclusion

Subsidies represent large budget allocations by many national governments in the Global South, and these subsidies do not always achieve the desired outcomes. Repurposing input subsidy programs represents a huge opportunity for achieving better outcomes from agriculture: enhanced food security, livelihoods and environment.

Countries will have different strategies and purposes for repurposing subsidies, but many will benefit from incentivizing integrated soil fertility management, promoting diversification, and giving more attention to family farmers. For example, in Brazil, a better balance between the subsidies to credits (with a budget of US$ 100 bn per year) and the government procurement programs providing farmers with markets (with a budget of US$ 0.7 bn per year) would have the potential to benefit a larger number of family farmers in poor areas such as the Caatinga.

Repurposing must be tackled both from within the agricultural sector and outside the sector if a just rural transition is to be achieved. Critically, repurposing efforts must be accompanied by efforts to ensure that voices from all stakeholders are incorporated, particularly those smallholders farming on the frontlines of climate change.

References

1 de Albuquerque, A., Assunção, J., Castro, P., Hoover, N. and de Miranda, G., 2023. Smallholders in the Caatinga and the Cerrado: A Baseline Analysis for a Rural Just Transition in Brazil. Climate Policy Initiative, Rio de Janeiro.

2 da Silva, G.S., Amarante, P.A. and Amarante, J.C.A., 2022. Agricultural clusters and poverty in municipalities in the Northeast Region of Brazil: A spatial perspective. Journal of Rural Studies, 92, pp.189-205.

3 Sari, R.M. and dan Agussalim, N.D.S.S., 2025. The Dynamics of Rural Poverty in Indonesia: Perspectives from Local Communities, Government, and the International Community. International Journal of Environmental Sciences, 11(6s), pp.534-553.

4 Hasell, J. and Arriagada, P., 2023. OWID Data Collection: Inequality and Poverty. Our World in Data. https://ourworldindata.org/poverty

5 Cherol, C.C.D.S., Ferreira, A.A., Lignani, J.D.B. and Salles-Costa, R., 2023. Regional and social inequalities in food insecurity in Brazil, 2013-2018. Cadernos de Saúde Pública, 38, p.e00083822.

6 McCarthy, J.F., Nooteboom, G. and McWilliam, A., 2023. Understanding agrarian change: Scenarios of agricultural development, income diversification, food poverty and nutritional insecurity in Indonesia. The Paradox of Agrarian Change, p.1

7 Hammond, J., Pagella, T., Caulfield, M.E., Fraval, S., Teufel, N., Wichern, J., Kihoro, E., Herrero, M., Rosenstock, T.S. and van Wijk, M.T., 2023. Poverty dynamics and the determining factors among East African smallholder farmers. Agricultural Systems, 206, p.103611.

8 de Albuquerque, A., Assunção, J., Castro, P., Hoover, N. and de Miranda, G., 2023. Smallholders in the Caatinga and the Cerrado: A Baseline Analysis for a Rural Just Transition in Brazil. Climate Policy Initiative, Rio de Janeiro.

9 de Albuquerque, A., Assunção, J., Castro, P., Hoover, N. and de Miranda, G., 2023. Smallholders in the Caatinga and the Cerrado: A Baseline Analysis for a Rural Just Transition in Brazil. Climate Policy Initiative, Rio de Janeiro

10 Syaukat, Y., 2011. The impact of climate change on food production and security and its adaptation programs in Indonesia. J. ISSAAS, 17(1), pp.40-51.

11 Gwambene, B., Liwenga, E. and Mung'ong'o, C., 2023. Climate change and variability impacts on agricultural production and food security for the smallholder farmers in Rungwe, Tanzania. Environmental Management, 71(1), pp.3-14.

12 Costa, D.P., Lentini, C.A., Cunha Lima, A.T., Duverger, S.G., Vasconcelos, R.N., Herrmann, S.M., Ferreira-Ferreira, J., Oliveira, M., da Silva Barbosa, L., Cordeiro, C.L. and Santos, N.A., 2024. All deforestation matters: deforestation alert system for the Caatinga biome in South America's tropical dry forest. Sustainability, 16(20), p.9006.

13 Franca Rocha, W.J., Vasconcelos, R.N., Costa, D.P., Duverger, S.G., Lobão, J.S., Souza, D.T., Herrmann, S.M., Santos, N.A., Franca Rocha, R.O., Ferreira-Ferreira, J. and Oliveira, M., 2024. Towards Uncovering Three Decades of LULC in the Brazilian Drylands: Caatinga Biome Dynamics (1985–2019). Land, 13(8), p.1250.

14 Niemeyer, J. and Vale, M.M., 2022. Obstacles and opportunities for implementing a policy-mix for ecosystem-based adaptation to climate change in Brazil's Caatinga. Land Use Policy, 122, p.106385.

15 Wynants, M., Patrick, A., Munishi, L., Mtei, K., Bodé, S., Taylor, A., Millward, G., Roberts, N., Gilvear, D., Ndakidemi, P. and Boeckx, P., 2021. Soil erosion and sediment transport in Tanzania: Part II–sedimentological evidence of phased land degradation. Earth Surface Processes and Landforms, 46(15), pp.3112-3126.

16 Ritchie, H., 2021. Deforestation and forest loss. Our world in data. https://ourworldindata.org/deforestation

17 Gautam, M., Laborde Debucquet, D., Mamun, A., Martin, W., Piñeiro, V. and Vos, R., 2022. Repurposing agricultural policies and support: options to transform agriculture and food systems to better serve the health of people, economies, and the planet. Washington, DC: World Bank; and International Food Policy Research Institute (IFPRI).

18 Jayne, T.S. and Rashid, S., 2013. Input subsidy programs in sub-Saharan Africa: a synthesis of recent evidence. Agricultural economics, 44(6), pp.547-562.

19 Campbell, B.M., Nyirongo, J., Botha, B., Duchoslav, J., Munthali, M.W., Nyondo, C., Sunga, I. and Wollenberg, E.K., 2023. From input subsidies to compensating farmers for soil health services.

20 Corcioli, G., Medina, G.D.S. and Arrais, C.A., 2022. Missing the target: Brazil's agricultural policy indirectly subsidizes foreign investments to the detriment of smallholder farmers and local agribusiness. Frontiers in Sustainable Food Systems, 5, p.796845.

21 da Silva Medina, G., Gosch, M.S. and DelGrossi, M.E., 2021. Development pathways for family farmers: Lessons from Brazil on the need for targeted structural reforms as a means to address regional heterogeneity. Geoforum, 118, pp.14-22.

22 Firdausi, S., Supriyanto, R. and Alta, A., 2025. Targeting Efficiency: Reviewing Indonesia's Fertilizer Subsidy Reform. Center for Indonesian Policy Studies (CIPS), Jakarta

23 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

24 National Audit Office. 2024. Performance audit report on the regulation of distribution of fertilisers. The United Republic of Tanzania.

References

25 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

26 https://sdgs.un.org/partnerships/zimbabwe-pfumvudza-programme

27 Khonje, M.G., Nyondo, C., Mangisoni, J.H., RickerGilbert, J., Burke, W.J., Chadza, W. and Muyanga, M., 2022. Does subsidizing legume seeds improve farm productivity and nutrition in Malawi?. Food Policy, 113, p.102308

28 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

29 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

30 de Albuquerque, A., Assunção, J., Castro, P., Hoover, N. and de Miranda, G., 2023. Smallholders in the Caatinga and the Cerrado: A Baseline Analysis for a Rural Just Transition in Brazil. Climate Policy Initiative, Rio de Janeiro

31 Roser, M., 2023. Employment in agriculture. Our world in data. https://ourworldindata.org/employment-in-agriculture

32 Harris et al., 2019. Can African smallholders farm themselves out of poverty? The Conversation.

33 Giller et al., 2021. Small farms and development in sub-Saharan Africa: Farming for food, for income or for lack of better options? Food Security, 13(6), pp.1431-1454.

34 Handa, S., Natali, L., Seidenfeld, D., Tembo, G., Davis, B. and Zambia Cash Transfer Evaluation Study Team, 2018. Can unconditional cash transfers raise long-term living standards? Evidence from Zambia. Journal of Development Economics, 133, pp.42-65.

35 Graziano da Silva, J.F., Dahlet, G., Takagi, M., DelGrossi, M., Lima, P.D. and Ceolin, S., 2019. From Fome Zero to Zero Hunger: A global perspective.

36 de Albuquerque, A., Assunção, J., Castro, P., Hoover, N. and de Miranda, G., 2023. Smallholders in the Caatinga and the Cerrado: A Baseline Analysis for a Rural Just Transition in Brazil. Climate Policy Initiative, Rio de Janeiro.

37 Hoddinott, J., Berhane, G., Gilligan, D.O., Hirvonen, K., Kumar, N., Lind, J., Sabates-Wheeler, R. and Taffesse, A.S., 2024. Securing food, building livelihoods? A 15-year appraisal of Ethiopia's Productive Safety Net Programme (No. 2024/76). WIDER Working Paper.

38 Fonseca, C.V.C., Proença, Y., Luna, I. and Saes, M.S.M., 2025. Transformative policies in Brazilian agri-food systems: An analysis of family farm procurement under the national school feeding program. Food Policy, 132, p.102856.

39 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

40 Tups, G. and Dannenberg, P., 2023. Supplying lead firms, intangible assets and power in global value chains: explaining governance in the fertilizer chain. Global Networks, 23(4), pp.772-791.

41 Asante, K.T. and Mullard, S., 2021. Social accountability and anti-corruption in Ghana's Fertiliser Subsidy Programme. U4 Issue 2021, 6. Chr. Michelsen Institute.

42 Tambulasi, R.I., 2009. The public sector corruption and organised crime nexus: The case of the fertiliser subsidy programme in Malawi. African Security Studies, 18(4), pp.19-31.

43 Mbita, O.D., Nicholaus, M.R. and Twahir, R.K., 2025. Evaluating the Efficiency and Reliability of Fertilizer Subsidy Systems: The Role of Blockchain in Driving Enhancements in Tanzania. Journal of Applied Sciences and Environmental Management, 29(1), pp.79-84.

44 Harianto, S., Putri, R. T., Pribadi, F., Agustin, D. N., & Jie, F. (2025). The Political Economy of Fertilizer Scarcity: Social and Economic Implications for Smallholder Agriculture in Indonesia—Governance Challenges, Rural Livelihoods, and Policy Reform. Future of Food: Journal on Food, Agriculture and Society, 13(2).

45 Alta, A., Setiawan, I. and Fauzi, A.N., 2021. Beyond fertilizer and seed subsidies: Rethinking support to incentivize productivity and drive competition in agricultural input markets (No. 43). Policy Paper.

About the authors

Bruce Campbell is the Chief Innovation Strategist at Clim-Eat

Gabriel da Silva Medina is a Professor at the Faculty of Agronomy and Veterinary Medicine at University of Brasilia

Stephen Whitfield is a Professor of Climate, Agriculture and Food at University of Leeds

Aditya Alta is the Head of Research at Center for Indonesian Policy Studies

Holly Foster is the Programme and Advocacy Officer at Clim-Eat