# Coffee futures from Evidensia

Informing action for a sustainable future

October 2020

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# Why ‘Coffee Futures’?

Evidensia’s mission is to inform sustainability practice and action with credible evidence and insights. Through October 2020, Evidensia ran a month-long campaign to share key insights, trends and analysis focused on coffee and sustainability. The ‘Coffee Futures’ campaign provided curated insights and learnings on a range of topics touching the coffee sector. **Importantly it asked – what do we know about the impacts of market-based sustainability tools and what can we learn from this evidence?**

This slide deck is a compilation of the key insights emerging from this campaign. It is a resource intended to support work by all stakeholders working towards furthering sustainability in the coffee sector. We hope it helps bridge the gap between evidence and action.

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Handful of coffee in Colombia © SAN

# Key topics covered in the campaign

*Click on links below to go straight to that section of this deck*



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# Impact of COVID-19 on the coffee sector

Coffee cherries © Rainforest Alliance

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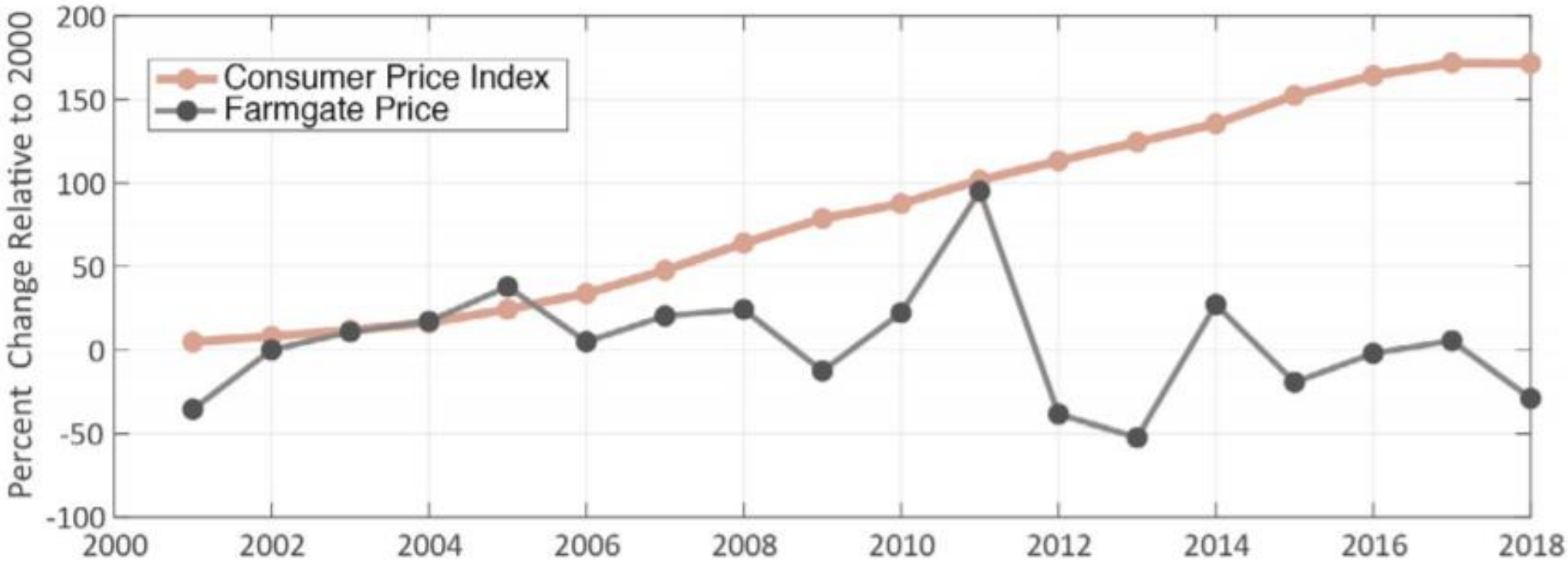
We start our coffee insights with the impacts and projected challenges of COVID-19.

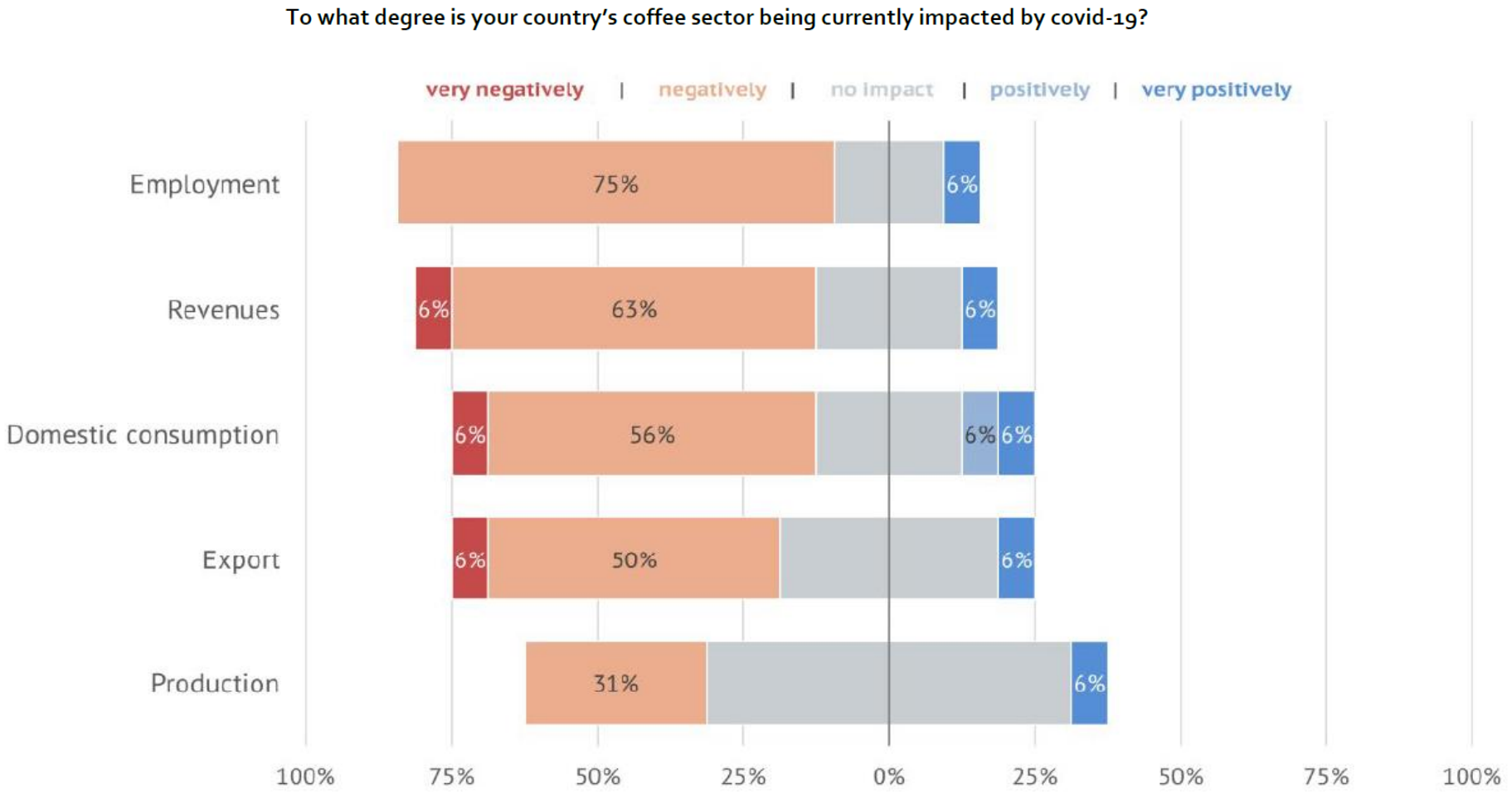
This paper assesses the impacts of the Covid-19 pandemic in the context of multiple shocks faced by coffee farmers over the last decades - falling prices, labour shortage, glut in demand and continued oversupply keeping prices depressed.




CPI and farmgate prices are averaged across the 25 coffee growing regions with consistent farmgate price data. CPI data is from the World Bank; the farmgate price data is from the ICO (2020a).

Click to access this study: Guido, Z. *et al*, 'will COVID-19 be one shock too many for smallholder coffee livelihoods?', World Development, 2020.

A survey by the International Coffee Organisation (ICO) with coffee exporting countries launched in May 2020 indicates multiple challenges hitting the coffee sector - employment, revenues, domestic consumption and export - representing an unprecedented joint supply and demand shock.

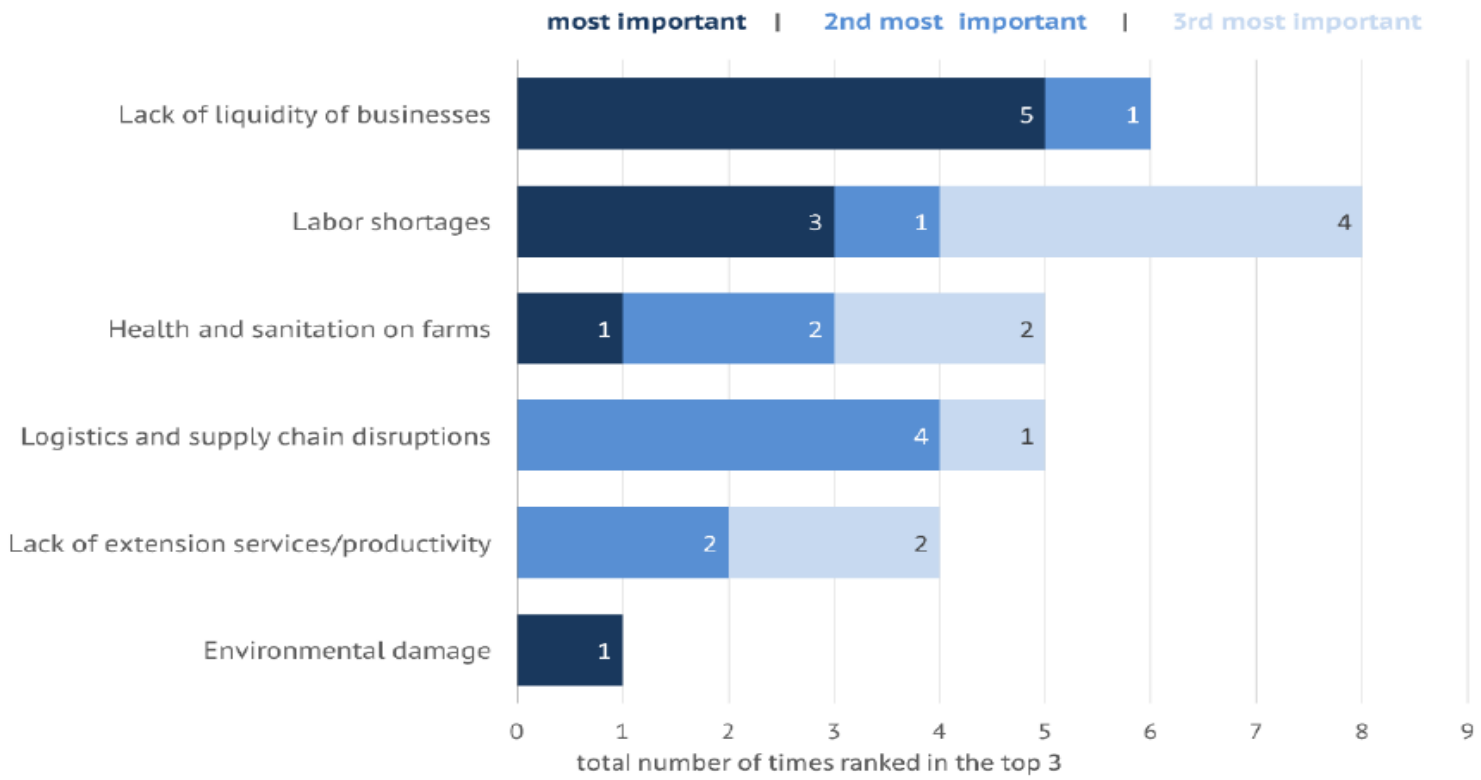



Click to access this report: International Coffee Organisation, 'Impact of COVID-19 on the global coffee sector: Survey of ICO exporting members' ICO Coffee Break Series, No 3, 2020.

The survey raises concerns around the long-term sustainability of the sector, as reduced incomes will likely lead to increased poverty, reduced investment in sustainability, and potential reliance on harmful coping-measures such as child labour.

Labour and finance have been identified as areas of key concern over the year, with environmental damage less of a priority.

**Figure 12: What are the most important areas in which technical or financial assistance is required over the next year to mitigate the damage caused by covid-19?**




Click to access this report: International Coffee Organisation, 'Impact of COVID-19 on the global coffee sector: Survey of ICO exporting members' ICO Coffee Break Series, No 3, 2020.

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# Coffee sector general trends

Coffee beans, Vietnam © Rainforest Alliance

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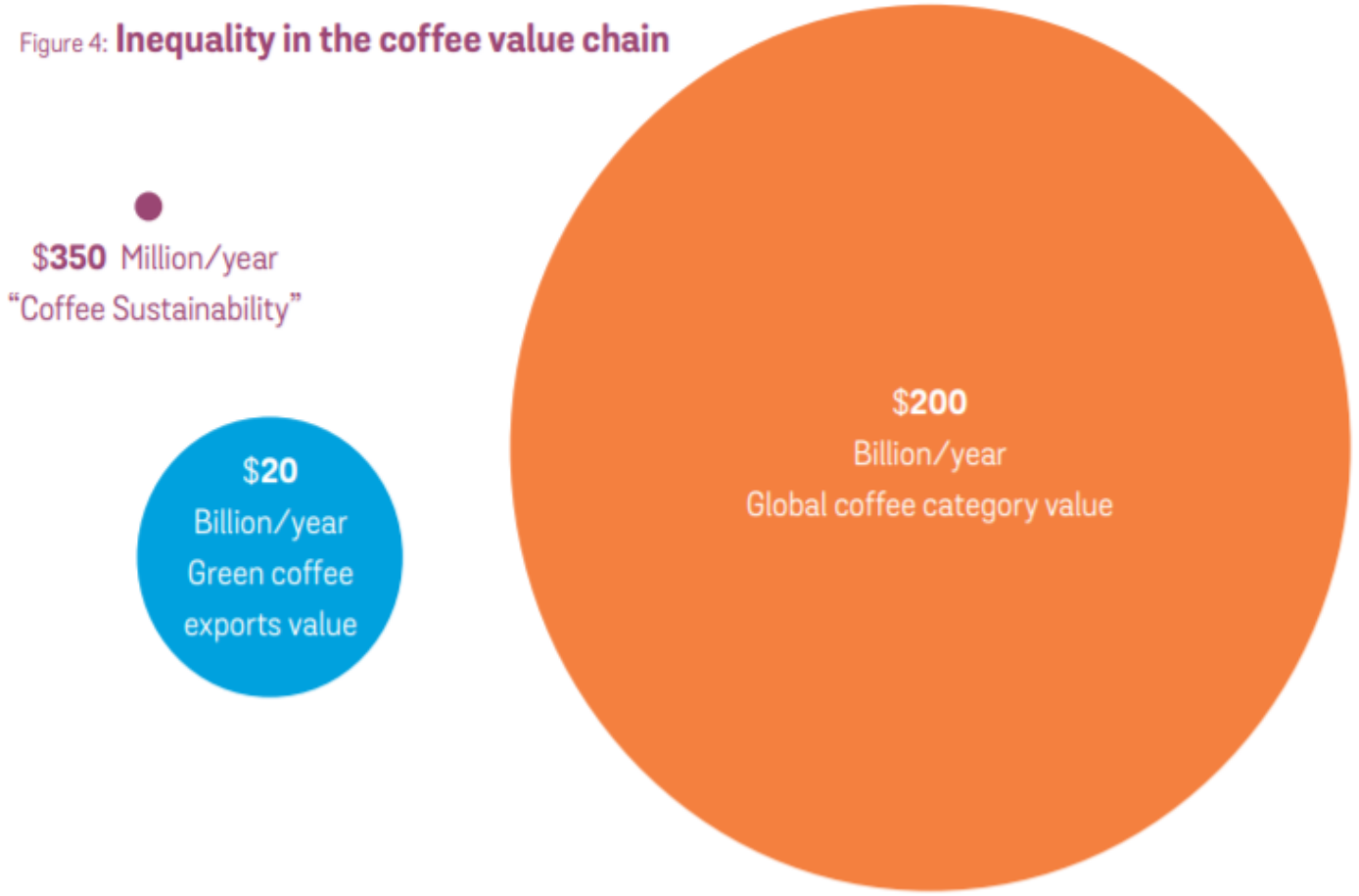
The Coffee Barometer from HIVOS, Solidaridad, Oxfam, Conservation International and COSA reports that the green coffee export value is less than 10% of the $200 billion revenues generated in the coffee retail market.

Figure 4: **Inequality in the coffee value chain**

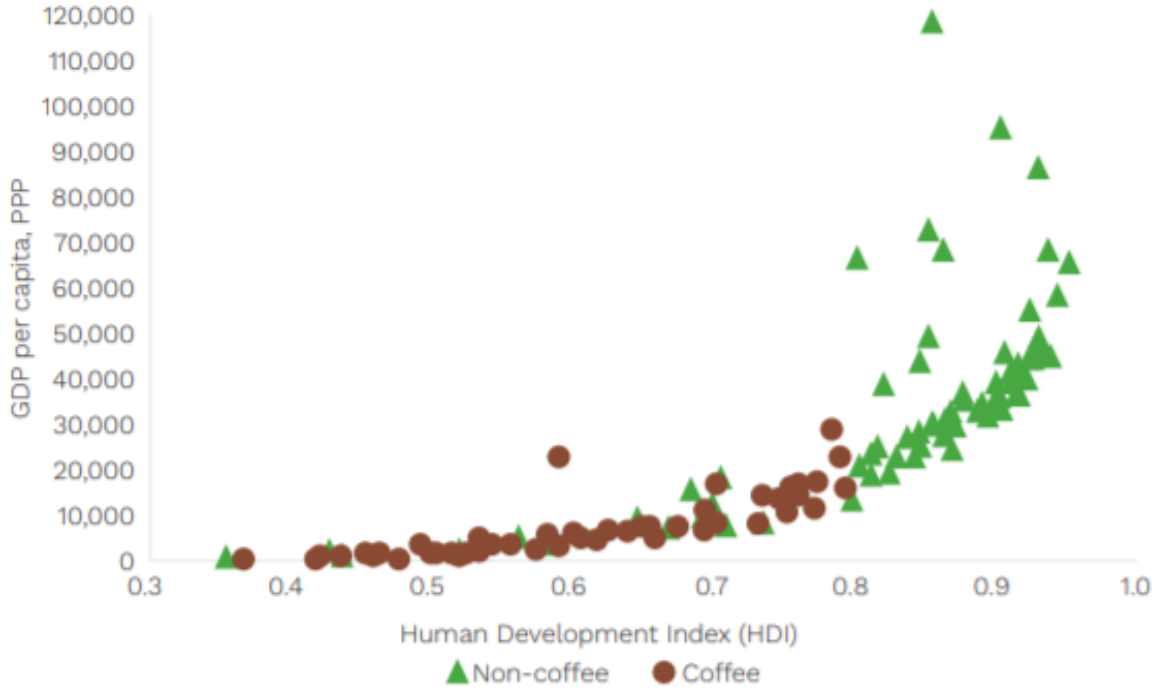



Click to access this report: Panhuysen, S., Pierrot, J. (2018). Coffee Barometer 2018.

With over 90% of coffee exported in green form, value addition remains concentrated in importing countries. This value chain inequality is also apparent when comparing the income and human development index (HDI) of coffee-producing and non-coffee-producing countries.

**FIGURE 2**

Coffee is produced in countries with relatively low income (2017)

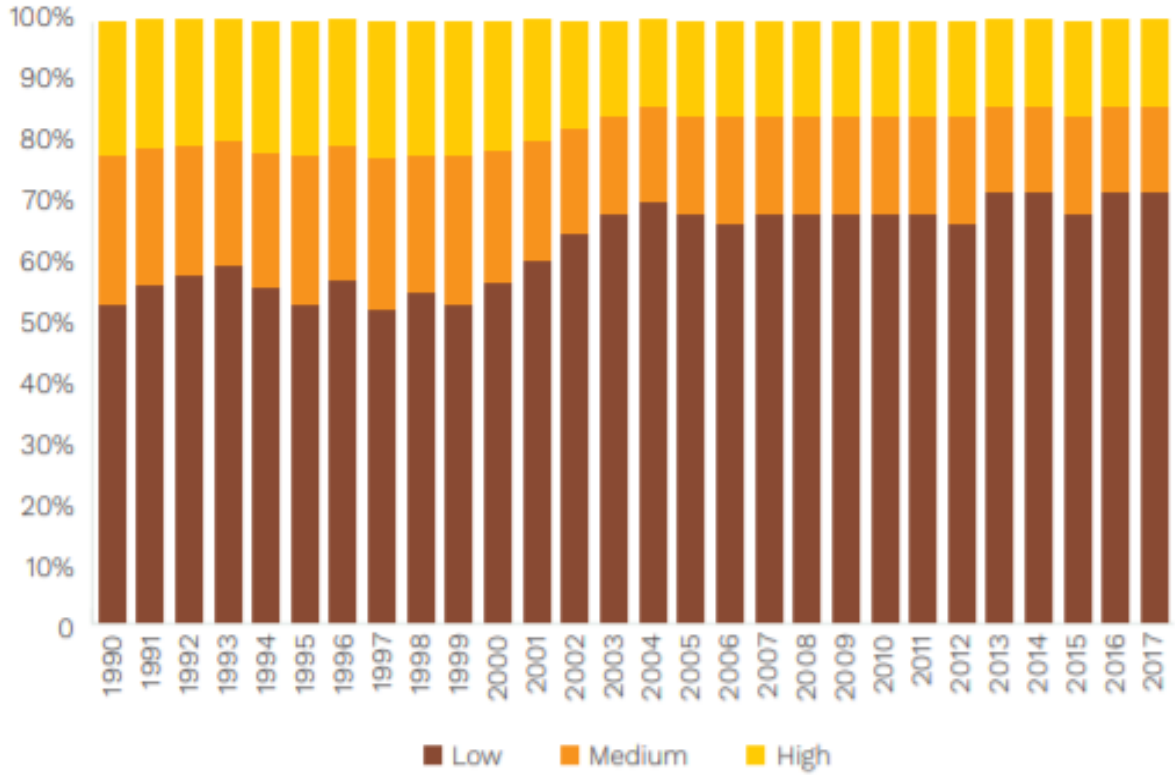



**SOURCE:** World Bank / United Nations

Click to access this report: International Coffee Organisation (ICO), 'Growing for prosperity: Economic viability as the catalyst for a sustainable coffee sector', Coffee Development Report 2019.

The pandemic has hit export-dependent countries the hardest underlining the growing importance of boosting domestic consumption. This data shows the country classification of coffee export dependence.

**FIGURE C2** Share of sample countries classified by coffee export dependency




**SOURCE:** ICO

Click to access this report: International Coffee Organisation (ICO), 'Growing for prosperity: Economic viability as the catalyst for a sustainable coffee sector', Coffee Development Report 2019.

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# Reach and scope of market-based sustainability tools

Coffee Nursery, Uganda © UTZ Certified

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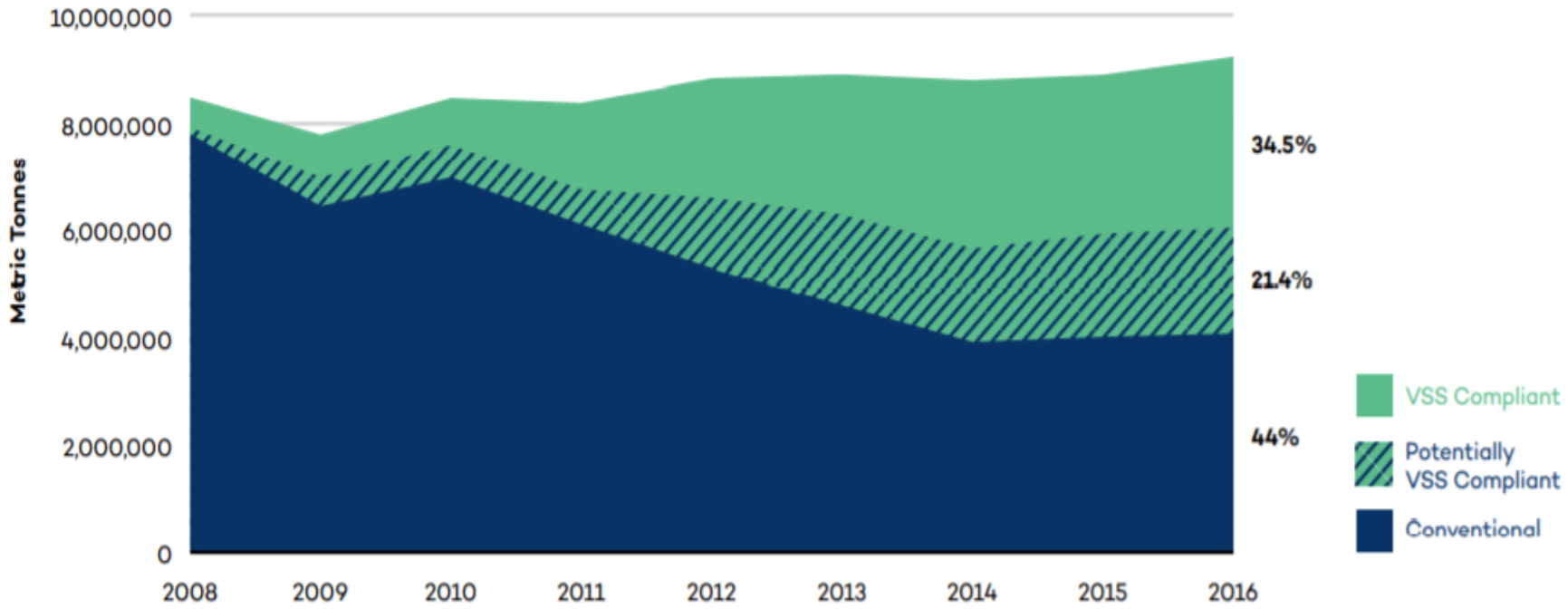
Coffee is the flagship sector for market-based sustainability tools – scale and scope of voluntary sustainability standards, company sourcing codes, investment programmes and sector platforms is growing.

## VSS-Compliant Coffee Accounted for at Least 34 Per Cent of Total Coffee Production in 2016

**Figure 1. Global coffee production trend 2008–2016[9]**

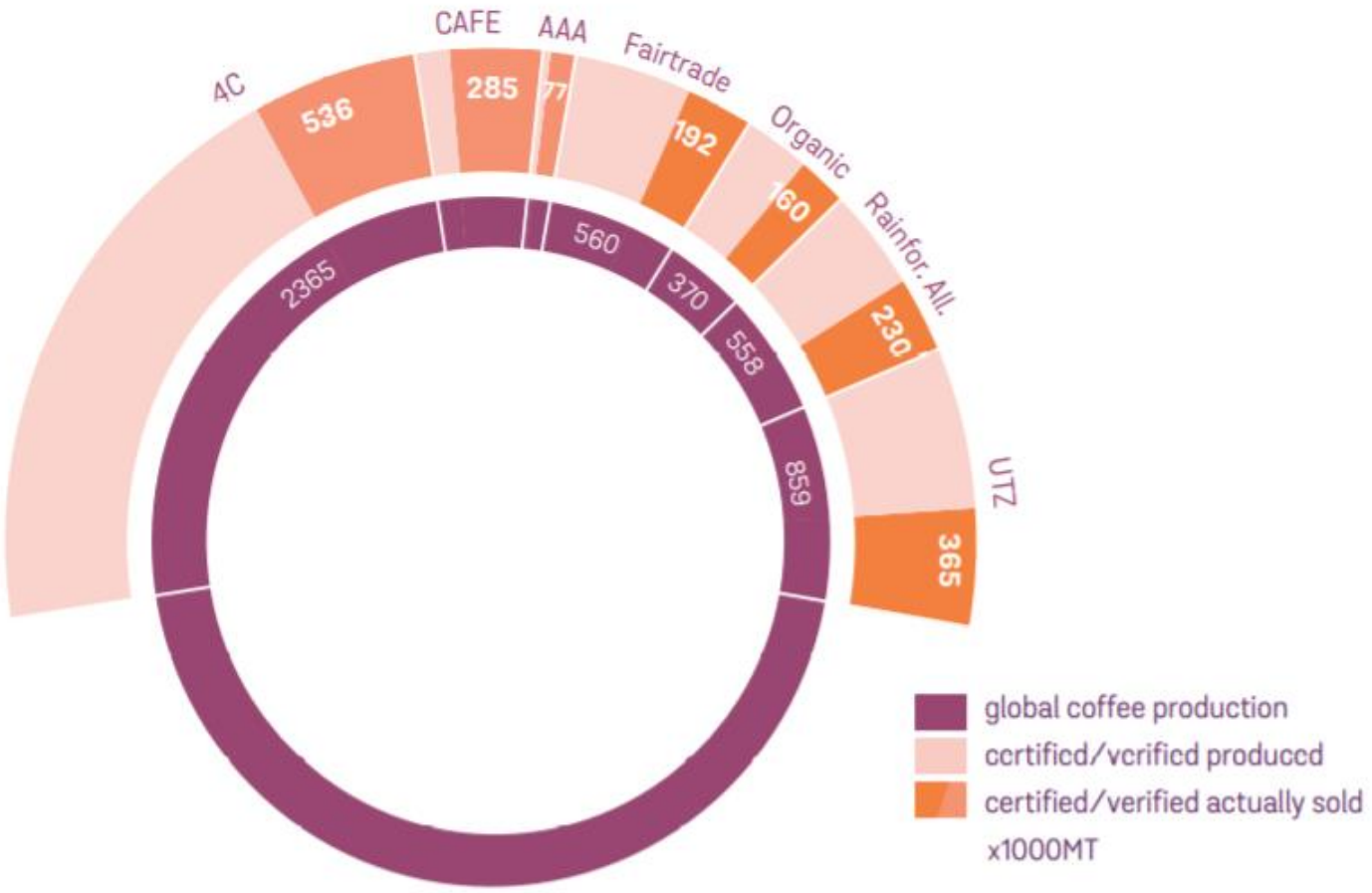



*Note: Conventional production volumes do not comply with a VSS, while VSS-compliant production volumes refer to coffee produced in compliance with one or more VSSs. Production volumes that are defined as potentially VSS-compliant cannot be definitively identified as conventional or VSS-compliant with the data currently available.*

Click to access this report: International Coffee Organisation (ICO), 'Growing for prosperity: Economic viability as the catalyst for a sustainable coffee sector', Coffee Development Report 2019.

Despite growth in VSS certified production, the International Coffee Organisation reports a supply and demand gap: in 2016/17 55% of global coffee production was certified, but only 20% was procured as such by the industry.

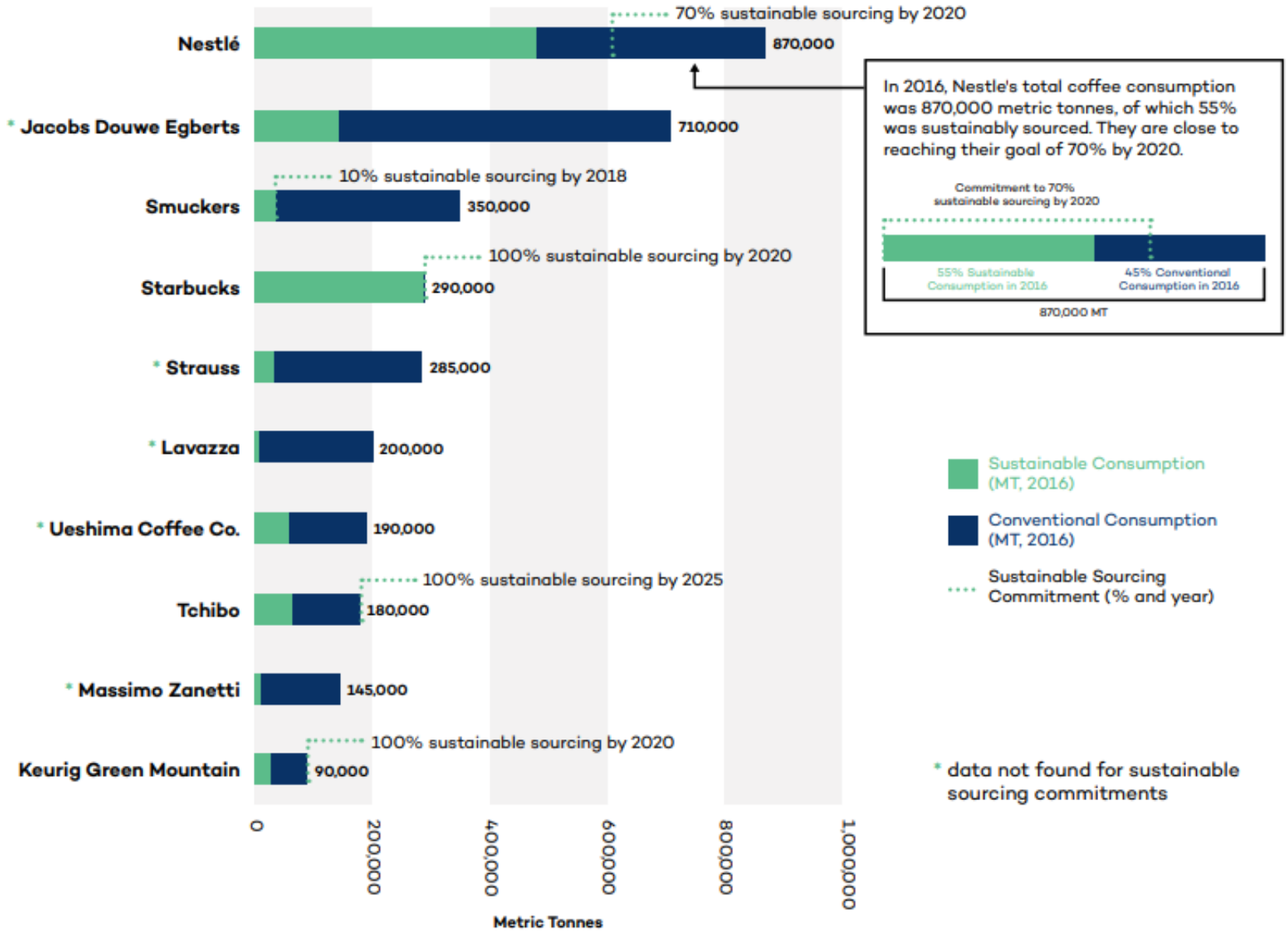
Figure 5: **Global market share and demand VSS in 2017**




Demand for VSS-compliant coffee is largely concentrated in traditional markets (Europe and the USA), higher demand from producing countries and emerging economies could help bridge the gap.

Click to access this report: Voora, V, *et al*, 'Global Market Report: Coffee', IISD Sustainable Commodities Marketplace Series, 2019.

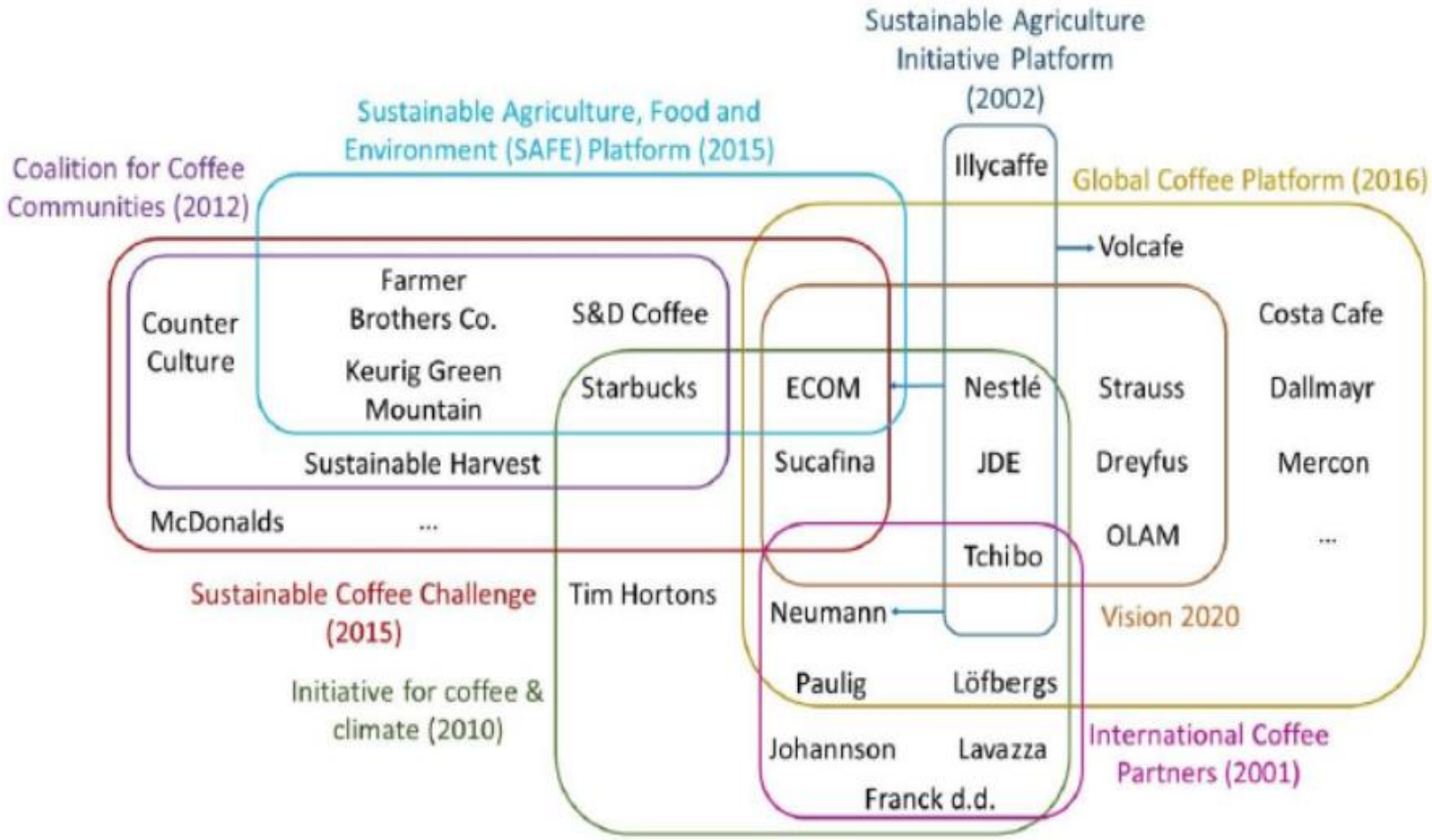
IISD's Global Market Report shows differing levels of corporate progress towards sourcing more sustainable coffee.




Click to access this report: Voora, V, *et al*, 'Global Market Report: Coffee', IISD Sustainable Commodities Marketplace Series, 2019.

The coffee sector has also seen movement in sustainability and governance. Janina Grabs explores the rise of 'buyer-driven' governance and collaborative platforms – such trends are fundamentally important to understand.

*Figure 10: Overlap between sustainability platforms in the coffee sector. Source: Own illustration.*




Click to access this article: Grabs, J. 'The rise of 'buyer-driven sustainability governance: Emerging trends in the global coffee sector'. ZenTra Working Papers in Transnational Studies, No.73, 2017.

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# Key issues: food security and climate change

Coffee, Kenya © Global Coffee Platform, Claire Hogg

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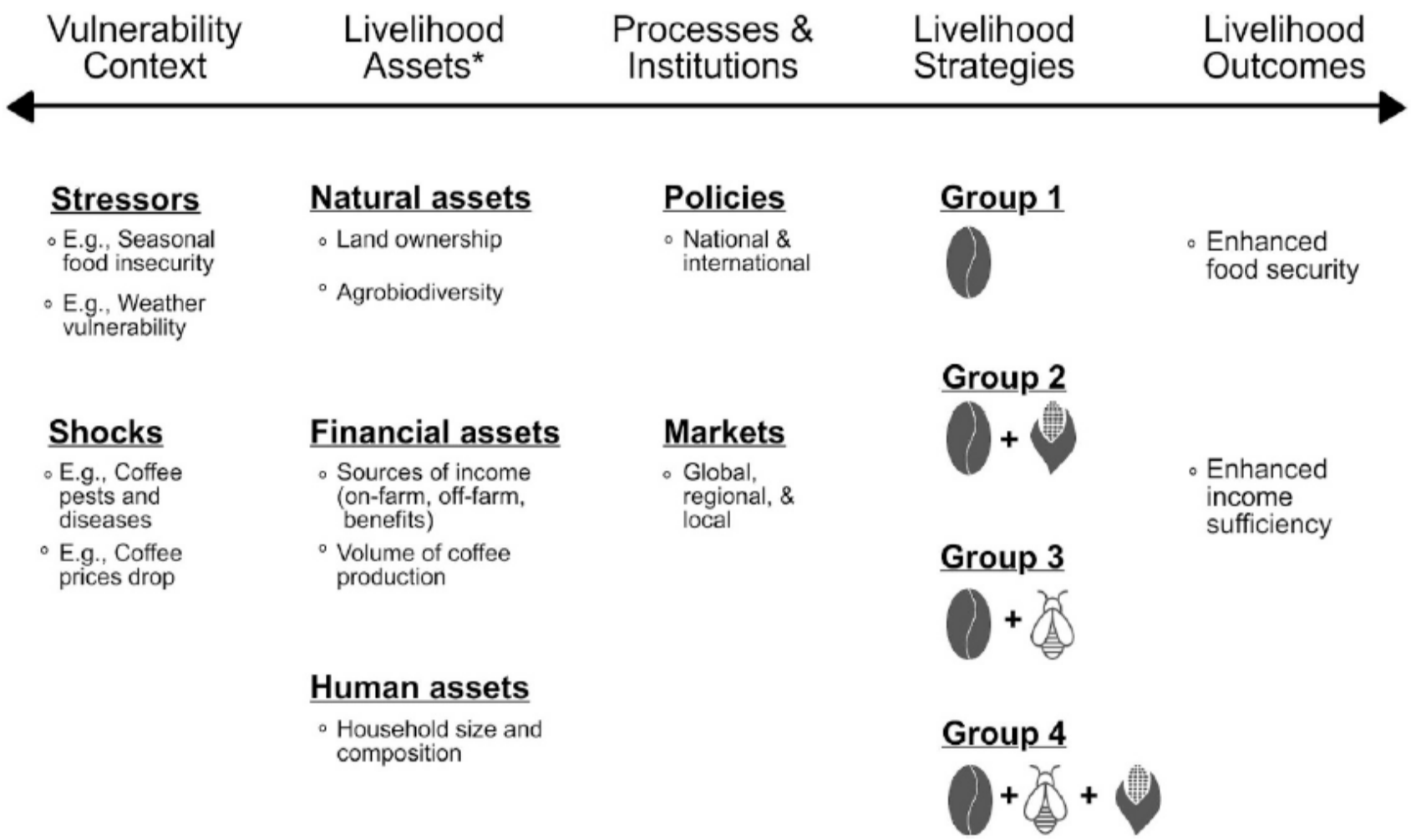
# Food Security

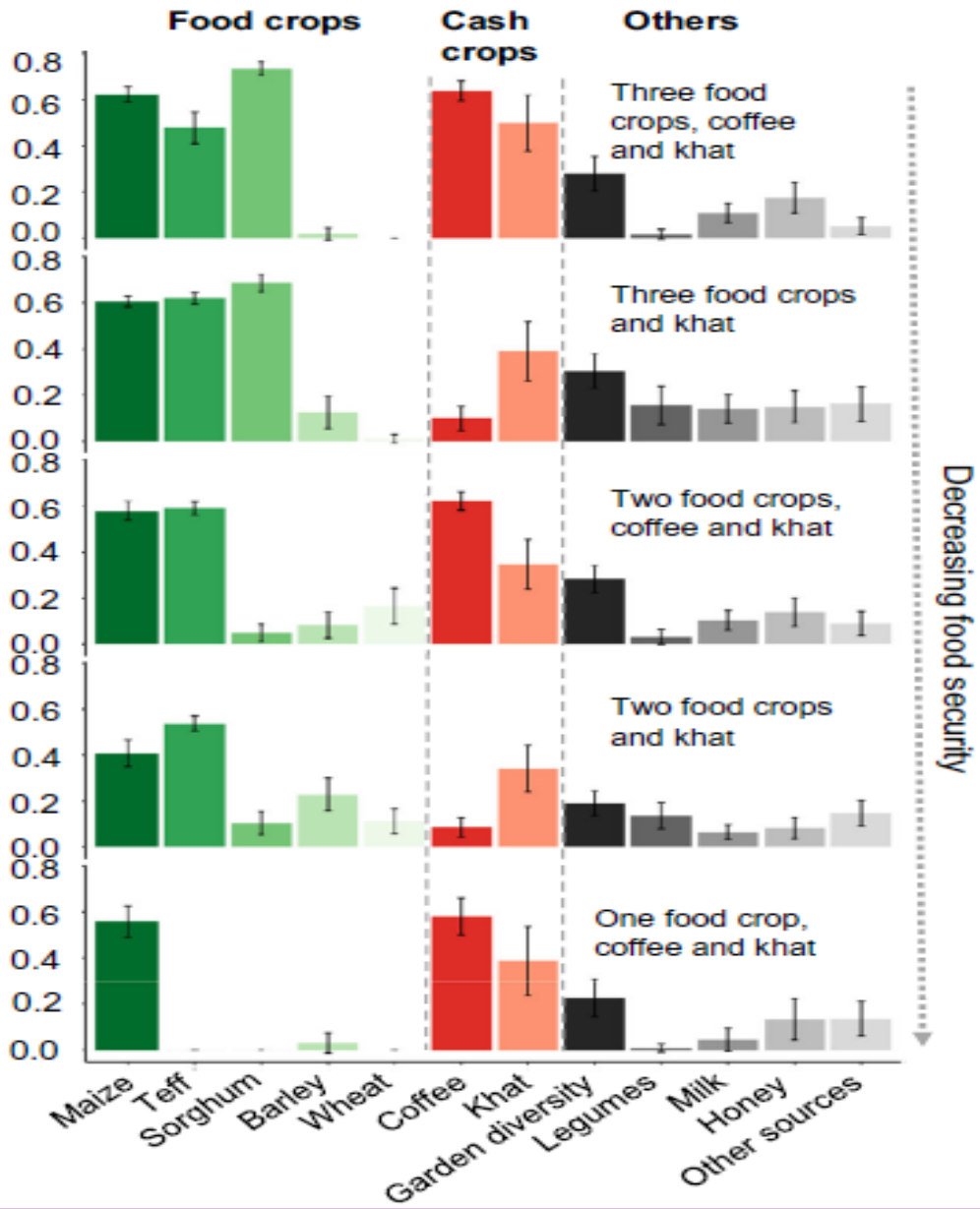
We now turn to the issue of food insecurity for coffee growing communities. What's the extent of food insecurity within coffee-growing communities? What's working to address this? What role are market tools playing?

Anderzen et al apply the sustainable livelihoods framework to study the effects of income diversification on coffee farmers in Chiapas. Groups with a focus beyond just coffee experienced greater food security.




Click to view this article: Anderzen, J., *et al*, 'Effects of on-farm diversification strategies on smallholder coffee farmer food security and income sufficiency in Chiapas, Mexico', Journal of Rural Studies, 77:33-46, 2020. (for full access visit the publisher's website)

Research carried out in Ethiopia suggests diversified livelihood strategies improve food security, contrasting dominant policy narratives focused on productivity and commercialisation




Livelihood profiles. The x-axis shows livelihood activities in the study area. The y-axis indicates livelihood components. Values for the y-axis such as harvest were log-transformed and then scaled between 0 and 1 for comparability. Error bars indicate 95% confidence intervals.

Click to access this article: Manlosa, A., *et al*, 'Livelihood strategies, capital assets, and food security in rural Southwest Ethiopia', Food Security, 11:167-181, 2019.

This study explores coffee farmer vulnerability in Nicaragua – results identify the HH capacities strongly correlated to food security, and identify path dependence in coping with sequential hazards. Table below shows typical household response strategies.

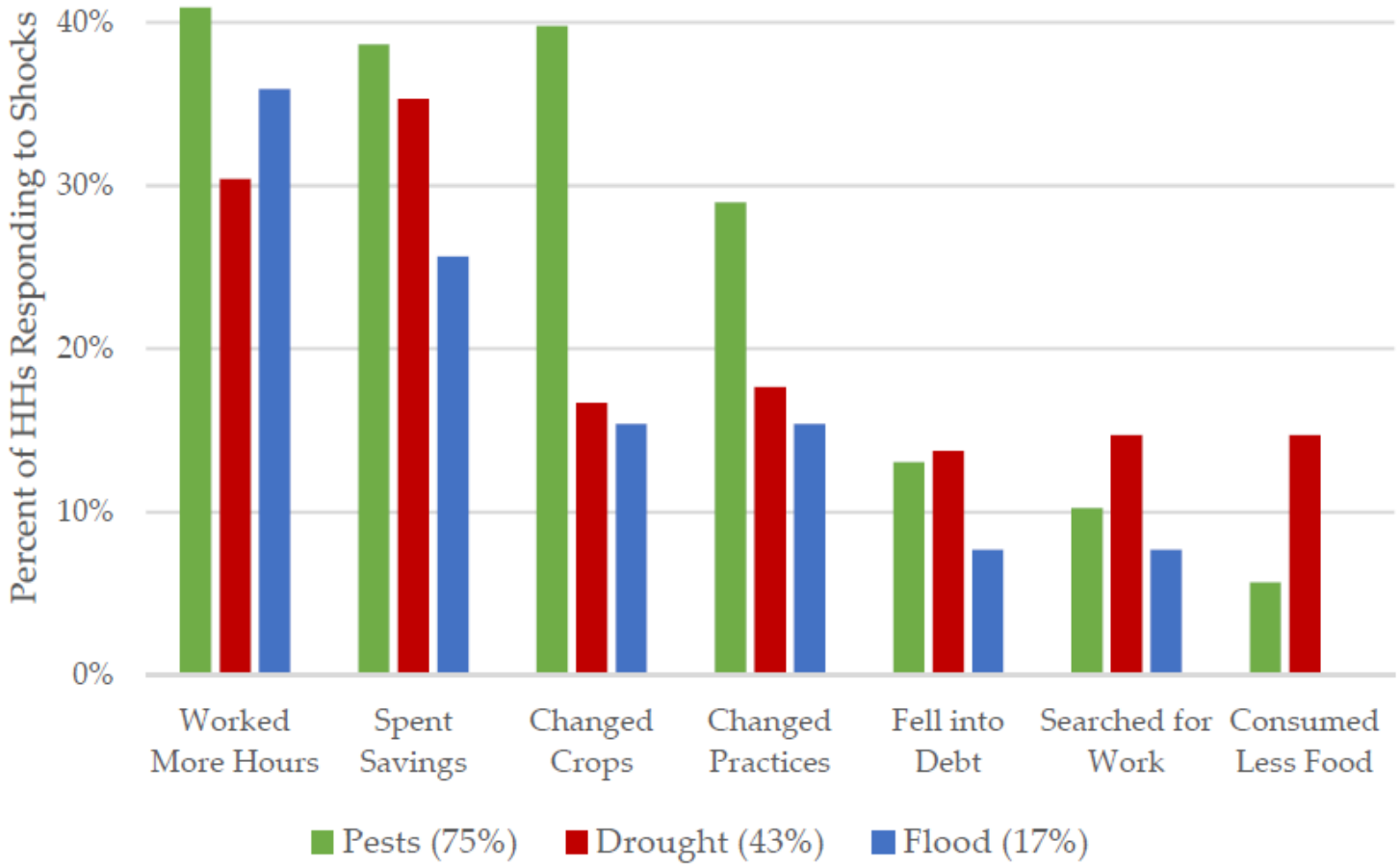
Table 3. *Frequency and severity weights of household coping mechanisms response to three hazards*

| Hazard/coping mechanisms | Coffee rust (2010 to present) | Drought (2009) | Hurricane Mitch (1998) | Weight (1 = less severe) |
|---|---|---|---|---|
| 1. Reduce household expenditures | 204 | 157 | 197 | 1.44 |
| 2. Off-farm day labor | 176 | 141 | 164 | 2.78 |
| 3. Spend savings | 176 | 127 | 161 | 2.56 |
| 4. Future crop sales for a lower price | 108 | 76 | 100 | 3.67 |
| 5. Increase wild food harvest from forest | 49 | 32 | 37 | 1.22 |
| 6. Selling assets (cattle or land) | 45 | 28 | 34 | 4.00 |
| 7. Credit, loans, and/or NGO Assistance | 44 | 20 | 43 | 2.22 |
| 8. Increase harvest from farm | 29 | 20 | 24 | 1.44 |
| 9. Increase wild food harvest (non-forest) | 27 | 27 | 36 | 1.44 |
| 10. Do nothing ("suffer through it") | 25 | 27 | 21 | 4.00 |
| 11. Seek help from family, friends or organizations | 19 | 14 | 66 | 1.38 |
| 12. Emigrate | 3 | 6 | 5 | 3.67 |

*Sources:* Household Surveys (2014); Focus Groups (2014 and 2015), Maxwell *et al.* (2008).

Click to access this article: Bacon, C.M, *et al*, 'Vulnerability to cumulative hazards: coping with the coffee leaf rust outbreak, drought, and food insecurity in Nicaragua', World Development, 93:136-152, 2017.

Important insight from Aniseh Bro's study of coffee farmer behaviours in the face of increasing uncertainty and shocks - graph shows household response to shocks over 3 years, most rely on 'coping strategies', while fewer are investing in adaptation.




Click to access this article: Bro, A.S., 'Climate change adaptation, food security, and attitudes toward risk among smallholder coffee farmers in Nicaragua', Sustainability, 12, 2020.

Philip Schleifer and Yixian Sun's systematic review delves into VSS' impacts on food security (with much of the evidence from coffee). Findings show positive impacts through economic effects but more to be through and land-use related effects.

View their article or read their blog on Evidensia.


21st February 2020

**By Philip Schleifer and Yixian Sun**

Share

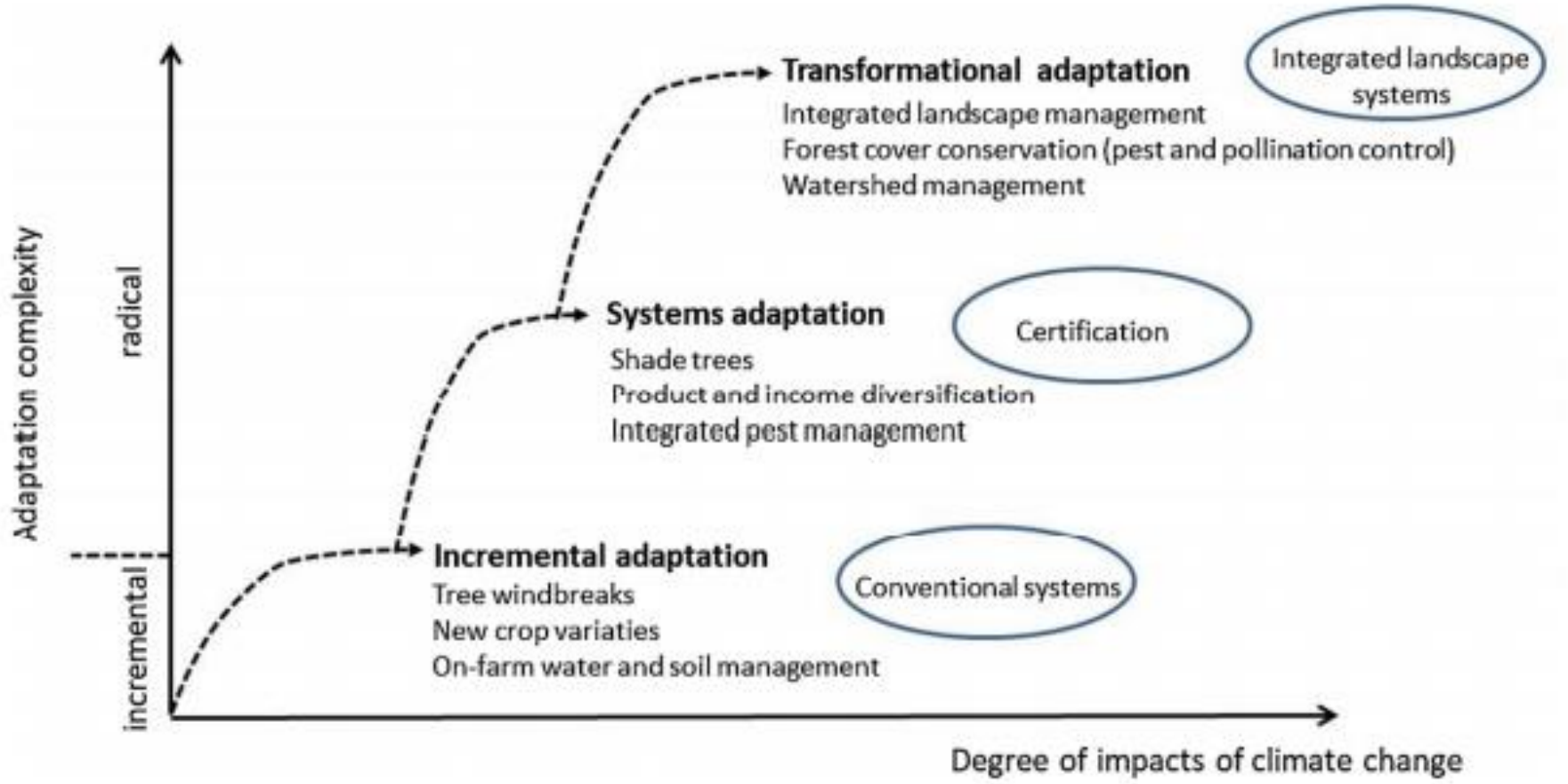
Voluntary sustainability standards (VSS) are now an important mode of governance in agricultural commodity chains. According to the Standards Map of the International Trade Centre, there are 150 VSS active in the agrifood sector, with many of these programs focused on the certification of tropical commodities and their production in developing countries. In the coffee sector, current estimates of the global certified production area range between 26% to 45%. This is followed by cocoa (23%–38%), tea (13%–18%), oil palm (12%), cotton (10%–11%), and bananas (5%–9%).[1] These figures show that VSS are no longer a niche phenomenon, but have reached the mainstream. As the market share of these programs continues to grow, researchers and practitioners alike are turning their attention to their socio-economic and environmental impacts on the ground.

Click to access this blog: Schleifer, P., Sun, Y., 'Sustainability standards' impact on food security: what's the evidence?', Evidensia, 2020.

# Climate Change

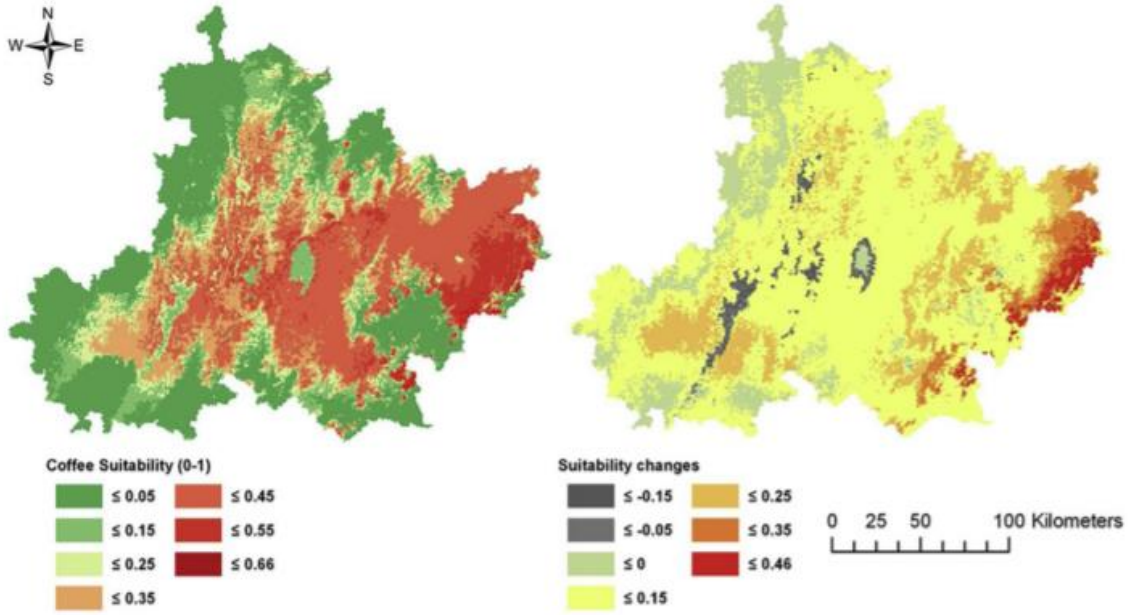
Now for a closer look at climate change impacts and adaptation strategies in coffee growing communities.

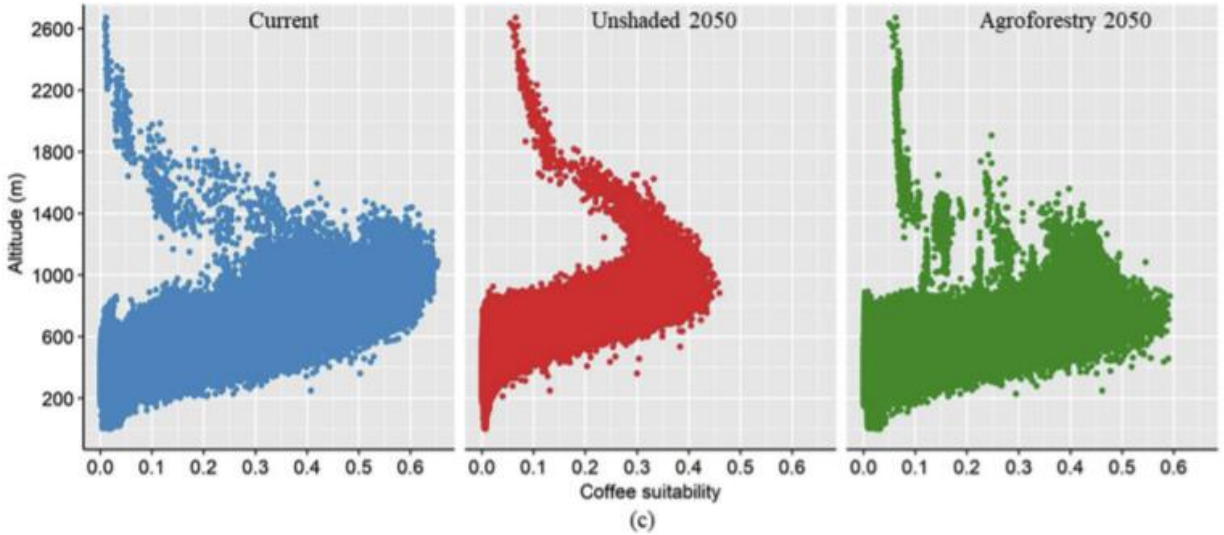
Verburg, et al identify climate change adaptation options, scale of application and implementation steps for coffee systems. As degree of climate change impacts increase, more complex, large scale and radical adaptations are required. Certification can facilitate a move from farm-scale to landscape approaches.




Click to access this article: Verburg, *et al*, 'An innovation perspective to climate change adaptation in coffee systems', Environmental Science and Policy, 97:16-24, 2019.

Important insights into the effect of climate change on suitable coffee production areas in southeast Brazil by 2050, and the potential of agroforestry to mitigate impacts. By 2050 models 60% reduction in suitable coffee producing area in southeast Brazil – but adoption of agroforestry with 50% shade cover can reduce mean temperatures, maintaining 75% of coffee production area.




Changes in coffee suitability from the current situation as compared to 2050 under unshaded and agroforestry coffee systems in the Southeast Mountains region, Brazil. Maps show the coffee suitability in the agroforestry (shaded coffee) scenario for 2050 (a), and the changes in coffee suitability between the Agroforestry and Unshaded scenario in 2050 (b). The bottom panels show the relation between altitude and suitability for coffee production for the current situation (left), unshaded coffee for 2050 (middle), and agroforestry coffee for 2050 (right)

Click to access this article: Gomes, *et al,* 'Agroforestry systems can mitigate the impacts of climate change on coffee production: A spatially explicit assessment in Brazil', Agriculture, Ecosystems and Environment, 294:106858, 2020.

Not all supply-chain actors view, understand and engage with climate change solutions the same way. This chapter shows the critical role of direct service providers in disseminating information to coffee farmers.

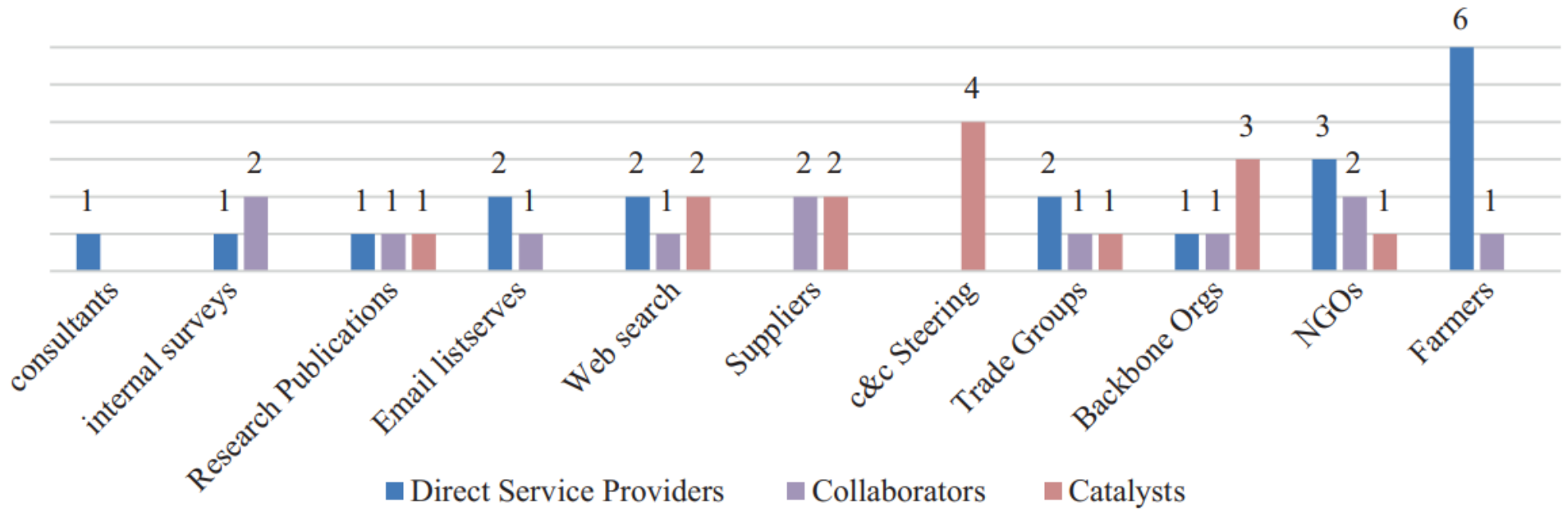



**Fig. 19.2** Sources of climate-change information for various actors within the coffee industry (multiple choices allowed)

Click to access this chapter: Sloan, K., *et al,* 'One Size Does Not Fit All: Private-Sector Perspectives on Climate Change, Agriculture and Adaptation', in: Rosenstock T., Nowak A., Girvetz E. (eds) 'The Climate-Smart Agriculture Papers', Springer, Cham, 2019.

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# Field insights from key coffee origins

Coffee workers, Vietnam - © Rainforest Alliance

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This survey of coffee farmers in Coorg, India, reveals strong environmental values and advocates for a landscape approach for wider-reaching impacts than certification alone.

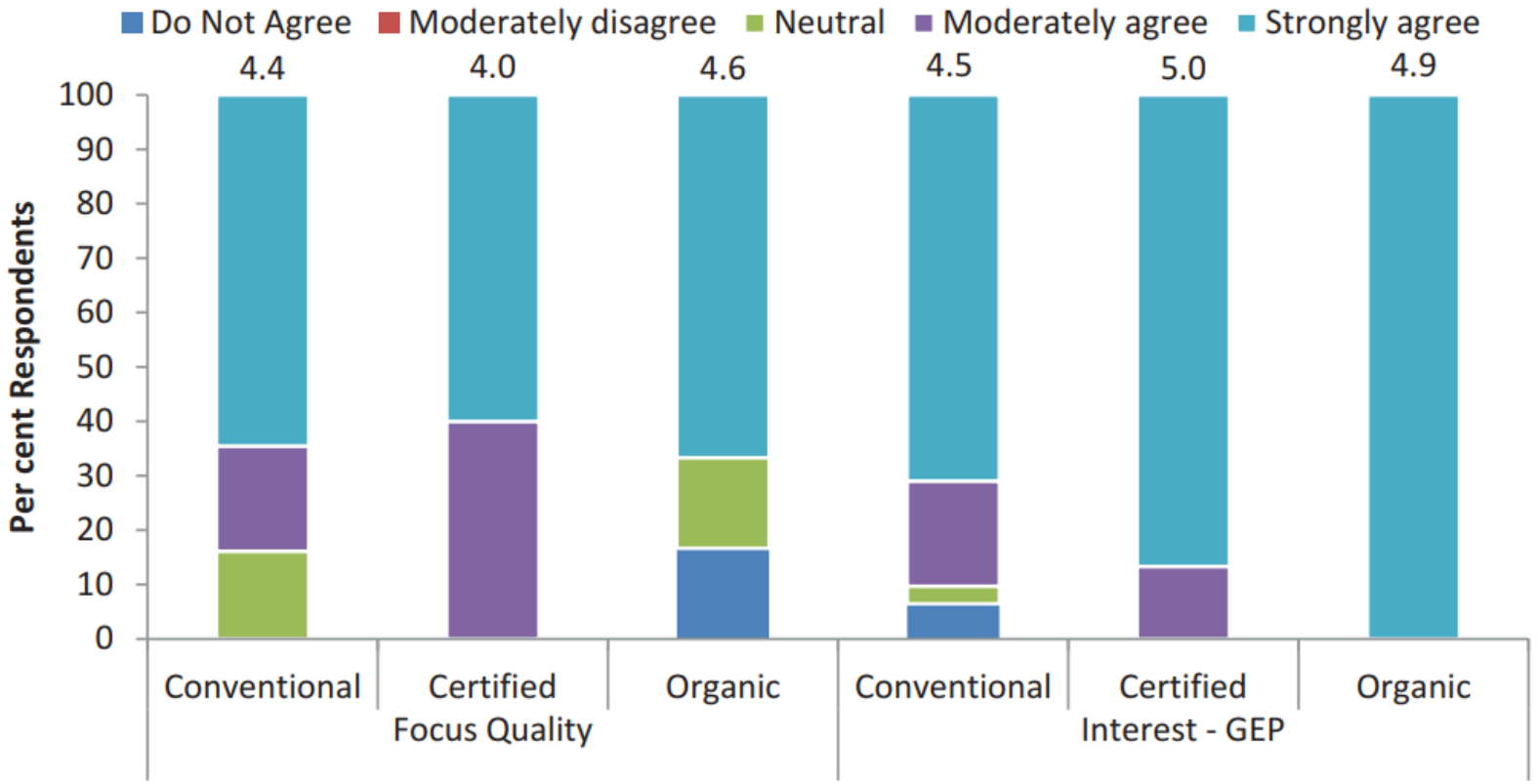



**Figure 7.** Opinion of coffee planters on quality and good environmental practices. Source: Survey results. Note: GEP: Good Environmental Practices; Values on bar indicates average score (on 1 to 5 point scale).

Click to view this article: Rich, K, *et al*, 'Coffee certification in India: Awareness, practices, and sustainability perception of growers', Agroecology and Sustainable Food Systems, 42,4:448-474, 2018. (for full access visit the publisher's website)

This is the first study to compare the eco-efficiency of conventional and certified coffee farms in Vietnam. The average score is <50% showing large potential for economic and environmental improvement; certified farms score higher than non-certified but low price premiums are a risk.

# Eco-efficiency analysis of sustainability-certified coffee production in Vietnam.

Empirical study | Journal article

**Published by** Elsevier. **Authored by** Ho, T.Q., Hoang, V.N., Wilson, C. and Nguyen, T.T.

## Summary

This paper investigates the "eco-efficiency" of certified coffee production in Vietnam. The researchers found that coffee farms with UTZ and 4C certification were, on average, more eco-efficient than conventional farms, meaning that they acheived higher yields with fewer inputs. Other factors were also associated with higher eco-efficiency scores, including farm elevation, presence of wind-break trees, and use of irrigation systems.

Summary by Evidensia Team

Click to view this article: Ho, T.Q., *et al*, 'Eco-efficiency analysis of sustainability certified coffee production in Vietnam', Journal of Cleaner Production, 183:251-260, 2018. (for full access visit the publisher's website)

Study on efficiency differences between sustainable & non-sustainable smallholder coffee production in Vietnam. Sustainable coffee is more profitable & resource efficient, but farmer age and education levels prevent wider adoption.

**Table 2.** Descriptive factors of production.

| Variables | SC | | Non-SC | | t-Ratio |
|---|---|---|---|---|---|
| | Mean | Std. Deviation | Mean | Std. Deviation | |
| Yield | 3215.77 | 805.10 | 2933.25 | 905.95 | 2.9206 * |
| NPK fertilizer | 14,612.24 | 4159.10 | 16,632.28 | 5260.66 | −3.6722 * |
| Organic fertilizer | 6510.76 | 2358.90 | 3289.20 | 2285.84 | 12.1424 * |
| Manure | 5762.84 | 2500.14 | 3983.07 | 2669.15 | 6.0717 * |
| Pesticide | 1788.13 | 1204.13 | 1282.48 | 1310.16 | 3.5507 * |
| Water | 3946.67 | 2313.61 | 4556.26 | 4190.37 | −1.5180 |
| Hired labor | 10,135.25 | 5111.64 | 6612.93 | 6018.77 | 5.6091 * |
| Family labor | 108.91 | 37.00 | 146.24 | 29.80 | −9.9213 * |
| Depreciation | 2070.82 | 1282.15 | 1520.35 | 1609.33 | 3.3811 * |
| Other costs | 1225.90 | 837.74 | 4110.14 | 2986.90 | −10.8309 * |
| Age | 44.60 | 10.03 | 43.08 | 11.70 | 1.2380 |
| Education | 9.66 | 2.45 | 9.17 | 3.07 | 1.5164 |
| Farming experience | 8.74 | 4.18 | 16.21 | 8.05 | −9.7791 * |
| Household size | 4.70 | 1.19 | 4.63 | 1.37 | 0.4705 |
| Farm size | 1.40 | 0.65 | 1.61 | 1.02 | −2.0529 * |
| Labor/land ratio | 2.26 | 1.54 | 2.47 | 2.22 | −0.9384 |
| Credit | 51,923.77 | 23,080.82 | 59,887.22 | 41,428.41 | −2.0024 * |

Note: * Significant at $p < 0.05$. SC indicates sustainable certified coffee farmer and non-SC indicates non-sustainable certified coffee farmer.

Click to access this article: Hung Ahn, N., *et al*, 'Toward sustainability or efficiency: the case of smallholder coffee farmers in Vietnam', Economies, 7,66, 2019.

Study on C.A.F.E Practices in north Sumatra: age, area, family size, and non-coffee income found to influence participation, while variable costs are found to increase with no significant increase in productivity or coffee income.

# The analysis of propensity score matching on the economic effect of C.A.F.E. practices certification toward Lintong coffee farming In North Sumatra

Empirical study | Journal article

**Published** 2019. **Authored by** Sinaga, S.V., Harianto and Suharno

## Summary

The C.A.F.E. Practices aims to ensure that coffee is produced from sustainable farming and process by evaluating economic, social, and environmental aspects in the production process. Incentive for farmers following the certification will get better price than those not following certification. This research aims to analyze factors influencing farmer to participate in C.A.F.E. certification. After then, the economic effect of the certification will be analyzed using Propensity Score Matching (PSM) based on significant factors that influence farmers to participate in the certification. To reach that aims, a survey is conducted to 162 Lintong coffee farmers, consisting of 81 farmers who participate in certification and 81 farmers who do not participate in the certification. PSM in this research is conducted through psmatch2 and the nearest neighbor method. Based on the logit analysis, some factors like the farmers' age, area, the number of family member, and income outside coffee farming significantly influence the farmers' participation in the certification. The analysis on the effect of certification based on psmatch 2 and the nearest neighbor method after balancing test shows that the variable costs is increase significantly, while the increase in productivity and coffee farming income was not significant.

Click to access this article: Sinaga, S.V., Harianto, Suharno, 'The analysis of propensity score matching on the economic effect of C.A.F.E practices certification toward Lintong coffee farming in Northern Sumatra.

Study by ISEAL on VSS impacts in Sumatra. Certification builds livelihood resilience, training & social capital gains for communities. Role of coffee in wider poverty alleviation strategies is unclear.

Listen to the podcast for further insight into the impacts of sustainability standards on the livelihoods and poverty status of smallholder Robusta coffee farmers in southern Sumatra, Indonesia.

## Evaluation of the Impacts of Sustainability Standards on Smallholder Coffee Farmers in Southern Sumatra, Indonesia (Podcast)

Briefing or opinion | Podcast

**Published** 24th September 2019 **by** Evidensia. **Authored by** Evidensia

### Summary

In this podcast, Jeffrey Neilson from the University of Sydney discusses the research report on the Evaluation of the Impacts of Sustainability Standards on Smallholder Coffee Farmers in Southern Sumatra, Indonesia published in 2019. The study examines the impacts of sustainability standards on the livelihoods and poverty status of smallholder Robusta coffee farmers in Sumatra, Indonesia. It utilises both qualitative and quantitative methodologies to assess whether farmer livelihoods are improved as a result of: i) initial involvement in a program audited against the Common Code for the Coffee Community (4C) standard; and ii) upgrading from 4C to the more stringent Rainforest Alliance (RA) Standard.

Summary by Evidensia Team


Click to access the report: Neilson, J., *et al*, 'Evaluation of the impacts of sustainability standards on smallholder coffee farmers in southern Sumatra, Indonesia (final evaluation report)', ISEAL, London, 2019. And click here to access the podcast.

This report on the Impacts of certification on small coffee farmers in western Kenya finds that as producer organisation governance and transparency improve, so do farm level environmental and economic effects. But the poverty gap remains large and coffee growth potential limited.

**Fig. 6.9a Total household income (In USD)**

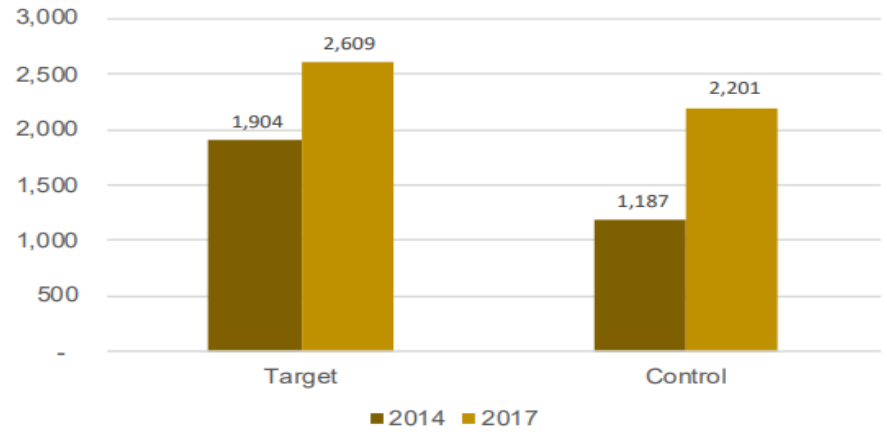
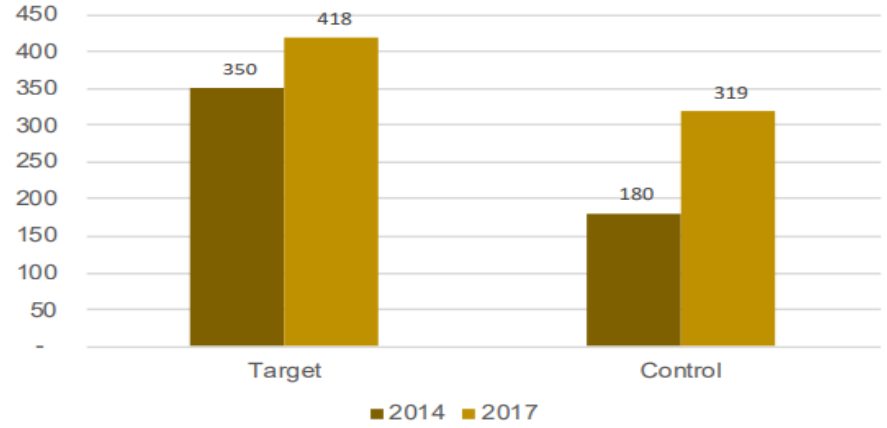



**Fig. 6.9b Per-capita household income (In USD)**




The findings are also explored in a podcast, and the contribution of sustainability standards to smallholder livelihoods and pro-poor development is further explored in an ISEAL webinar.

Click to access the report: de los Rios, C., 'Impacts of certification on small coffee farmers in western Kenya, 2014-2017 (final evaluation report)', ISEAL, London, 2019. And click here to access the podcast and here to access the webinar.

Study on coffee certification in Uganda finds VSS positively impact either socio-economic or environmental performance, but rarely both. Authors recommend improved standard design over multiple certification.

# Do private coffee standards 'walk the talk' in improving socio-economic and environmental sustainability?

Empirical study | Journal article

**Published** 2018 **by** Elsevier. **Authored by** Vanderhaegen, K., Akoyi, K.T., Dekoninck, W., Jocque, R., Muys, B., Verbist, B. and Maertens, M.

## Summary

This study assesses the effectiveness of private coffee standards in improving both environmental and socio-economic sustainability in Uganda. The authors combine socio-economic survey data with ecological field inventory data from certified and non-certified producers, finding that coffee standards in Uganda are not as socio-economically and environmentally impactful as consumers expect. Whilst certification can improve either a farm's socio-economic or environmental performance, they rarely address both. Multiple certification is found to be counterproductive, and it is recommended that improving standard design to ensure productivity within ecological boundaries would be more effective in mitigating the observed trade-offs between socio-economic and environmental outcomes.

Summary by Evidensia Team

Click to view this article: Vanderhaegen, K., *et al*, 'Do private coffee standards 'walk the talk' in improving socio-economic and environmental sustainability?', Global Environmental Change, 51:1-9, 2018. (for full access visit the publisher's website)

Insightful study comparing coffee certification schemes in Ethiopia. Highlights factors such as co-operative effectiveness, value chain dynamics, quality and rent extraction, which determine impacts on farmers.

# Do Private Sustainability Standards Contribute to Income Growth and Poverty Alleviation ? A Comparison of Different Coffee Certification Schemes in Ethiopia

Empirical study | Journal article

**Published** 11th February 2017 **by** MDPI AG. **Authored by** Mitiku, F., de Mey, Y., Nyssen, J. and Maertens, M.

## Summary

Private sustainability standards are increasingly important in food trade with developing countries, but the implications for smallholder farmers are still poorly understood. We analyze the implications of different coffee certification schemes in Ethiopia using cross-sectional survey data, and regression and propensity-score-matching techniques. We find that: Rainforest Alliance (RA) and double Fairtrade-Organic (FT-Org) certifications are associated with higher incomes and reduced poverty, mainly because of higher prices; Fairtrade (FT) certification hardly affects welfare; and Organic (Org) certification reduces incomes, chiefly due to lower yields. Cooperative heterogeneity importantly shapes these results. Results imply that private standards may not always deliver what they promise to consumers.

Click to access this article: Mitiku, F, *et al*, 'Do private sustainability standards contribute to income growth and poverty alleviation? A comparison of different coffee certification schemes in Ethiopia', Sustainability, 9,246, 2017.

Interesting study using the FAO SMART-Farm Tool to compare effects of certified vs conventional coffee systems in Brazil and Ethiopia across 4 dimensions – economic resilience, environmental integrity, social well-bring and good governance.

Certified systems in Brazil, on average, perform better on most indicators while Ethiopia presents mixed results. But, on good governance, certified coffee systems do uniformly better in both countries

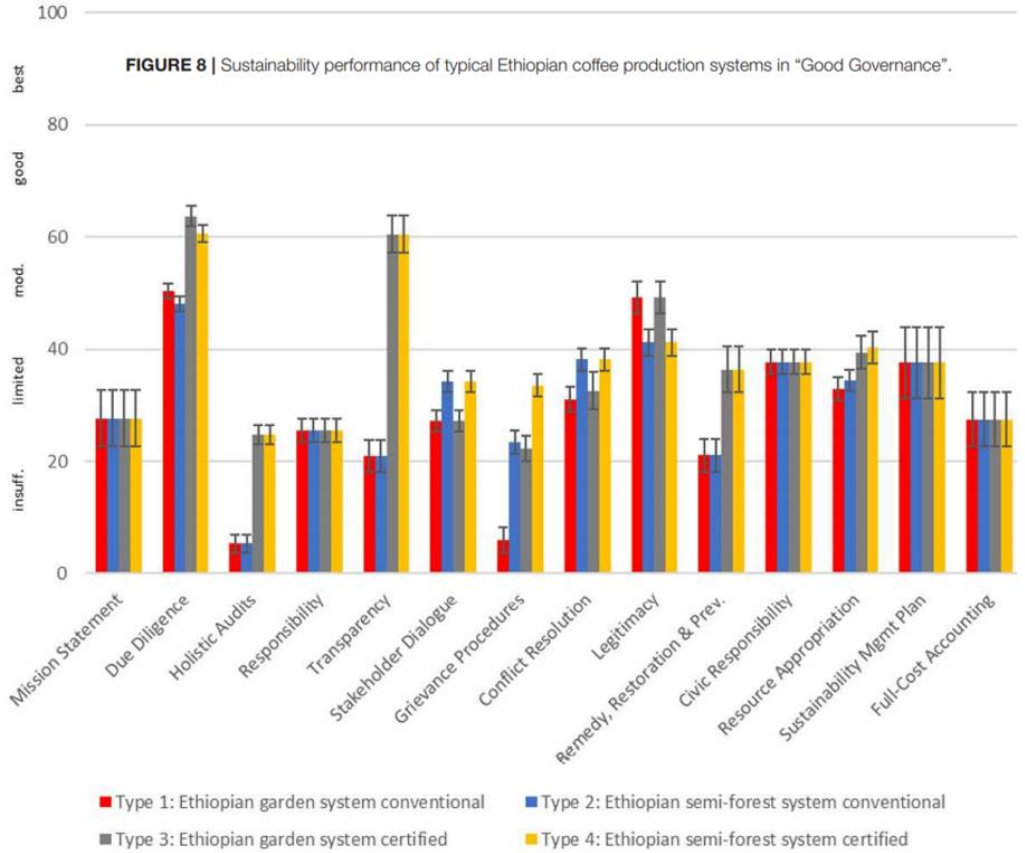


**FIGURE 8 |** Sustainability performance of typical Ethiopian coffee production systems in "Good Governance".

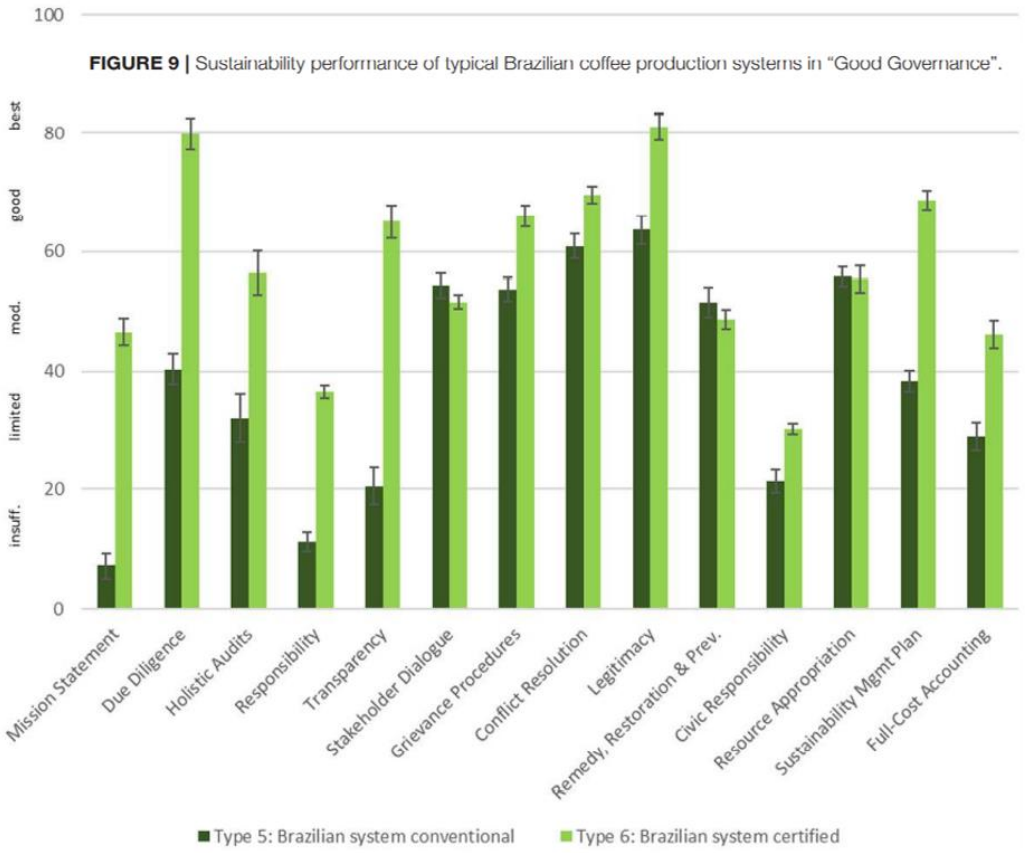


**FIGURE 9 |** Sustainability performance of typical Brazilian coffee production systems in "Good Governance".

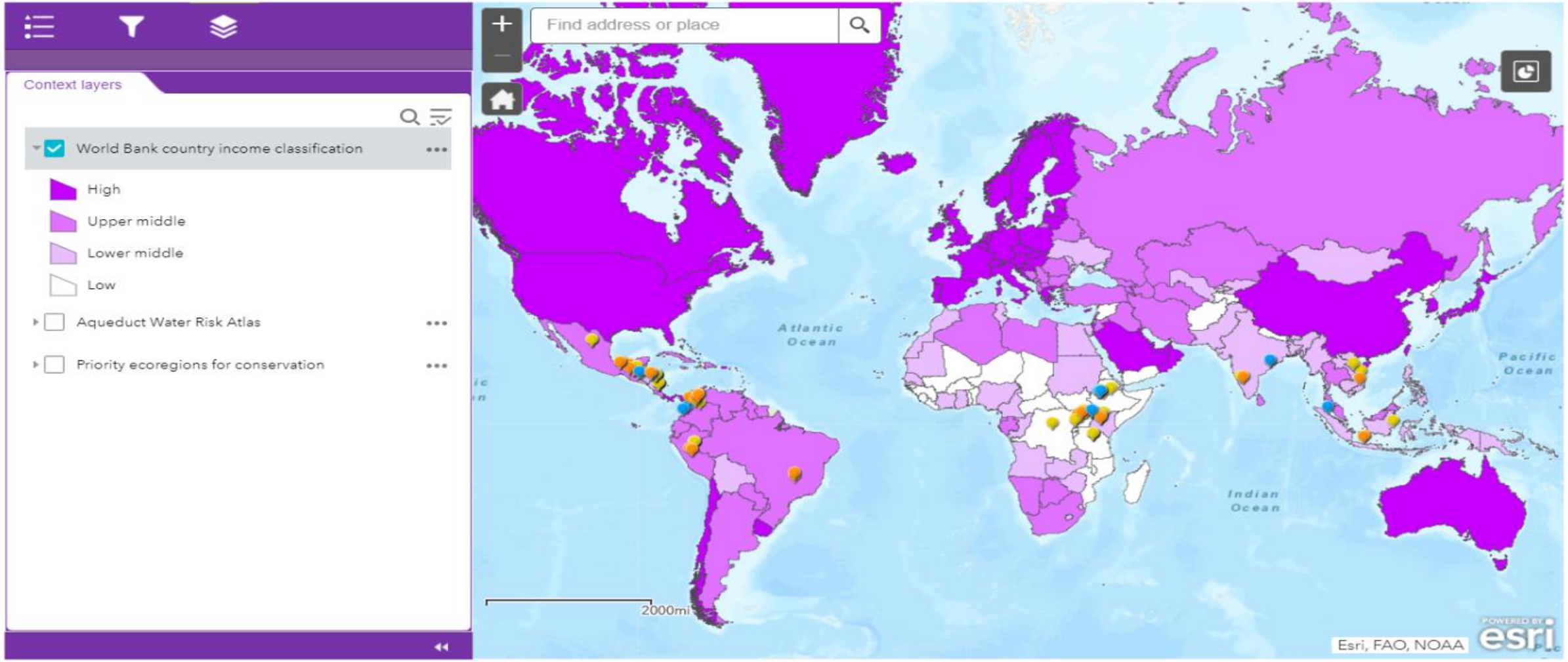
Click to access this article: Winter, E., *et al*, 'Evaluating the sustainability performance of typical conventional and certified coffee production systems in Brazil and Ethiopia based on expert judgements', Frontiers in Sustainable Food Systems, 4, 2020.

Study on effects of FairTrade USA certification on coffee smallholders and workers in Latin America. Empowerment and welfare gains for workers but economic impacts elusive. Highlights enabling conditions needed for market-based tools to succeed.


Theory of Change of FT4All pilot adapted by CIAT.

Click to access this article: Del Rio, M.L., *et al*, 'Impacts of Fair Trade-certified coffee in Nicaragua, Brazil, Honduras, and Peru: Implications for livelihoods and empowerment of farm workers and independent smallholder producers', CIAT Policy Brief No. 40, International Center for Tropical Agriculture (CIAT), Cali, Colombia, 2017.

If you've found this snapshot of coffee origins interesting, Evidensia can help you delve deeper – try using the Geographic Map to explore how market-based tools in coffee impact low, middle and high income countries.




Click to access Evidensia's Geographic Map: https://www.evidensia.eco/work-with-evidence/geo-map/

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# Impacts of market-based sustainability tools

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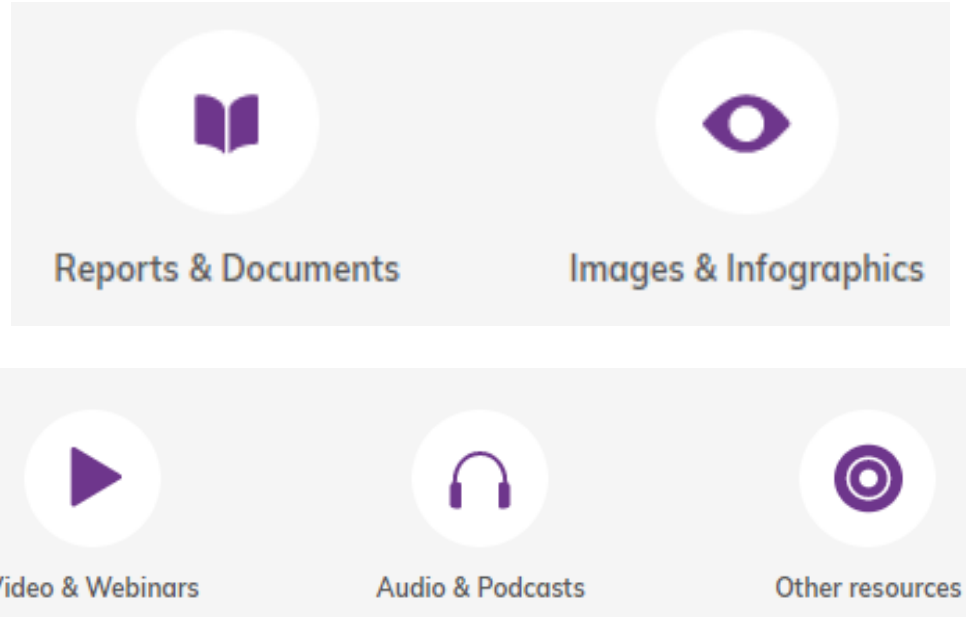
Coffee plantation seen from a drone in Nicaragua © Giuseppe Cipriani for UTZ

Most of what we know about the impact of market-based tools on agriculture comes from research on coffee, and mostly on the effects of sustainability standards. There is a need for evidence on the impacts of other market tools and approaches including company codes, supply chain investment programmes, national and regional platforms and landscape approaches.

Evidensia has 180+ credible evidence resources about the impacts of market-based tools in the coffee sector in a range of formats. Visit the Online Library or Knowledge Matrix to access these and filter according to your needs.




| Sectors & Products ▸ / Issues & Outcomes ▾ | Agriculture | Coffee |
|---|---|---|
| Child rights and wellbeing | 17 | 15 |
| Climate change | 10 | 10 |
| Consumers and supply chains | 13 | 13 |
| Forests and other ecosystems | 32 | 32 |
| Freshwater and oceans | 9 | 9 |
| Health and wellbeing | 21 | 19 |
| Livelihoods | 47 | 45 |
| Participant costs and benefits | 108 | 103 |

Click to access the Knowledge Matrix: Knowledge Matrix - Evidensia

This 2019 Evidensia systematic review into the effects of market-based sustainability tools on yield, price, costs and income in agriculture also shed light on the coffee sector. The systematic evidence mapping exercise again showed that coffee is the most-researched commodity in the sustainable agriculture space.

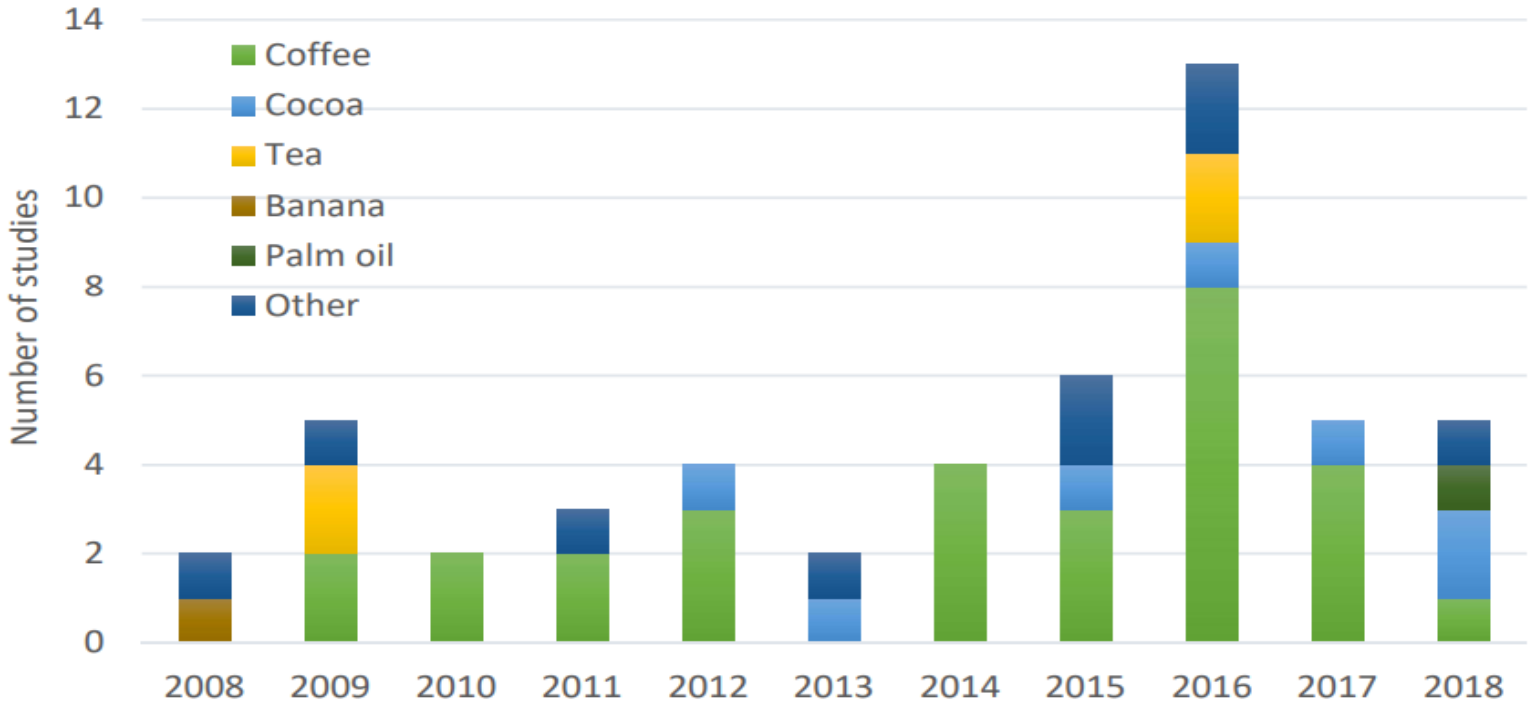



Figure 3. Number of qualifying resources by crop studied, over time. One resource, from 2009, addressed two crops (coffee and tea). 'Other' includes black pepper (three resources), cotton, honey, lychee, peas, and rice (one resource each), and one resource that addressed 'all agriculture.'

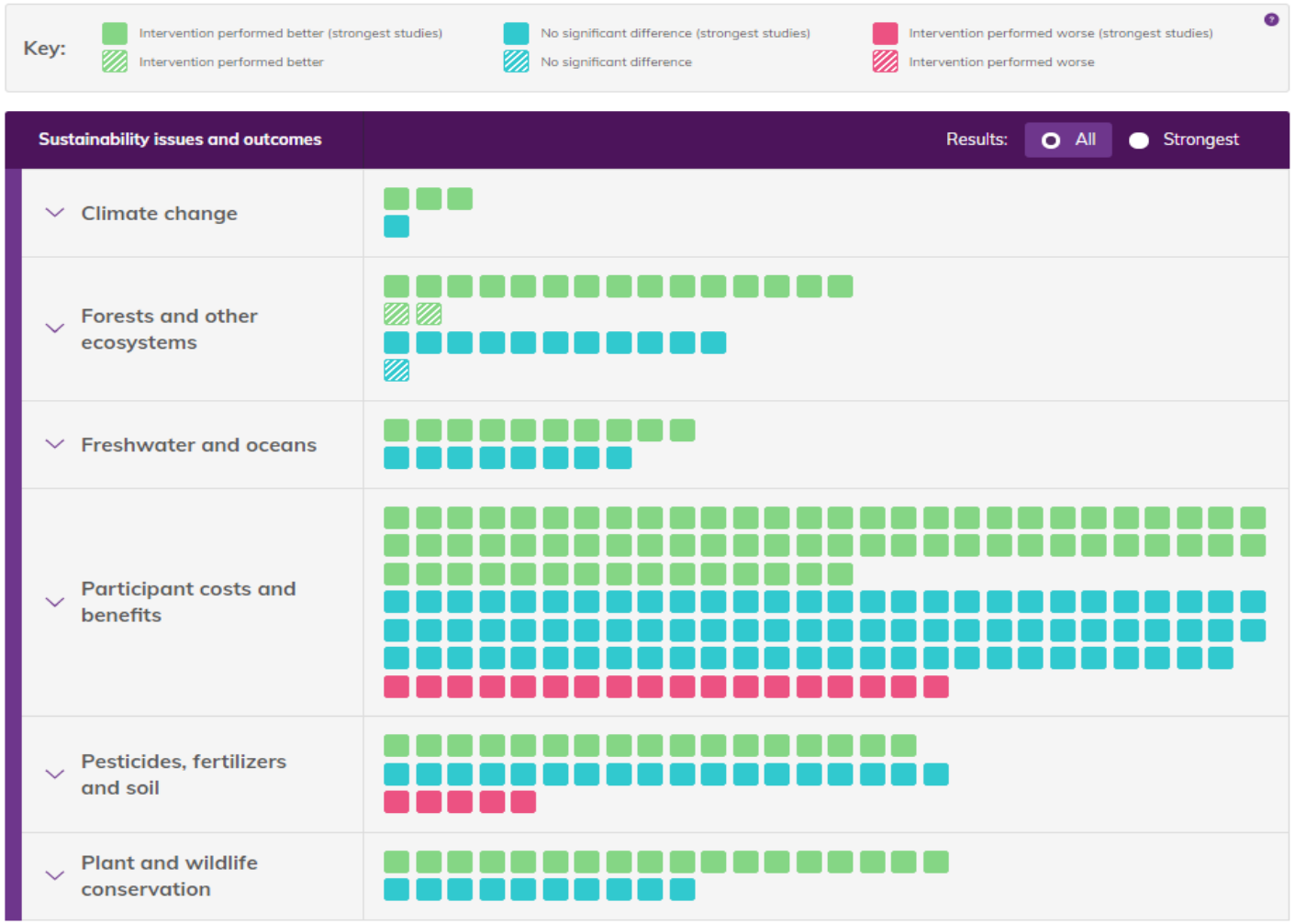
Click to access this report: Evidensia, 'Effects of voluntary sustainability standards and related supply chain initiatives on yield, price, costs and income in the agriculture sector', Evidensia, London, UK, 2019.

Coffee is a great example of a sector with good quality data and a wealth of research to assess impacts across multiple issues. But as the table below shows, there are gaps, especially in our understanding of impacts on wages, workers' rights, biodiversity and climate change initiatives in the coffee sector. More longitudinal studies with data collected over time and with strong control groups would strengthen the evidence base on sustainable coffee.

| Issues | No. studies in Evidensia Knowledge Matrix |
|---|---|
| Child rights and wellbeing | 12 |
| Climate change | 6 |
| Consumers and supply chains | 8 |
| Forests and other ecosystems | 22 |
| Freshwater and oceans | 4 |
| Health and wellbeing | 18 |
| Livelihoods | 41 |
| Participant costs and benefits | 87 |
| Pesticides, fertilizers and soil | 18 |
| Plant and wildlife conservation | 10 |
| Rights of indigenous peoples and local communities | 25 |
| Wages and workers' rights | 14 |

Click to access the Knowledge Matrix: Knowledge Matrix - Evidensia

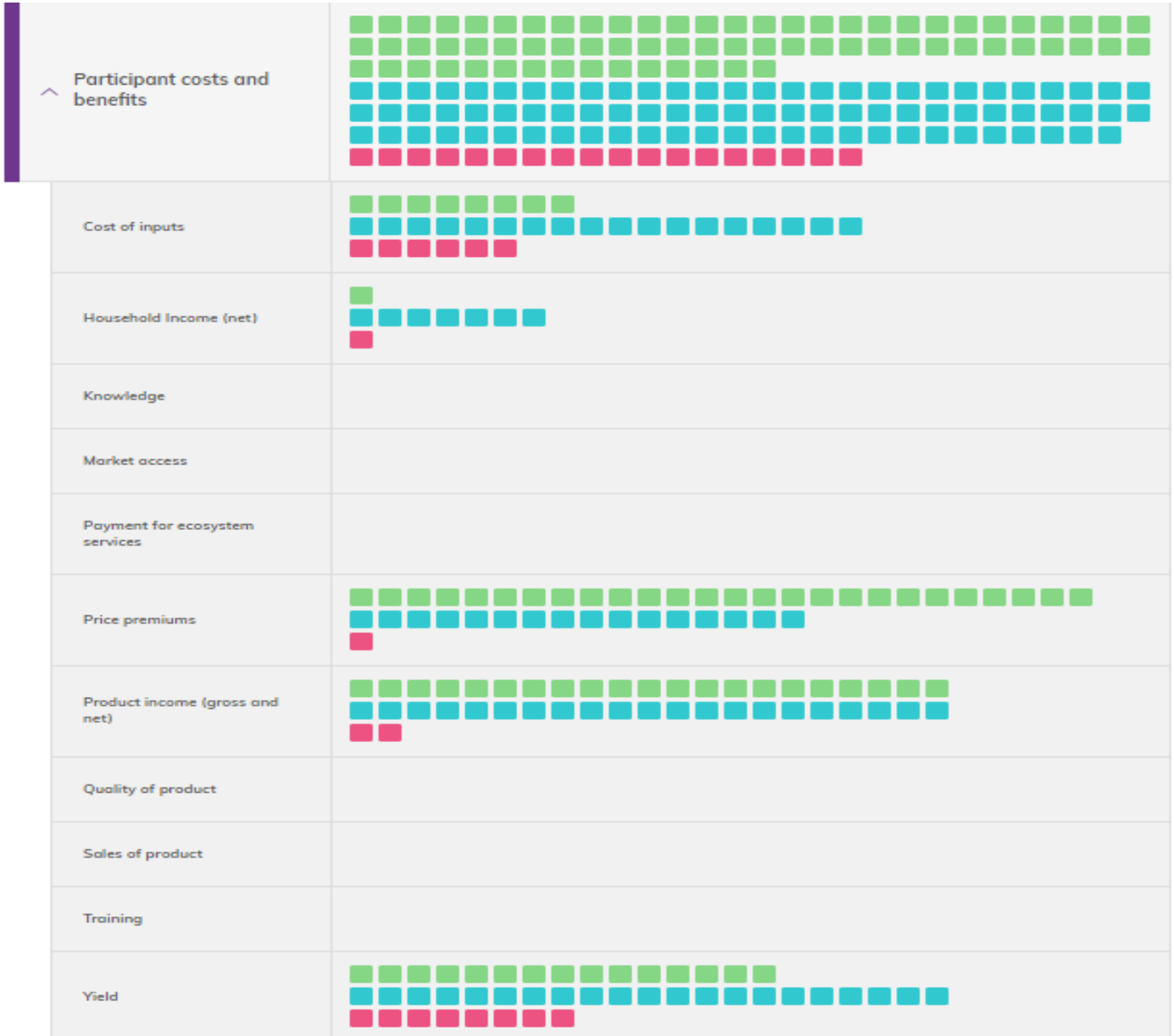
These visual summaries show the results of all Evidensia's systematic reviews for coffee. Each square is a statistical result drawn from a study comparing the performance of market-based tools against a control group in a coffee origin. The overall picture is that on many issues, the best evidence suggests that these tools have a statistically insignificant effect on target groups but on many issues, there is strong volume of positive results as well.




Click to access the Visual Summaries: Visual Summaries - Evidensia

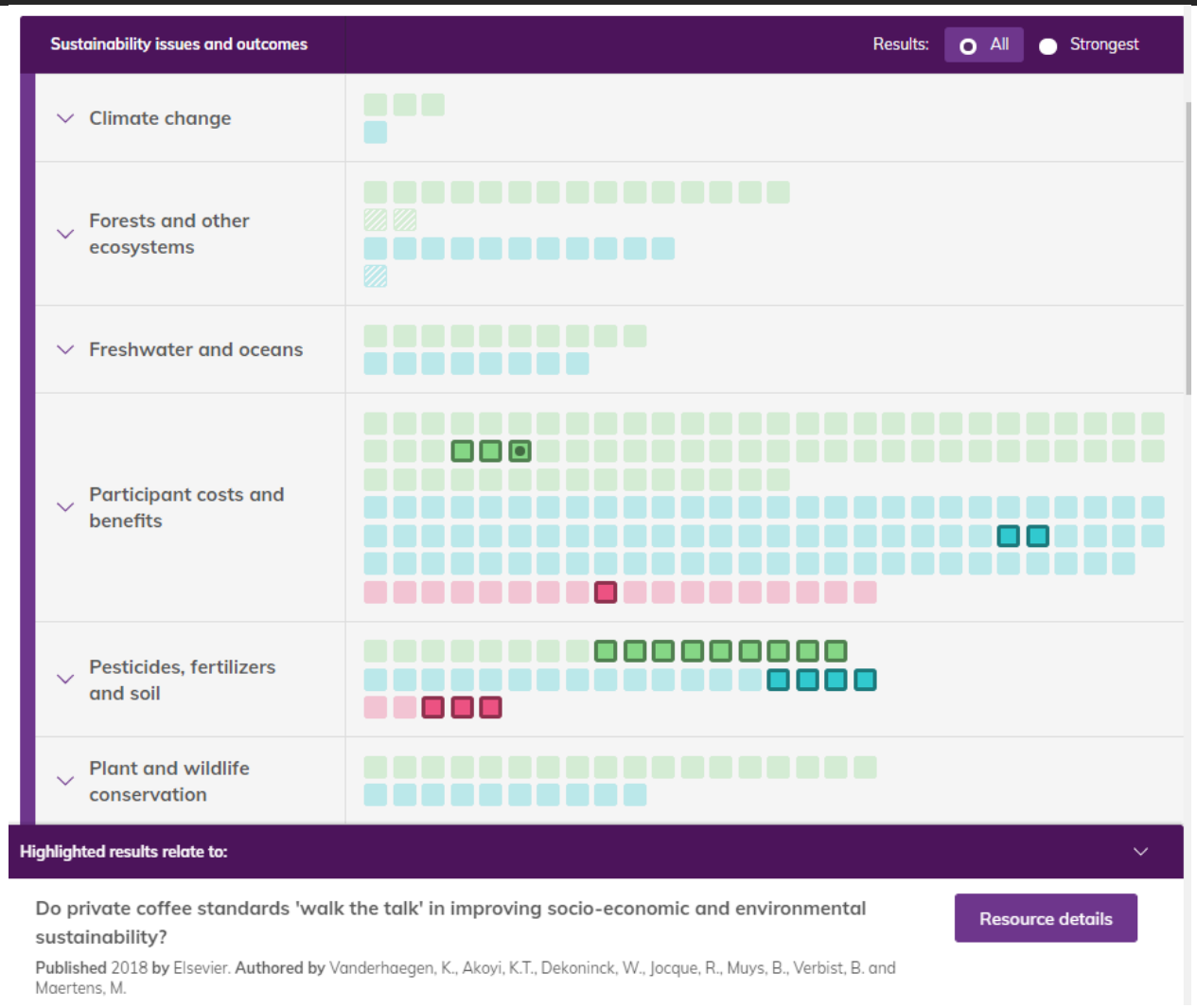
A large amount of the impacts results in coffee are on participant costs & benefits – topics such as farmer incomes, revenues, costs, yields, prices and training and knowledge. The bulk shows an equal mix of positive and neutral results.

Break this down further and we see that positive results of these tools are related to price premiums and improvements in income from coffee for farmers. But, these are not translating into higher household incomes. Impacts of tools on yields are highly mixed and impacts on costs of production can go in either direction ie – such tools could result in a decrease or an increase in coffee production costs borne by farming households.




Click to access the Visual Summaries: Visual Summaries - Evidensia

Evidensia's visual summaries are great for a big picture overview, but you can also take a deeper dive at results level - see which data points are related and the study they're from.

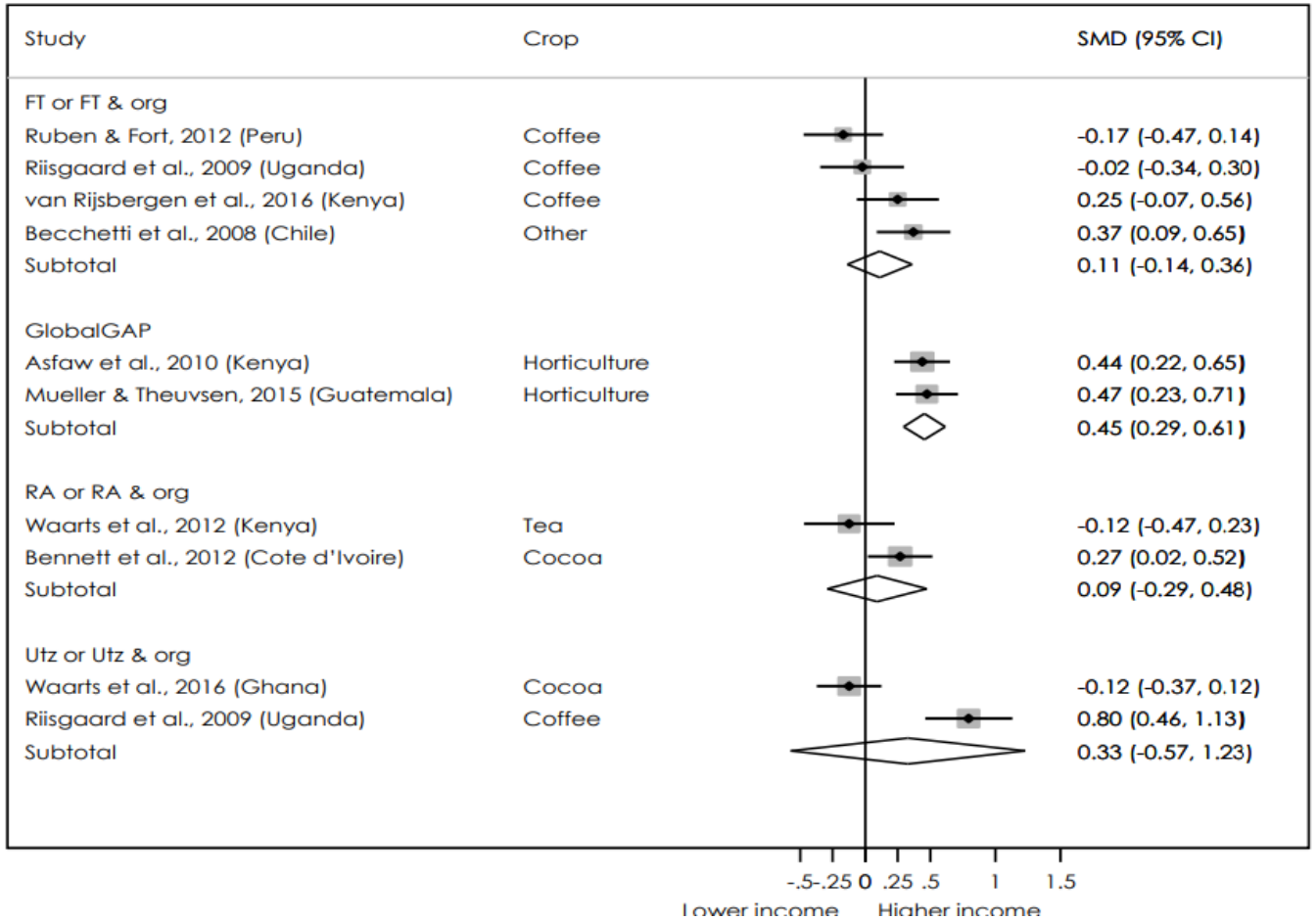



Click to access the Visual Summaries: Visual Summaries - Evidensia

This 2017 systematic review from Carlos Oya *et al* continues to be a seminal read - the first systematic review on impacts of agriculture certification schemes on socio-economic outcomes in low- & middle-income countries. Lots of evidence on coffee.

These 'forest plots' show positive overall impact on coffee income in many of the individual studies reviewed.

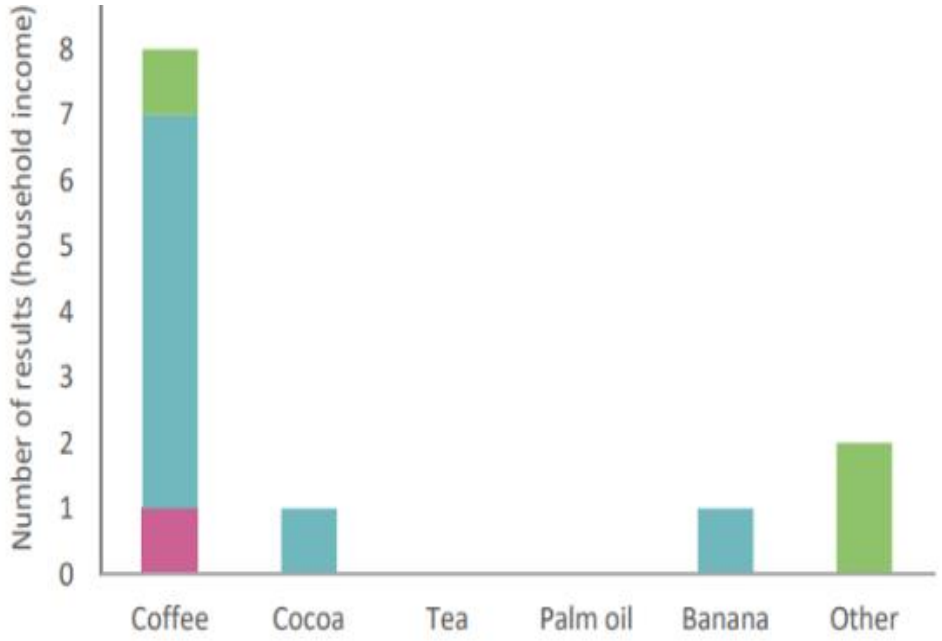
**Figure 31: Forest plot for income from certified production by crop**



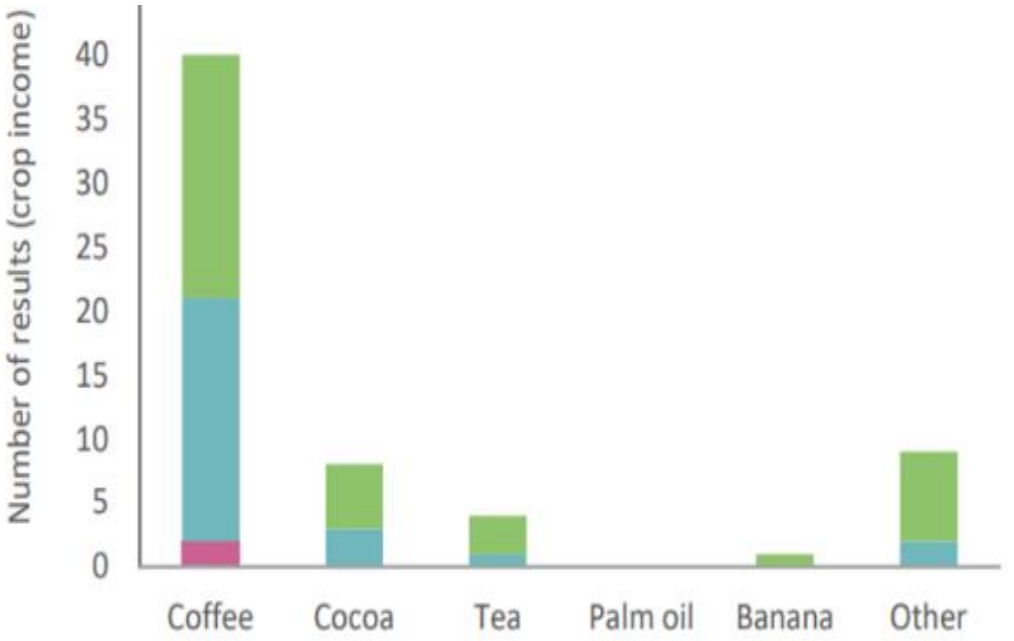

Click to access this report: Oya, C. *et al*, 'Effects of certification schemes for agricultural production on socio-economic outcomes in low- and middle-income countries: a systematic review', International Initiative for Impact Evaluation, Systematic Review 34, 2017.

This graph is from Evidensia's 2019 systematic review on the impacts of market-based tools on farmer yields, prices, incomes and costs in the agriculture sector. Looking at results on income, the graphs below demonstrate the difference between how these tools are impacting coffee income (right) and overall household income (left). The evidence suggests that market-based tools are driving higher incomes in coffee but that this is not translating into overall higher household incomes. This underlines the importance of looking at the full picture of income, revenue and costs within a farming house that is the central focus of the 'Living Income' Approach.

Impacts: household income



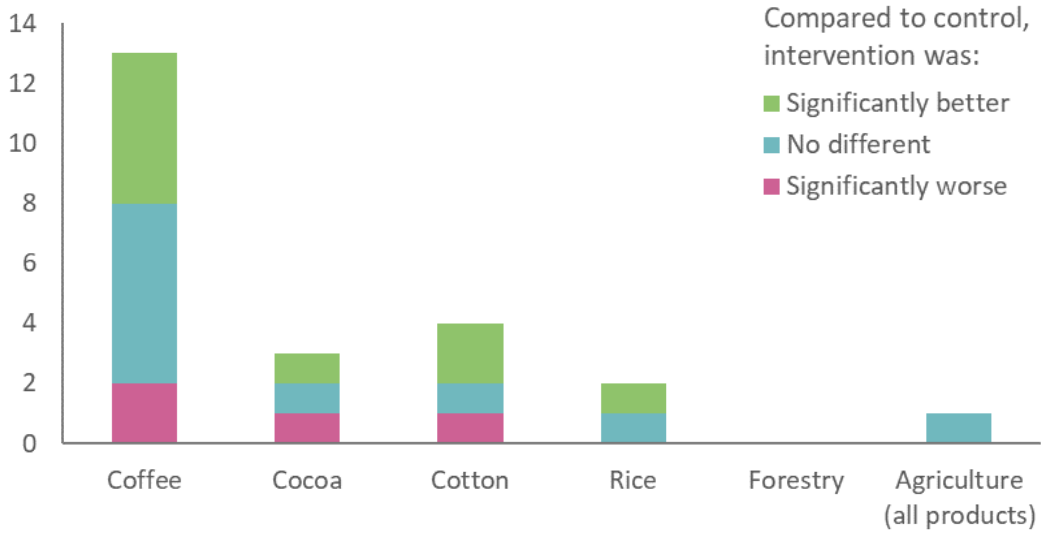

Impacts: coffee income



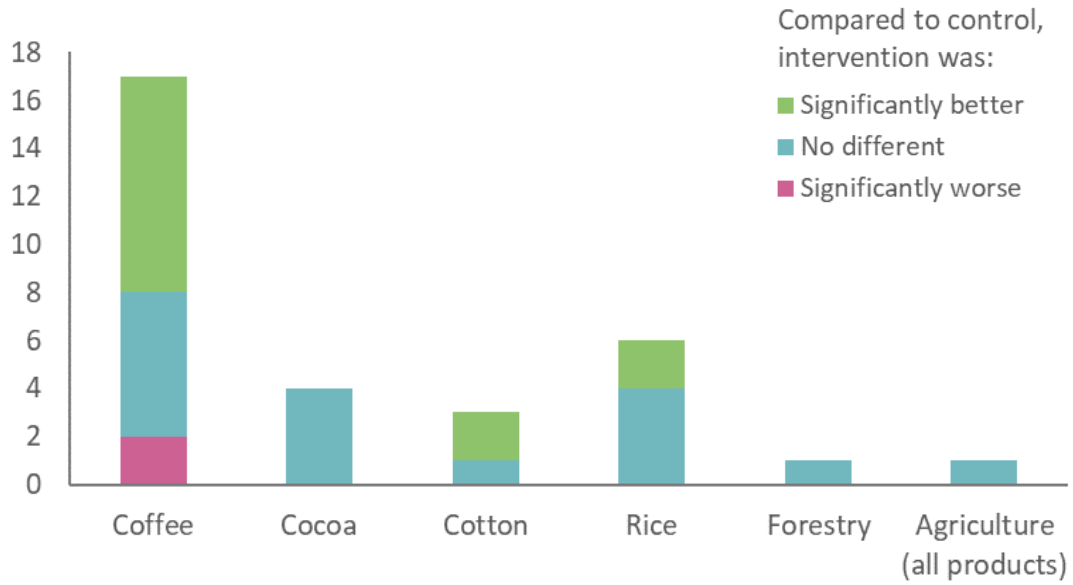

Click to access this report: Evidensia, 'Effects of voluntary sustainability standards and related supply chain initiatives on yield, price, costs and income in the agriculture sector', Evidensia, London, UK, 2019.

Evidensia's 2020 systematic review on the impacts of market-based tools on agrochemical use also sheds light on coffee. As the tables below show, again the bulk of impacts results are a mixed bag. There is more evidence that market tools are supporting reducing fertilizer use than pesticide use. In some cases, target farms may even be increasing their use of agrochemicals.

## Impacts: pesticide use




## Impacts: fertilizer use




Click to access this report: Evidensia, 'The impact of market-based sustainability approaches on agrochemical and antibiotic use: a synthesis paper', Evidensia, London, UK, 2020.

The review also noted that multiple studies found support strategies -- such as access to training and diagnostic tools -- helped farmers implement best practices related to IPM and fertilizers. Benefits of training extended beyond certified farms – producers shared knowledge with certified and non-certified neighbours alike. The research showed a complex relationship between productivity and the implementation of sustainable agrochemical and soil practices.

Much more focussed research is needed to understand the impacts of these tools on agrochemical use, especially in global hotspots.

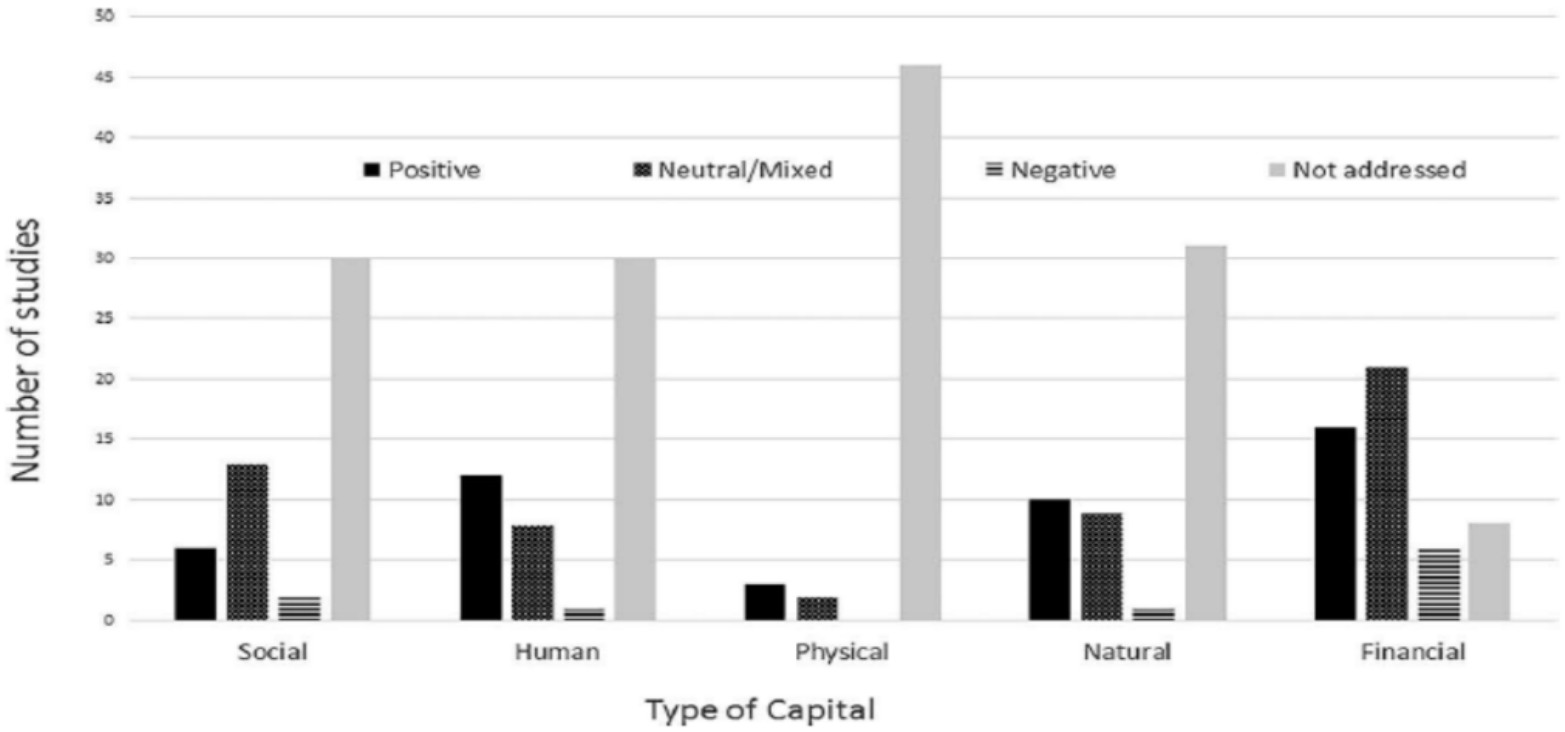
- For agrochemicals, most research has focused on fertilizer and pesticide use, less on measures of soil health and erosion
- Most research from Africa, although Asia and South America are global hotspots in terms of fertilizer and pesticide use


Click to view a recording of the Evidensia webinar discussing the results from this systematic review: https://www.evidensia.eco/resources/1047/addressing-agrochemical-and-antibiotic-use-in-food-and-farming-impacts-of-market-based-sustainability-tools-webinar/

A useful evidence review that applies the 5-Capitals framework to consider various impact pathways on how VSS support farmer livelihoods, with a focus on coffee.

This graph shows the reported impacts of certification on smallholders from the 51 studies included in the review, by livelihood capital (social, human, physical, natural, and financial).

Reported impacts of certification on smallholders from the 51 studies (by livelihood capital).




Click to access this article: Bray, J.G., and Neilson, J., 'Reviewing the impacts of coffee certification programmes on smallholder livelihoods', International Journal of Biodiversity Science, Ecosystem Services and Management, 13,1:216-232, 2017.

This paper reviews the evidence base on the impacts of 4 major coffee certification schemes – a useful read for a general overview of the evidence base and is one of the few studies to review evidence on wages and workers' rights in the coffee sector.

# What are we getting from voluntary sustainability standards for coffee?

Synthesis paper Research report

**Published** August 2018 **by** Centre for Global Development. **Authored by** Elliot, K.A.

## Summary

Demand for and supply of "sustainable" coffee (and other commodities) have grown markedly for two decades, as has the literature analyzing the effects of voluntary sustainability standards for coffee. The evidence for assessing the impacts for smallholder producers and the environment remains relatively weak, however. A relatively small number of studies use methods that allow researchers to attribute observed outcomes to sustainability certifications. This paper reviews research from the past decade on the effects of coffee sustainability schemes to see what we have learned about the impact of such schemes, and whether positive livelihood effects are mainly the result of relatively better off households choosing to participate. Overall, the available research suggests that certification schemes can be beneficial, but context matters, and the poorest, most vulnerable smallholder producers are able to comply with sustainability standards only with substantial external help.

Click to access this paper: Elliot, K, A., 'What are we getting from voluntary sustainability standards for coffee?', Center for Global Development Policy Paper 129, 2018.

This 2020 paper from the TransSustain Project is one of the rare studies looking at the impacts of different market based approaches such as VSS and company sourcing codes together and separately, across 3 countries with a sample of 1900 smallholders, and visual summaries of impacts on environmental, economic and social dimensions, such as the one below.

| | Fairtrade | Fairtrade/organic | Rainforest Alliance | UTZ Certified | 4C | Nespresso AAA | C.A.F.E. Practices |
|---|---|---|---|---|---|---|---|
| **Economic sustainability** | | | | | | | |
| Gross profits ($/ha) | 🟡🟡🔴 | ○○○ | 🟢🟡🟢 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟡🟡 |
| HH income | 🟡🟡🔴 | 🔴○○ | 🟢🟡🟡 | 🟡○○ | 🟡🟡○ | ○🔴○ | ○🟡🟡 |
| Poverty/wealth | 🟡🟢🟢 | 🟡○○ | 🟢🟡🟢 | 🟡○○ | 🟡🟡○ | ○🔴○ | ○🟡🟡 |
| GAP training | 🟢🟡🔴 | 🟢○○ | 🟡🟢🟡 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟢🔴 |
| Record-keeping | 🟡🟡🔴 | 🟢○○ | 🟢🟢🔴 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟢🔴 |
| Soil analysis | 🟢🟡🟡 | 🟢○○ | 🟢🟢🟢 | 🟡○○ | 🟡🟢○ | ○🟡○ | ○🟡🟢 |
| Productivity | 🟡🟢🟡 | 🔴○○ | 🟢🟡🟢 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟡🟢 |
| Lower costs ($/ha) | 🟡🔴🟡 | ○○○ | 🔴🟡🔴 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟡🔴 |
| Higher prices | 🟢🟡🔴 | 🟢○○ | 🟡🟡🔴 | 🟢○○ | 🟢🟢○ | ○🟡○ | ○🟢🟡 |
| Access to finance | 🟡🟢🟡 | 🟢○○ | 🟢🟡🟡 | 🟡○○ | 🟡🟡○ | ○🟡○ | ○🟢🟡 |

○ Results from Honduras
○ Results from Colombia
○ Results from Costa Rica

🟢 Positive impact 🟡 Non-significant impact 🔴 Negative impact ○ No data

Results from Rainforest Alliance/Nespresso AAA and Rainforest Alliance/C.A.F.E. Practices groups

Significant impact = ** or *** in either PSM or regression, or * in both

Click to access this report: Dietz, T., *et al*, 'The impacts of voluntary sustainability standards on sustainable coffee production in Latin America', Trans Sustain Stakeholder summary Report, 2020.

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# Expert insight

Coffee plant in Costa Rica © SAN

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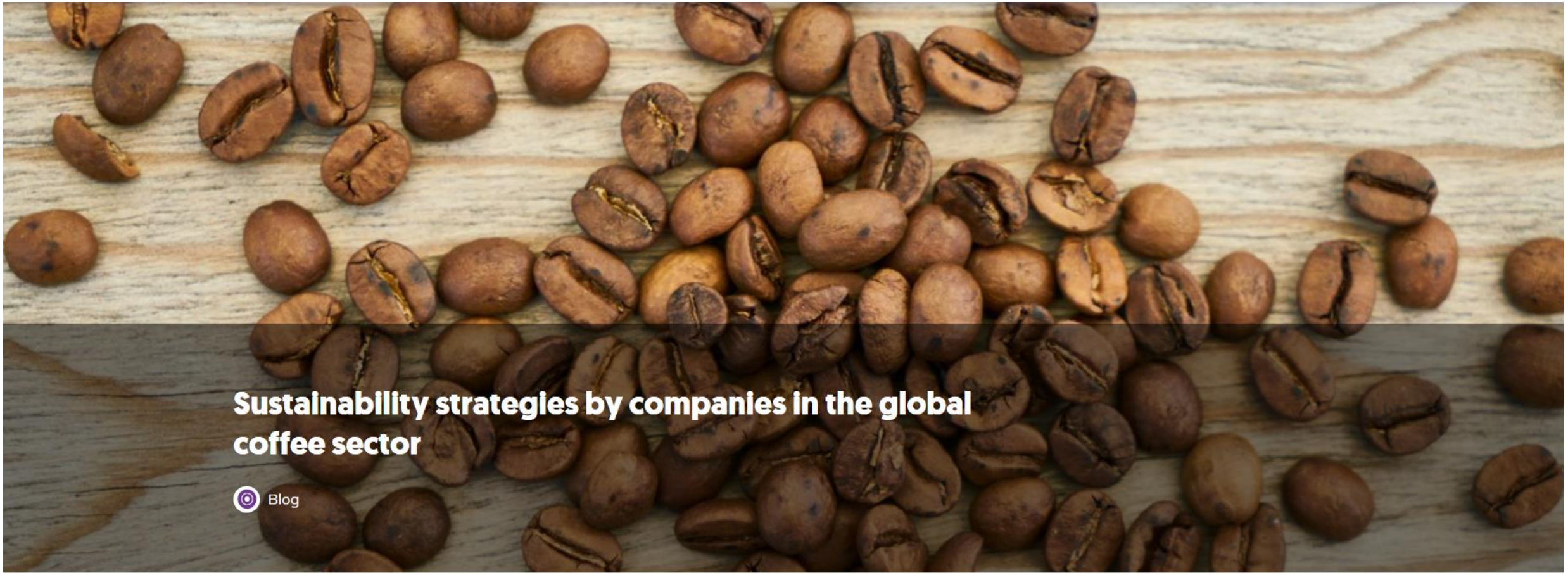
How effective is private regulation in incentivising more sustainable production practices in the coffee sector? Janina Grabs, post-doctoral researcher at ETH Zurich, shares her insight.


Click to access this blog: How effective is private regulation in incentivizing more sustainable production practices in the coffee sector? - Evidensia

In this blog, Simon Bager (Earth and Life Institute at the University of Louvain) shares insights from his research on corporate sustainability strategies in the coffee sector. Read for an exploration of findings, and what they mean for company strategies.

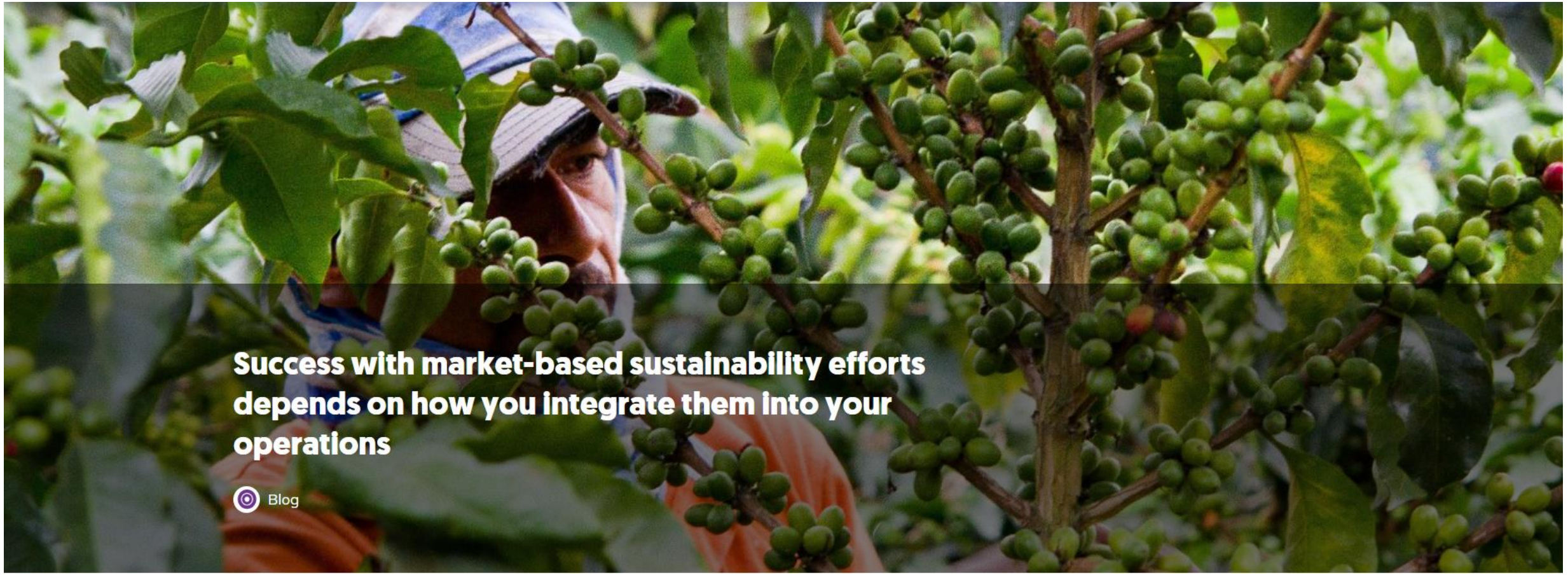



Click to access this blog: Sustainability strategies by companies in the global coffee sector - Evidensia

Interesting insights from Jeremy Haggar's (Natural Resources Institute, University of Greenwich) research into trade-offs between intensification and sustainability in coffee production, and the potential role of certification.


Click to access this blog: Intensification-sustainability trade-offs in coffee production and the potential role of certification - Evidensia

What drives successful market based sustainability efforts? The Committee on Sustainability Assessment (COSA) have distilled 5 key elements for a successful sustainable sourcing program, relevant to CSR strategies large and small.




Click to access this blog: Success with market-based sustainability efforts depends on how you integrate them into your operations - Evidensia

What are the main challenges for coffee company sustainability programmes? In this blog Reud Reuben and colleagues from Wageningen University and Research explore challenges and ways forward.


Click to access this blog: Five challenges for coffee company sustainability programmes - Evidensia

In this blog Rocco Macchiavello (London School of Economics) shares insights from his research on the Sustainable Quality Program in Colombia, quantifying the program's impact on the coffee sector & discussing questions and opportunities.


Click to access this blog: An evaluation of the sustainable quality program in Colombia coffee - Evidensia

Do coffee sustainability standards need to rethink their operating model? Jeffrey Neilson (University of Sydney) reflects on insights from his 5 years leading research with ISEAL in Indonesia on livelihood & poverty impacts of VSS.


Click to access this blog: Do coffee sustainability standards need to rethink their operating model? - Evidensia

In this closing blog, Bambi Semroc of Conservation International's Sustainable Coffee Challenge and Vidya Rangan of ISEAL, bring together insights from research and practice. How can we learn from the expansive knowledge base on sustainable coffee to inform our actions going forward?


Click to access this blog: Coffee and sustainability: combining insight from research and practice - Evidensia

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# Closing Thoughts

The coffee sector has been a leader in global efforts to see if a commodity can meet growing demand, drive economic development in producing countries, as well as conserving the forest and freshwater ecosystems where it grows. Despite this, the sector faces unprecedented challenges: most notably, poverty, lack of economic development, deforestation and climate change. The good news is that efforts have been intensely researched offering us insights into what's worked, what's not and why. Coffee is the most researched commodity in the sustainability space and this Coffee Future's campaign has sought to review and share key insights from the evidence base to inform actions for a sustainable future.

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Coffee beans pouring from scoop © Sergey, Adobe stock

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