



Towards a Shared Approach for  
Smallholder Performance Measurement:  
Common indicators and metrics



## EXECUTIVE SUMMARY

This paper presents an aligned yet customizable framework of indicators for measuring farm-level sustainability in smallholder agricultural supply chains. These indicators are proposed primarily in the context of performance measurement, but can also be useful for more in-depth impact evaluation studies. The proposal is not for one single common set of indicators, but rather for using the same indicators when asking the same types of questions at the farm and household level. The authors argue that using the same indicators when asking the same questions in smallholder supply chains will increase comparability across data collection efforts and ensure that the community is building on the common understanding of how to gather credible, affordable, and useful data in smallholder chains.

The ideas presented here are drawn from recent fieldwork of food and beverage companies, standards organizations, NGOs, and development agencies, and were synthesized as part of a community of practice led and facilitated by the Sustainable Food Lab. This community is co-led by a committee of practitioners from the Committee on Sustainability Assessment (COSA), the International Social and Environmental Accreditation and Labeling Alliance (ISEAL), The IDH Sustainable Trade Initiative, Rainforest Alliance, the Ford Foundation, the Center for Development Innovation at Wageningen (CDI), Nestlé, Root Capital, Mars Inc., and the Sustainable Food Lab. The work is funded by the Ford Foundation and the IDH Sustainable Trade Initiative.

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# 1 WHAT IS PERFORMANCE MEASUREMENT?

## 1.0 What is Performance Measurement?

A growing number of companies are expanding their smallholder sourcing programs—including the use of 3rd party certification. Motivations range from securing supply of raw material to creating new sourcing arrangements with brand or reputation benefits. Alongside the increased investment in smallholder sourcing is interest—and even urgency—in finding cost-effective approaches to better understanding farm-level conditions and sustainability. Some companies are interested in measurement to identify key social, economic, or environmental sustainability issues that are risks to the continuity of the supply chain or opportunities for improvement. Others are interested in measurement to track progress on sustainability and livelihood conditions at the farm and household level.

Similarly, development agencies and standards organizations are looking for practical ways to build ongoing livelihood monitoring into their agricultural enterprise work in order to complement their impact assessments, improve learning and effectiveness, and to help communicate development gains.

The Seas of Change International Learning Workshop held in The Hague in April 2012, brought together 100 leaders from business, government, NGOs, research, and producer organizations to discuss scaling the benefits of agri-food markets that are inclusive of smallholder farmers. One of the key take-aways from this workshop, outlined in the published meeting

report, was the need for better monitoring and assessing of social impact. “Finding the right metrics and cost-effective ways of collecting and reporting data are all very high priorities.”<sup>1</sup>

Smallholder chains can present complex social and economic questions relating to sustainability. They are characteristically diverse, containing many producers who may or may not keep written records and often include a wide range of farm sizes and livelihood statuses. For these reasons, an affordable way to measure sustainability and progress in real time is critical for increasing transparency about the conditions and needs of producers. More frequent monitoring allows the practitioner to build rapid information feedback loops in order to enable adaptive management, experimentation and learning from evidence about what works when engaging with smallholder supply chains.

Performance Measurement is an approach that assesses current status and tracks change over time. The goal is cost effective ways to measure performance that can complement more intensive and expensive in-depth assessment. Performance measurement approaches are not designed to measure attribution between specific interventions and specific outcomes the way an impact assessment might. Figure 1 illustrates how performance measurement can be used to regularly track progress, between an initial study and occasional in-depth assessment. As pointed out in the COSA Measuring Sustainability

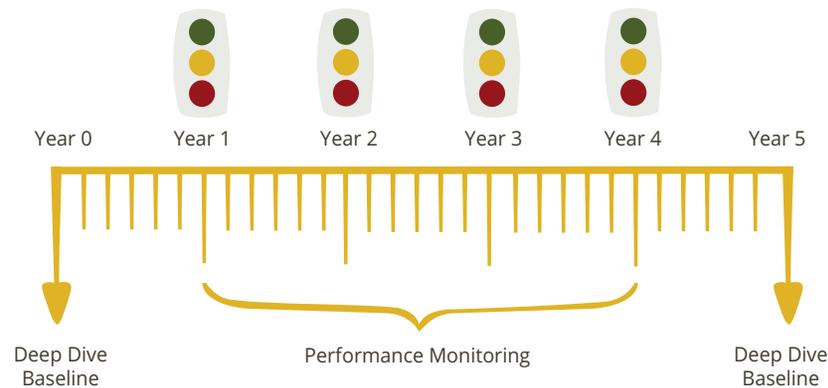
<sup>1</sup> Woodhill, J., Guijt, J., Wegner, L., Sopov, M. From Islands of Success to Seas of Change: A report on scaling inclusive agri-food markets. 2012.



“I think there is real value in a group of companies engaged in measuring the status of their smallholder supply chains to come together and learn from one another about what is working and what’s not. By sharing our learning, and by collaborating to develop a shared approach to performance measurement we can avoid duplication of efforts and gather more actionable data more efficiently.” -Duncan Pollard, Nestlé

Report, “Impacts can take many years to evolve and manifest... in the meantime, investments continue and require ongoing direction and decision-making.”<sup>2</sup> This is where performance measurement can play a very useful role.

Figure 1. Example of Performance Measurement as an Ongoing Approach to Data Collection



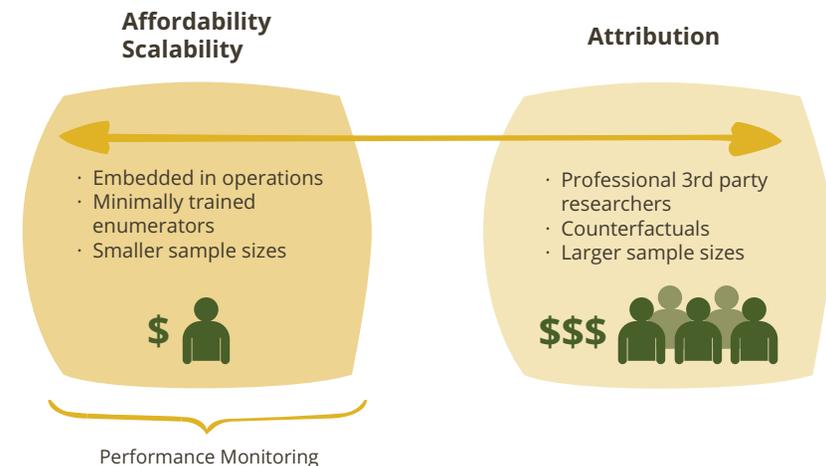
The development of new ICT tools for data collection—like SMS and voice recognition cell phone surveys and new approaches to data management at the coop, supplier, and industry level—offer exciting new possibilities for practical, more real-time monitoring. These new technologies should be embraced while also maintaining a focus on the purpose of data collection: to gain insight into supply chains in order to improve sustainability, both from a business perspective and in terms of improved livelihoods and environmental conditions for producers.

Performance measurement can be useful for a single study to measure current conditions of producers within a supply chain (such as average farm productivity at the farm level or average

household revenue), and for repeated measurements to monitor whether activities are being accomplished as expected, and whether the main outcomes are moving in the right direction. This approach can allow for some general analysis of correlation between the adoption of better management practices and specific outcomes, e.g. crop yields, but is not rigorous enough to demonstrate attribution of outcomes to specific activities. Attribution—how much change can be attributed to a specific intervention—requires more rigorous impact evaluation design, including counterfactuals. These approaches can be complementary. This can be thought of as a continuum—as illustrated in Figure 2—where investments in sample size, control groups, and professionalization of enumerators drive accuracy, confidence, potential to attribute, and costs.

This document aims to provide guidance on common indicators and measurement approaches—primarily at the farm and household level—that are appropriate for performance measurement in agricultural supply chains. While there are many ways to

Figure 2. Measurement Methodology Continuum



<sup>2</sup> COSA. 2013. The COSA Measuring Sustainability Report: Coffee and Cocoa in 12 Countries. Philadelphia, PA: The Committee on Sustainability Assessment

# 1 WHAT IS PERFORMANCE MEASUREMENT?

collect data within the broader performance measurement approach—from cell phone surveys, to local technicians interviewing farmers, to traders collecting information through field staff—this approach is typically characterized by relatively short surveys by enumerators who have not received extensive training. In some cases, performance measurement data collection is embedded into the business systems of the supply chain. Therefore it is critical that indicators and approaches for performance measurement be appropriate to how the data is collected and who is collecting it.

For more detail on developing a performance measurement approach—including considerations of who should be collecting data, whom data should be collected from, and how to choose a survey delivery method—please see *Towards a Shared Approach to Smallholder Performance Measurement: A Practitioners Guide to developing a performance measurement strategy*, a companion document to this paper, published in 2013 by the Sustainable Food Lab.



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## 2.0 Why Shared Approaches to Common Indicators?

While companies, donors, investors, and development organizations certainly differ in the specific questions that they are asking about supply chains and the conditions of farms and households, it has been found, in practice, that there is significant overlap in the information sought. In the context of trade with small-scale producers, companies, certifiers and donors often share questions such as:

- Are farmers as productive with their land and labor as they could be? Is productivity improving and increasing?
- Are farmers consistently meeting quality goals? Is that quality improving?
- Is the crop profitable? Is the income from the crop increasing?
- Are farmers living above the poverty line? Are they food secure? Are their incomes and assets increasing?
- Is production of this crop an attractive livelihood for future generations?
- Are women participating in the value chain? Are women benefiting from that participation?
- Are the farmers adopting farm practices that will allow them to continue to cultivate this land into the future?

There is not one single blueprint set of indicators for performance measurement in smallholder chains. Ultimately the choice of indicators and detailed methodology for performance measurement efforts should be based on the purpose and specific questions of that undertaking. This paper can provide a good starting point to guide readers through what to ask the small-scale producers in agricultural supply chains, why to ask, and finally—where there is agreement—how to ask in ways that increase the chance of consistency and learning between efforts.

There are several reasons why taking a common approach to measuring common indicators can be beneficial:

- **Greater efficiency and effectiveness:** More companies are asking these questions and are looking to the wider community for guidance on the most appropriate indicators and approaches for smallholder supply chains that will be credible to external stakeholders, consistent with the larger community.
- **Reduced burden on suppliers and farmers:** Organizations asking these questions—companies, donors, NGOs—are often asking about similar crops and sometimes even the same supply chains. Consistency with indicators and approaches allows suppliers to answer multiple inquiries with the same data, decreasing costs and burden on suppliers and farmers.
- **More effective community learning:** When the way data is collected is standardized, the data becomes more comparable for learning, the same data can inform multiple interested organizations, and the collective data can support better evidence-based decision-making.

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## 2 WHY SHARED APPROACHES TO COMMON INDICATORS?

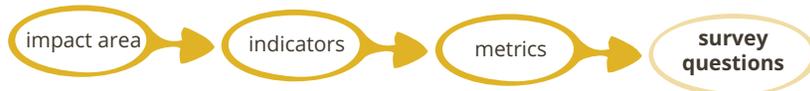
small-scale producers in agricultural supply chains, why to ask, and finally—where there is agreement—how to ask in ways that increase the chance of consistency and learning between efforts. It is not assumed that all users will adopt the entire performance measurement Framework presented here. The Framework is a flexible resource and which pieces of it users adopt will depend on the purpose and scope of their measurement initiative.

### 2.1 Common Terminology

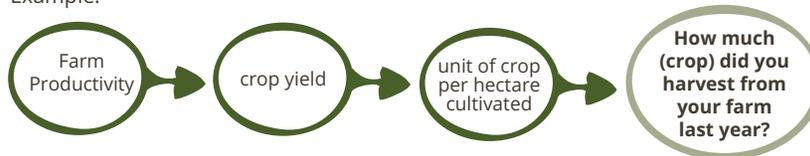
There is often confusion about the distinction between an indicator and a metric. For this document the authors use the following definitions:

Figure 3. Performance Measurement Indicator Framework

Framework:



Example:



- **Theme:** The broad category of social or environmental results to track (e.g., livelihood, gender, or productivity)
- **Indicator:** A quantitative or qualitative descriptor of condition; indicators are typically selected to track changes in a system over time or to monitor the effects of a specific intervention; good indicators are **SMART:** **S**pecific (clearly linked to purpose), **M**easurable (can be quantified), **A**chievable (can be changed by the activities of the project), **R**elevant (to how success is defined), and **T**ime bound (show change over time)
- **Metric:** The means of measure; the specific quantification of an indicator; how the indicators are defined (e.g., price x volume = gross crop income)
- **Survey Question:** The specific question that is asked to the interviewee to collect data on the metric, which will inform the indicator; survey questions can also be accompanied by important guidance on who should ask the question and why it is being asked
- **Targets:** For change programs, where investments are being made to achieve outcomes, also defining clear targets



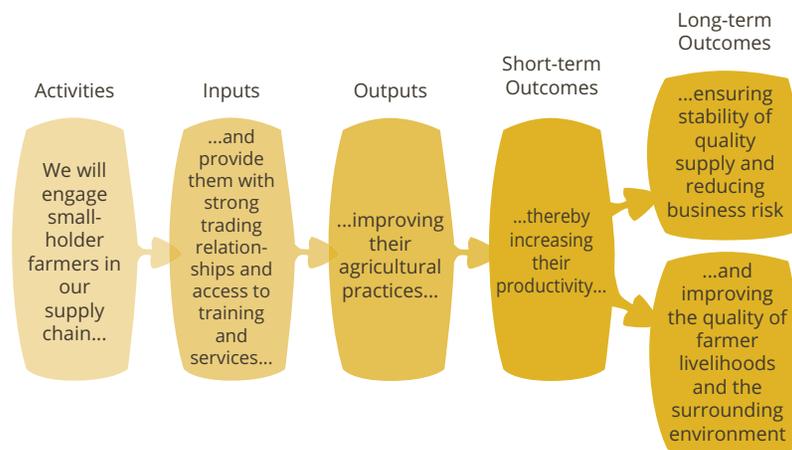
## 2.2 Using Results Chains to Identify Common Performance Indicators

Organizations work with smallholder agricultural supply chains in different ways. Some companies purchase raw materials from smallholders through a chain of traders. Some provide regular services such as technical assistance and access to inputs such as seeds and fertilizer in addition to buying. Other organizations invest in certification, capacity building of farmer organizations, and greater value-addition for farmers. These different models of engagement and investment with small-scale producers will have different underlying theories of change, often illustrated with a results chain. Also called a theory of change, impact pathway, log frame, or casual model, a results chain is a set of causal assumptions about how activities lead to outcomes and eventually impacts. Good theory-based measurement approaches are grounded in the specific purpose and goals of each effort.

When one looks across many of the current efforts to measure performance in smallholder agricultural supply chains, there is a typical high-level logic from a company perspective that can provide a basis for a common approach to indicators. The theory runs something like this: By engaging farmers through trade in more modern supply chains, organizations create access to good trading relationships and access to services (such as training and inputs) that will help farmers professionalize their practices. Good access to services and a good case to invest based on the attractiveness of this supply chain relative to alternatives, will lead farmers to improve their agricultural practices, increase their productivity and improve their net income and quality of life. And where good agricultural practices include conservation practices, adoption will also lead to better environmental outcomes.

Results chains are recognized by many as a useful tool to graphically synthesize how investments and activities will lead to results. The authors of *Monitoring and Measuring Change in Market Systems* write that “results chains are a means of illustrating and explicating our ideas about how a particular investment or set of interventions is going to lead to changes...”<sup>3</sup> All results chains are based on causal assumptions. For example, it is an assumption that increased productivity leads to increased income. A well-designed performance measurement approach can help test the key assumptions by using the collected data to find correlation between stages in the pathway. It is important that practitioners understand and articulate the working assumptions in their results chains in order to remain open to learning from results.

Figure 4. Very High Level Access to Services & Trade Results Chain (Supply Chain Perspective)



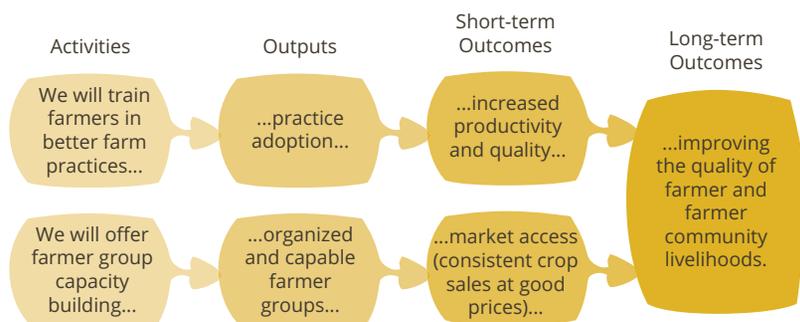
Of course, organizations that are working with farmers and farmer organizations to build their capacities and help develop new access to markets would look at things a little differently.

<sup>3</sup> Osorio Cortes, L. & Marcus Jenal. *Monitoring and Measuring Change in Market Systems*. SEEP, fhi360, USAID MaFi. 2013.

## 2 WHY SHARED APPROACHES TO COMMON INDICATORS?

Figure 5 shows another very high level results chain that starts with investing in farmers to improve market access and farm level performance (e.g., productivity and quality) through capacity building and training. While there may be some important additional hypothesis that vary from case to case—such as the idea that increasing farmer organizational capacity can increase access to affordable credit—end goals are often similar around improved farmer livelihoods and better environmental performance and much of the logic chain is similar.

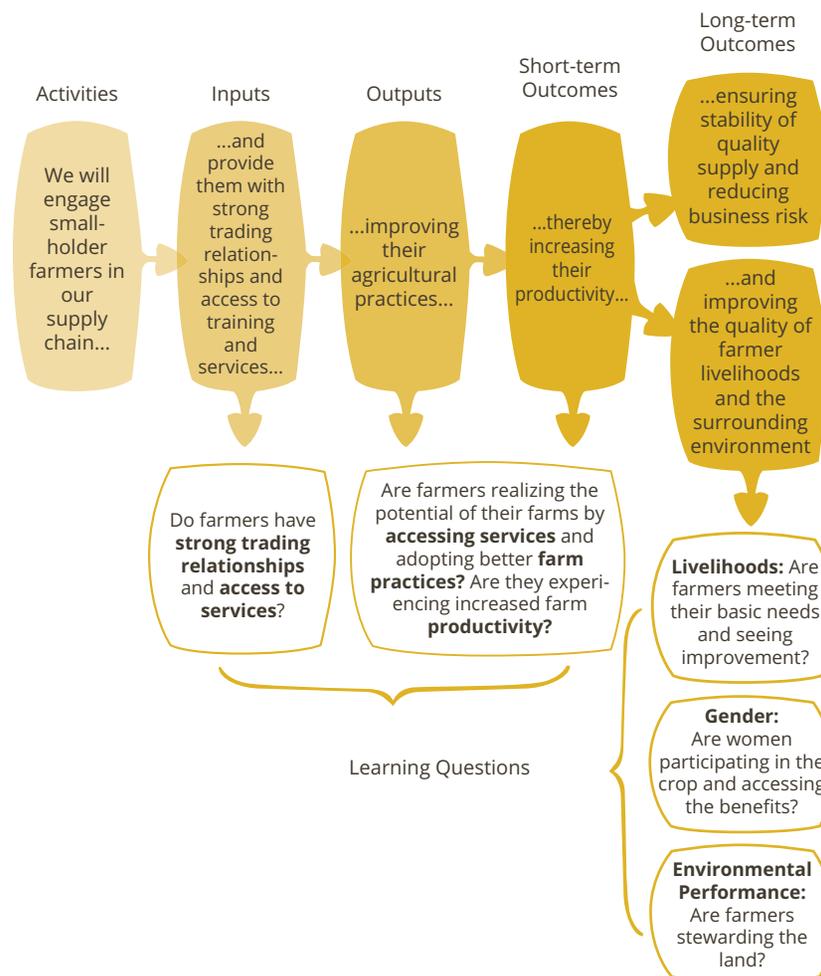
Figure 5. Very High Level Market Access and Increased Productivity Pathway



Looking back at Figure 4, the generic high-level results chain, it is now possible to identify key learning questions and important indicator areas to focus on. As illustrated in Figure 6, this results chain leads to key learning questions that follow the chain of logic. Do farmers have good access to services? Are they realizing the potential of their farm by accessing those services and adopting good agriculture practices? Are they achieving good productivity?

Performance measurement along this complete chain of logic can provide information that is both helpful for learning and also explaining how intended results link back to actions. While

Figure 6. How the Results Chain Leads to Learning Questions and Themes



it may be tempting to simplify a results chain and consider only productivity or household income, experience in the field indicates that one will obtain much more useful information by looking more broadly. For example:

- Information about crop revenue from the primary crop in the value chain along with overall household revenue allows one to see whether the crop is contributing to the revenue. Household revenue may be influenced by many factors such as off farm income and remittances.
- Information about farm productivity enables one to better understand improvements in farm performance that could be disguised by price volatility if one just looked at crop income.
- Information about adoption of good agricultural practices allows one to better understand correlations between productivity and practice adoption in the face of weather volatility that changes annual productivity.
- Information about criteria other than just productivity is useful when trying to understand how trade and investments in farm practices improves livelihoods. There are many documented cases where improvements in productivity alone have not led to improvements in household income and food security.

Although the results chain looks different for different supply chain actors—depending on the point of engagement with the farmer and exact interventions—the common learning questions and themes that provide a framework of common approaches include trading relationships, access to key services, best practices adoption and productivity, environmental performance, gender, and livelihood.



## 3 COMMON INDICATORS

### 3.0 Common Indicators

Discussions with companies, standards organizations, donors, and development agencies clearly identified the interest in and potential value of taking a shared approach to performance measurement in situations where the same types of learning questions are being asked. A “shared approach” here can go to the level indicators, to metrics, and even to survey questions and data collection methodology. The resolution presented here on a shared approach does vary from indicator area to indicator area depending on the convergence reached.

Table 1 is a summary of the proposed themes and shared indicators, following the outline in Figure 6. In the sections that follow, readers will find background thinking on each indicator area as well as identification of specific metrics where they have been recognized as appropriate for performance measurement and field tested sufficiently in order to ensure confidence in their use. For some of the themes used in the assessment of smallholder livelihoods, there are not yet well developed specific metrics that fit the scope of performance measurement that can be used across different kinds of supply chains. Metrics for some themes—like gender and trading relationships—require more testing and confidence building. For others, the specificity of different crops, chains, and geographies may lend themselves better to site-specific metrics that are guided by the proposed themes.

It is important to note that this is an ongoing, iterative process. New studies to test indicators and metrics in smallholder chains

are taking place frequently. It is expected that our collective understanding and agreement will evolve and improve over time. This will be documented in future versions of this guide.

Additionally, information on farm and household characteristics should be collected. This will allow for clear description of who the farmers are behind the data and to compare performance between groups in ways that will increase learning and future program design.

The following sections are structured to present the reader with the rationale for each theme, the recommended indicators and metrics that fit within the scope of performance measurement, and for most themes, a final section that provides recommendations for those looking to go deeper than performance measurement allows.

In the first half of 2015, the Sustainable Food Lab and its partners will be taking the Shared Approaches Framework to the next level of specificity by developing a sample survey from the indicators and metrics in the Framework. This will serve as an example for practitioners to use to understand how one might translate the Shared Approaches indicators into a more action-ready format.

### 3.1 Livelihood and Well-Being

Livelihood is a very broad concept and encompasses many aspects of one’s life. In deep dive livelihood assessments,



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Table 1. Common Indicator Framework

Impact Areas	Guiding Question	Indicator Area	Rationale
Livelihood and Well Being	Are farmers meeting basic needs and seeing improvement?	Food Security: Access to sufficient food	Food security is a key component of sustainable livelihoods, understood by many as a basic right, and is a CSR and sustainability risk. It is important to measure separately where possible because of cases where gains in income didn't lead to gains in food security.
		Income	Household revenue can show whether the household is above a poverty line and whether overall revenue is improving with crop income.
		Poverty	To understand poverty status the Progress out of Poverty Index (PPI) is a 10 question, country-specific survey developed by the Grameen Foundation. It measures the likely percent of producers above an absolute poverty line, or above local poverty line.
		Assets	Measurement of a few key assets like land-holding, bank accounts, access to electricity, ownership of a form of transportation, or communication device, and type of cooking fuel used allows us to learn more about the farmer's living conditions and is complementary to efforts to measure wealth.
		Perceived Well-Being	Farmer perception of well-being can be equally as important as other livelihood indicators as it gives a sense of whether farmers believe their basic needs are being met and whether they will continue with this crop.
Gender	What are gender roles and benefits in this crop?	Participation	It is important to understand the role of women in the supply chain in order to better target training and other interventions.
		Benefits	If women are doing the work of the crop, but not going to trainings, trading, or involved in decision-making, there may be opportunities for improving inclusivity of women. It is also important that data is collected in a way that enables users to disaggregate finding by the gender of the head of household so outcomes can be examined by gender.
Environmental Stewardship	Are natural resources well stewarded?	Adoption of conservation practices	Identify 3-5 key conservation practices appropriate to the system being examined, such as cover cropping, no till, drip irrigation, etc. Where practical also look for outcome based indicators that fit within the scope of performance measurement.
Farm Productivity	Are farmers realizing the potential of their farm?	Adoption of best practices	Training only has benefits if the new practices are adopted. Typical approaches look at 3-5 key practices that drive productivity or quality. Specific practices must be identified for each crop. Adoption signifies an investment on the part of the farmer and that they are following practices most likely to result in good productivity.
		Estimated Productivity	It is important to measure productivity to track improvements in farming outcomes independent of price volatility. Look at farmer recollection of productivity through survey questions about 1) yield and 2) land area planted.
		Crop Revenue	Crop revenue (production times price) tracks the revenue contribution of the crop. Net crop income is much better whenever possible because profits are dependent on production costs. Typical key costs to measure are hired labor and inputs costs.
Access to Services	Do farmers have access to services?	Access to credit, training and inputs	Access to services like training, credit and inputs is critical for farmer success.
	Are farmers using these services?	Use of credit, training, and inputs	Use of services measures the functional attractiveness of the services. Only if farmer use the services can they improve farm outcomes.
Trading Relationships	Are farmers experiencing good trading relationships?	Organization	While participation in a producer organization is not necessary for good trading relationships, it is one indicator that farmers are organized and therefore have potential for better negotiating power. If farmer participates in a farmer group, then asking how they feel about the capacity of the coop gives further insight. See COSA's PO Index.
		Loyalty/Dependency	Loyalty, by which we mean the choice of farmers to continue selling through to a specific buyer, is the best "voting with your feet" indicator from farmers. However, this is only an indicator of the relative attractiveness of a buyer when there are other options available to the farmer. If a farmer continues to sell to a specific buyer because they have no other choice, that is considered dependency rather than loyalty.
		Transparency	Where farmers have access to information—prices, price structures, quality grades, etc.— they are better able to make informed choices about market participation and investing in their production. Contracts are one vehicle for transparency.
		Producer Perception	Perception matters and often defines the reality of how producers experience trade. These general "satisfaction questions" capture the farmer's overall sense of the crop and trading relationship.
Next Generation Farmers	Is the supply chain cultivating a next generation of farmers?	Attractiveness of Growing Crop as Profession	Youth are the future of a secure global food supply and as such, those investing in agricultural development initiatives would do well to monitor progress in this area in a common way in order to compare and share learning, adapt strategies and speed up progress and innovation.

### 3 COMMON INDICATORS

#### Company Case: Unilever

Unilever's Sustainable Living Plan describes Unilever's corporate sustainability ambitions, formulated into more than 50 time-bound targets. One of these targets is to, "engage with at least 500,000 smallholder farmers in our supply network. We will help them improve their agricultural practices and thus enable them to become more competitive. By doing so we will improve the quality of their livelihoods."

So Unilever needs to measure conditions in its smallholder supply chains to know and report on the impact its sourcing has on smallholder livelihoods. To this end, Unilever, together with partners and advisors, has developed a performance measurement survey aimed at reporting on improvements in smallholder livelihoods, and diagnosing any issues. The survey is anchored in Unilever's understanding of how participation in a Unilever supply chain can affect livelihoods.

Unilever developed a simple results chain that describes how its sourcing from smallholder farmers affects farmer livelihoods. The results chain describes a causal pathway much like the example above: (1) Ensuring Good Trading Relationships; and providing (2) Access to Training, Inputs and Services; plus (3) Adoption of Good Practice and Make Use of Services; which would lead to more (4) Successful Farmers; and then to improved (5) Livelihood Status. So the results chain draws a connection between trade and livelihoods, via a set of assumed, but sound, intermediary steps.

At each stage of the results chain there are a small number of indicators, describing the status of that step. Indicators are then operationalized in concrete metrics. A survey finally gathers the data required to calculate these metrics.

approaches to livelihoods may include disaggregated analysis of livelihood systems for different socio-economic groups and wider social issues such as health, kids in school, and access to clean water. For the purposes of supply chain performance measurement, practitioners focus on a select number of themes and indicators that are more directly linked to the supply chain—the individual farm and household—as opposed to the community at large.

#### Measuring Household Income and Assets

Income and assets are very important indicator categories for assessing livelihoods. Motivations for looking at income and assets may include a desire to see whether incomes are improving, whether incomes are attractive relative to other options, and whether producers are able to achieve a minimum standard of living such as exceeding a local poverty line.

Household assets are important for two reasons. First, research has indicated that assets are critical to assisting poor people to move out of poverty, especially intergenerational poverty. Income is transitory while assets—land, savings, a house, and a mode of transportation—are more durable and can be used to generate further income. Second, household assets can give a sense of household quality of life (when compared to averages in the region) and whether households have been able to invest in their farms and homes. Of course, what assets a farmer invests in will vary across cultures. And this can make it hard to gather comparable data.

Measuring household income allows us to track improvements in income relative to a metric like a local poverty line. However, measuring total household income in smallholder supply chains can be quite complicated, given the range of livelihood activities that one household can engage in and the challenges of recall. It is difficult to reliably assess farm income through short surveys

in situations where farmers do not keep written records and it isn't appropriate or possible to do an in-depth income estimate through an exploration of household consumption.

To address these challenges with income and asset measurement, a number of organizations have come up with poverty indices that collect a variety of metrics as proxies for poverty. One such index is the **Progress Out of Poverty Index (PPI)** created by the Grameen Foundation and Microfinance Risk Management. The PPI is a country-specific index made up of 10 simple questions that are chosen for their statistical correlation to the incidence of poverty. The developers of each PPI scorecard use national census data to find this correlation. The way the PPI is structured allows the user to plot the respondent's household's score to a corresponding national or international poverty line. The PPI is designed to track change over time and is not sensitive enough to show meaningful change in a household's poverty status for time frames less than 5 years.

The PPI has emerged as an attractive approach to measuring poverty status. It was initially designed for microfinance organizations and their client population. Until recently it has not been used to measure agricultural livelihood status. Some questions still remain about how well the PPI serves as a proxy for poverty likelihood in rural agricultural supply chains. For example, is the PPI sensitive enough to measure the probability of being poor accurately at a very local level and does it capture incremental improvements in income sufficiently for that purpose. Research is underway to address the first of these questions.

### Recommendations for Performance Measurement

There are two reasons for including multiple measures for livelihood, particularly when using the performance measurement survey as a baseline or as the main vehicle for tracking change over time. When performance measurement is used for intermediary measurements between in-depth impact assessment studies, further simplification is possible. But as the main indicator set we recommend multiple measures because:

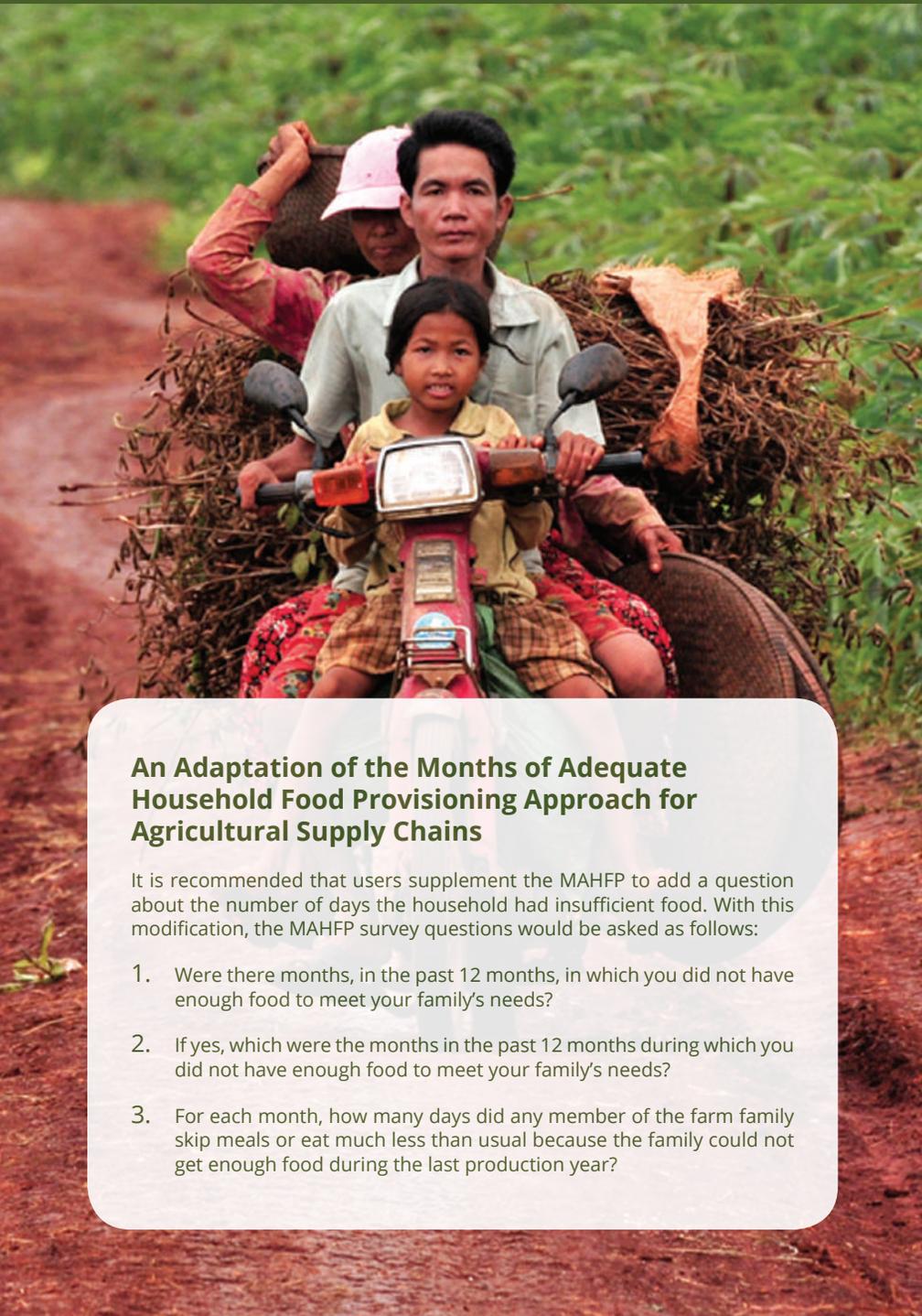
- In a number of supply chains, improvements in crop income don't necessarily lead to improvements in total household income or food security.
- Multiple measures of livelihood—food security, PPI, assets, income—help improve our confidence in the results through triangulation where we know that there are frequently accuracy problems in trying to measure household income directly.

These multiple measures also help us answer and track multiple questions such as:

- How does revenue compare to cost of production for the target crop(s)?
- What percentage of farmers have access to basic needs such as clean water, transportation, etc.?
- What percentage of farmers fall above or below the poverty line?



### 3 COMMON INDICATORS



#### An Adaptation of the Months of Adequate Household Food Provisioning Approach for Agricultural Supply Chains

It is recommended that users supplement the MAHFP to add a question about the number of days the household had insufficient food. With this modification, the MAHFP survey questions would be asked as follows:

1. Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs?
2. If yes, which were the months in the past 12 months during which you did not have enough food to meet your family's needs?
3. For each month, how many days did any member of the farm family skip meals or eat much less than usual because the family could not get enough food during the last production year?

By tracking the change, one can see whether things are getting better or worse over time. It is recommended that users collect data on the following indicators as a way of understanding the livelihoods of producers.

Table 2. Livelihood Indicators

Indicator Area	Metric
Food Security	<ul style="list-style-type: none"><li>• Days and months without sufficient food in past year.</li></ul>
Income	<ul style="list-style-type: none"><li>• Progress Out of Poverty Index</li><li>• Farmer Reported Total Household Income (clarify whether this includes gross farm revenue or net farm revenue)</li><li>• Percent of revenue from focus crop</li></ul>
Assets	<ul style="list-style-type: none"><li>• Source of water for domestic use</li><li>• Access to electricity</li><li>• Total land area owned (versus rented or leased)</li></ul>
Perceived Well-Being	<ul style="list-style-type: none"><li>• Perception that target crop could provide a viable livelihood for children</li><li>• Perceived change in economic situation in last year</li></ul>

#### More on Measuring Food Security and Nutrition

Food security is a widely recognized as an important indicator of having an adequate livelihood. According to the FAO, food security is defined as existing when people have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and enable an active and healthy life. Food security is a human rights issue and is critical to a sustainable

farm system. Without meeting basic food needs, it is hard to imagine a next generation of farmers aspiring to work in the same crops and supply chains.

According to the Gates Foundation, “key stakeholders and processes—including the CFS, the Secretary General’s HLP, the SDSN, and the Zero Hunger Challenge—overwhelmingly support a strong focus on food security and nutrition in the next set of global development goals...”<sup>4</sup>

Concerns with food security have become one of the most motivating factors for companies to act and make investments in their smallholder supply chains. It is recognized as the bare minimum for a sustainable livelihood. The Company Case from Keurig Green Mountain tells one company’s story with food security in a smallholder supply chain.<sup>5,6</sup>

Food security is important to measure separately from income because livelihood is only correlated at certain levels with food security. For households with very low incomes or very high incomes, a change in income of 20% may not result in any change to food security. In one example that demonstrates the complexity, Méndez et al. found that while higher crop incomes were clearly the dominant experience for the Fair Trade communities that they studied in Central America, there was

4 Gates Foundation. March 2014. Sustainable Agriculture. Food Security and Nutrition in the Post-2015 Framework.

5 keuriggreenmountain.com/Sustainability/ResilientSupplyChain/Farmers/FoodSecurity.aspx

6 Sweitzer, Malin & Landry. Indicators for Poverty and Hunger in Coffee Supply Chains: Green Mountain Coffee Roasters Confronts Los Meses Flacos. 2010.

only correlation with gains in food security while accompanied by income diversification.<sup>7</sup>

Before digging into how to measure food security and the best indicators to consider, it is important to be prepared to deal with findings that can result from an investigation into food security. What would a company do if they find our producers are food insecure? How do they make sense of findings and act upon it?

Food and nutrition security is a complex topic with a number of dimensions that include both access to sufficient calories, food security, as well as access to and consumption of adequate nutrition through a diverse diet, typically referred to as nutrition security. Measures of *food security* look at access to sufficient calories over a specific recall period while measures of *nutrition security* assess the types of food the household has access to and consumes in order to evaluate whether their nutritional needs are being met.

After thorough review, the MAHFP appeared the most appropriate approach for the level of depth and detail that a performance measurement study can afford<sup>8</sup> while still providing data that is actionable for supply chain partners. The MAHFP, unlike many other food security indicators, asks producers to recall food

7 Méndez, V. E., C. Bacon, M. Olson, S. Petchers, D. Herrador, C. Carranza, L. Trujillo, C. Guadarrama-Zuagasti, A. Córdón, and A. Mendoza. “Effects of Fair Trade and organic certifications on small-scale coffee farmer households in Central America and Mexico.” *Renewable Agriculture and Food Systems*: 1–16. 2010.

8 COSA. 2013. The COSA Measuring Sustainability Report: Coffee and Cocoa in 12 Countries. Philadelphia, PA: The Committee on Sustainability Assessment.

“In the last 10 years, hunger in the coffeelands has gone from an overlooked problem to one that is at the core of the coffee industry’s sustainability push. How did this happen? Largely because Keurig Green Mountain had the curiosity to ask tough questions and publish the answers — and then committed to act to address the issue.” — Michael Sheridan, Borderlands Coffee Project, Catholic Relief Services



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#### Company Case: Keurig Green Mountain (Keurig)

Much of Keurig Green Mountain's supply chain outreach work has supported improving food security — a complex, global problem that requires the concerted, coordinated efforts of many organizations and resources. The priority they place on food security at the household level stems from research Keurig (then Green Mountain Coffee Roasters) conducted in partnership with the International Center for Tropical Agriculture (CIAT), a multi-stakeholder collaboration that identified widespread seasonal hunger as a major threat to the agricultural supply chain. In 2007, CIAT found through a series of survey interviews with farming families that 67% of coffee growers interviewed in Nicaragua, Mexico, and Guatemala faced food scarcity for three to eight months of the year. An updated survey conducted in 2013 showed important gains, however the trend remained: when coffee is out of season, many farm families do not have other sources of income, nor do they have other ways to keep healthy and nutritious food on the table.

Administrators of the study came away from this experience determined to find opportunities to increase family income and reduce hunger and malnutrition in the coffeelands. It became clear that as a company Keurig needed to take a long term view of their supply chain, and to seek ways to strengthen it to secure the supply of high quality coffee they purchase. Keurig went beyond their noteworthy commitment to Fair Trade and, in fiscal year 2012, they pledged more than \$5.3 million in grants to support food security efforts as locally prioritized by cooperative and NGO partners throughout their supply chain. Keurig came to believe that in order to reduce hunger effectively, they needed to move beyond promoting only the quality of coffee as a means to increased income, but also on livelihood diversification, home food production, and savings groups to stabilize the household economy especially during the months after the coffee harvest. Through their journey, Keurig also learned the importance of including nutrition awareness in their food security work, which helps to address malnutrition—often manifested as stunting and wasting—that can arise from diets that are based on basic grains and not sufficiently diversified.

In 2012, Keurig Green Mountain and four other industry-leading companies — Counter Culture Coffee, Farmer Brothers Co., Starbucks Coffee Company, and Sustainable Harvest Coffee Importers — formed the Coffeelands Food Security Coalition (CFSC). In 2013, S&D Coffee & Tea and the Specialty Coffee Association of America joined the CFSC. Together, they are working with Mercy Corps and the Nicaraguan organization Asociación Aldea Global to help combat seasonal hunger among coffee-farming families in the Department of Jinotega — the source of 60% of Nicaragua's coffee.

availability over the last year to report months when their household lacked access to adequate food. In an agricultural supply chain where crop harvests, and therefore payments, are seasonal (as in the coffee example above) it is important to understand when farmers might be experiencing “lean” periods.

This information would allow a supply chain partner to work with producers to extend credits, promote diversification, or facilitate the planting of kitchen gardens for on-farm food consumption. Additionally, asking farmers to recall their experience over the last year relieves enumerators of the need to administer the survey at the same time each year as with indicators that suggest a recall period of one day or one week.

If supply chain partners feel that information regarding nutrition security is needed, they should consider a deeper-dive approach that extends beyond the reach of performance measurement. Unfortunately, while nutrition is critical for food security and health (globally, more than 25% of children are stunted due to malnutrition), it is difficult to measure in a simple survey. The Dietary Diversity Score is a commonly used and validated nutrition indicator. The DDS requires significant adaptation to local context in order to be administered correctly.

If there are known nutrition deficit problems, or food access problems have been identified in the supply chain, the DDS is a worthwhile in-depth expansion to be undertaken with the support and/or guidance of a nutrition expert.<sup>9</sup>

<sup>9</sup> GAIN, 2014. Leveraging Agricultural Systems to Improve Nutrition Security.



### Beyond Performance Measurement:

Two approaches for a deeper level of data collection around smallholder dietary diversity are Household Dietary Diversity Score (HDDS) and the Food Consumption Score (FCS).

**Household Dietary Diversity Score (HDDS)** calculates the number of different food groups consumed, rather than the number of different foods consumed as a way of determining diversity in both macro- and micronutrients consumed.

**Food Consumption Score (FCS)** measures household food access and diversity. The Food Consumption Score is based on dietary diversity, food frequency and relative nutritional importance of different food groups. Information is collected from a country specific list of food items and food groups.

Additionally, supply chain partners might find it very useful to understand whether farmers produce their own food on the farm. On-farm food production allows producers a degree of resilience not seen when they strictly rely on cash and markets for access to food. The example questions below allow the monitoring of availability of non-market food sources. Participants are asked if they produced vegetables/fruits or kept animals for own family consumption in the last year. They are then asked to specify number of different types of vegetables/fruits cultivated or animals kept.

- In the last year, did your family produce vegetables or fruits or keep animals for meat, milk, or eggs for family consumption?
- In the last year, how many types of animals did you keep for family consumption?
- In the last year, how many types of vegetables did you produce for family consumption?
- In the last year, how many types of fruits did you produce for family consumption?

## 3.2 Gender<sup>10</sup>

Women comprise 43% of the agricultural workforce in the developing world.<sup>11</sup> For this reason, understanding how women and men participate (or do not participate) in agricultural value chains is crucial to understanding the sustainability of a chain. When value chains work well for women, everyone benefits; the farming family, the community, and the value chain stakeholders. Root Capital has identified the vital role of women in high-impact but often low profile roles in value chains, and refers to these valuable supply chain actors as “hidden influencers”.<sup>12</sup>

<sup>10</sup> The Sustainable Food Lab consulted with gender experts Thalia Kidder from Oxfam GB and Jemimah Njuki from Care for their advice for this section.

<sup>11</sup> FAO Food and Agriculture Organization of the United Nations. 2011. The state of food and agriculture 2010-2011. Women in agriculture: Closing the gender gap for development. Rome FAO.

<sup>12</sup> Issue Brief No. 2: Applying a Gender Lens to Agriculture: Farmers, Leaders, and Hidden Influencers in the Rural Economy. September, 2014.



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FAO's research shows that "women farmers are 20-30 percent less productive than men, but not because they manage their farm less well, or work less. The main reason for the gap between men's and women's performance is that the former have access to resources seldom available to female farmers."<sup>13</sup>

Investments in women in value chains have great potential:

- Women tend to invest more in family, health, education and therefore efforts to include and benefit women often have greater development impact.<sup>14</sup>
- If women had the same access to productive resources as men they could increase yields on their farms by 20-30%. This could raise total agricultural output in developing countries by 2.54%.
- This increased productivity could in turn reduce the number of hungry people in the world by 12-17%.<sup>15</sup>

When value chains are unattractive options or fail to deliver benefits to women, there are risks to the sustainability of the supply chain including low productivity, low farm reinvestment, and food insecurity. Some ways that supply chains fall short as attractive options for women:

<sup>13</sup> Hivos, SCP, AgriPro Focus, Fari & Sustainable. October 2014. Sustainable Coffee as a Family Business.

<sup>14</sup> Capturing the Gender Effect. Anjala Kaneshasan, Krista Jacobs, Margo Young, Adithi Shetty. 2013.

<sup>15</sup> FAO Food and Agriculture Organization of the United Nations. 2011. The state of food and agriculture 2010-2011. Women in agriculture Closing the gender gap for development. Rome FAO.

- Women may do much of the work, and men get all the benefit of controlling the cash.
- Female farmers produce less than their male counterparts because they have less access to or ownership of land, use fewer inputs, and have less access to agricultural training and extension. In many countries women are only half as likely as men to use fertilizers.<sup>16</sup>
- The target crop might displace other crops that are important sources of income for women, which could potentially reduce their control over financial resources within the household.

When assessing whether value chains are inclusive of women, we want to ensure three things:

- 1. Interest:** Are women interested in participating in the supply chain?
- 2. Participation:** Are women participating in the supply chain? How?
- 3. Benefits:** If women are participating in the supply chain, are they accessing equitable benefits?

Performance Measurement does not allow us to gauge the interest of women in participating in the supply chain.

<sup>16</sup> In their 2014 Guatemala coffee producer cluster study, Root Capital found that "Despite having equal access to cooperative services and reporting significant improvements to quality of life, households represented in the cooperative by females benefit less in absolute terms than households represented by males because they have smaller landholdings.



It is beyond the scope of a lightweight assessment to survey women on their interest in participating in tasks related to the target crop. Understanding women's interest is important however, as we don't want to promote inclusion when women are not interested in that. Adding to women's work by suggesting that they be part of farm activities that they have no desire to participate in will only increase their burden. In the *Beyond Performance Measurement* for this section, we discuss a few tools for better understanding women's interest to participate in supply chain activities.

### Recommendations for Performance Measurement:

Household dynamics around gender can be a complex and delicate topic. With performance measurement, it is important to make sure that we assess gender results in ways that are appropriate for a short, supply chain focused inquiry conducted by a minimally trained enumerator. Indicators and metrics should be chosen based on the organization's theory of change and learning questions so that the assessment remains focused on collecting data that is useful as opposed to merely interesting to know.

The recommended indicators and metrics for performance measurement as described below can improve our understanding of how women in the household fare differently than men, and give us the data needed to ensure that supply chains deliver more benefits to women for the benefit of all supply chain stakeholders. These indicators and metrics also allow us to see

opportunity gaps. For example, if Kenyan women are plucking tea on their plantations, but their husbands are attending trainings on proper tea harvest, there is an opportunity gap. Supply chain partners could potentially see increased tea productivity if the women who are plucking the tea are also attending the trainings about tea harvest best practices. Through performance measurement we can identify this gap.

For performance measurement level efforts, there are two main sources of getting insight into gender. First, by identifying gender

Table 3. Gender Indicators

Indicator Area	Metric
Participation	<ul style="list-style-type: none"> <li>Gender of household member doing majority of work in target crop</li> <li>Gender of the HH member represented in the producer group if applicable</li> </ul>
Benefits	<ul style="list-style-type: none"> <li>Gender of household member attending training around the target crop</li> <li>Gender of HH member receiving the money from the sale of this crop</li> <li>Gender of the HH member who, during the last growing season, generally made the decisions about which crops to plant?</li> </ul>



### 3 COMMON INDICATORS

of head of household we can look at the overall performance of women headed households relative to men by disaggregating the data by gender for things like, productivity, income, poverty status, and food security. The authors recommend that data be disaggregated by gender for most, if not, all of the *Shared Approaches Framework* indicators. Secondly, we recommend specific additional questions that provide insight into the role of women in this value chain and some of the opportunities that participation in this chain can bring women. In *Beyond Performance Measurement* below we go into some additional useful methods for gathering information on women's roles and opportunities.

Effectively gaining insight into nuanced gender issues with performance measurement can a challenge. Where possible, it is ideal to directly interview women in the household in addition to the men, but that is not always practical for performance measurement approaches. One way to ensure more open, honest conversation when interviewing women farmers is to hire a mix of male and female enumerators and to train all enumerators on the sensitivities to be aware of when interviewing both male and female producers.

The main result from these gender questions is to identify whether women participate significantly in the work of the crop, and if they do, whether they are then receiving some of the benefits (such as training) and participating in the decision making of the crop. If women are doing the work but not

participating in training or in decision making, organizations should consider a much more in-depth look at gender issues with appropriate expert guidance.

#### **Beyond Performance Measurement**

For studies where gender is a priority and there are resources to go deeper there are a number of good methodologies that can support deeper analysis and can be conducted as supplemental focused studies where gender issues have already been surfaced or women's inclusion has been identified as a clear priority. This deeper research will allow the practitioner to get to the why of findings uncovered through performance measurement. In these more focused studies it is important to speak directly with women alone and in focus groups, outside of the company of men.

It can be very helpful to do a market analysis around gender to understand the potential roles for women in agriculture in the region one is working in. When we know the roles women can play in agriculture in a region, we can design a better roadmap for how to involve them in supply chains.

The Gender Action Learning System (GALS) developed by IFAD is participatory tool made up of a series of methods that enable household members to negotiate their needs and interests and find innovative, gender-equitable solutions in livelihoods planning and value chain development.



The Women's Empowerment in Agriculture Index (WEAI) is a tool that looks at women's control over various aspects of their lives, including household, community and economy arenas. In-depth approaches, like the WEAI, require interviewing women separately or in focus groups (ideally by women), or developing gender calendars in which women identify which activities they do throughout the year. This helps paint a picture of the role of women in a particular area and can be compared to crop calendars to see where time is being spent.

Additionally, experts consulted as a part of the process of revising these gender indicators suggest that when possible, those undertaking measurement efforts around issues of gender inclusion should conduct focus groups with local women to incorporate their voice into the assessment process to determine the most useful metrics for gender equity from their perspective. What do the ideas of gender inclusion and gender equity mean to them? There is great diversity among women and these diverse perspectives are often best represented by focus groups.<sup>17</sup>

### 3.3 Environmental Stewardship

Indicators to track environmental stewardship should be an integrated part of a performance measurement design—both because the condition of the environment on and around the farm affects crop productivity and livelihood sustainability, and because understanding farmers' impacts on the environment is important. A first step in establishing an environmental stewardship measurement framework is to clarify the goals for understanding, tracking, and communicating environmental stewardship. Motivations may include one or more of the following:

- Documenting that a company or supply chain is free of the worst “red flag” environmental impacts, such as destruction of primary forest; such evidence may be needed for **managing corporate risk**.
- Ensuring that farming systems are **sustaining the natural resource base**, including soil structure, soil nutrients, clean water, pollination and pest control services that support productive agriculture.
- **Improving resource use efficiency**.
- **Avoiding pollution** and contamination, including greenhouse gas emissions and water and soil contamination.
- **Increasing the conservation value** of agricultural lands to support more “multi-functional” rural landscapes that provide wildlife habitat and deliver a range of other public benefits to society.

Although not all of these categories will fit within the parameters of smallholder performance measurement, among the several existing agri-environmental indicator sets and associated multi-stakeholder processes such as the Field to Market Initiative<sup>18</sup> and the Sustainable Agricultural Initiative Platform SPA process<sup>19</sup> there is reasonable convergence regarding the critical categories of environmental issues to measure. These include:

- Soil health and conservation
- Water quality and conservation
- Biodiversity and habitat protection
- Energy use and greenhouse gas emission
- Waste management
- Input use

<sup>17</sup> Anna Laven and Rhiannon Pyburn of KIT. Personal Communication. June, 2014.

<sup>18</sup> [fieldtomarket.org](http://fieldtomarket.org)

<sup>19</sup> [saipatform.org/activities/alias/SPA](http://saipatform.org/activities/alias/SPA)

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Within each category, there is the option of measuring performance through *practice-based indicators* (i.e., quantifying the level of adoption of specific environmentally sensitive farming practices) and/or *outcome-based indicators* (i.e., direct measurement of environmental parameters of interest). In a general sense, practice-based indicators tend to be more cost-effective and scalable, whereas the outcome-based indicators provide a more reliable portrait of actual environmental performance.

In some cases, practice-based indicators (e.g., avoided deforestation or maintenance of natural habitat elements on a farm) provide a satisfactory proxy for outcomes that would be very difficult to quantify through direct observation. In other cases, outcome measures (e.g., deforestation) may be relatively feasible to assess. The choice between practice-based and outcome-based indicators (or some combination of each) is an early decision that should be made in setting up the environmental component of a sustainability assessment.

There are a small number of outcome based environmental indicators that are relatively simple to measure and fit within the scope of performance measurement. One such approach is the Visual Soil Assessment (VSA) that allows surveyors to score soil quality based on bio-physical indicators with minimal training. The performance measurement Community of Practice adopting and testing the Framework presented here will be researching and testing more simple approaches like the VSA in the coming years to find those approaches that quickly and simply yield environmental outcome data.

For small-scale producers, quantified environmental outcome measures can pose particular challenges. Direct measurement of environmental conditions in smallholder systems can be more time-consuming and expensive with the small size of the plots and the high number of smallholders in a supply chain. Given these limitations, a typical performance measurement approach for tracking environmental stewardship among smallholders would entail surveying a representative sample of farmers regarding their use of environmental management practices, land use practices, and input usage. Specific practice-based indicators need to be developed based on the specific crop and location being monitored. In one example, when assessing the environmental sustainability of organic smallholder sugarcane production in Paraguay,<sup>20</sup> the Food Lab used the following indicators:

- Use of cover or companion crops as a soil conservation practice (to reduce erosion, disease and pests and to increase soil organic matter) and a carbon sink.
- Existence of native forest as a way of looking at biodiversity and avoided deforestation.
- Existence of riparian buffers as an erosion prevention technique and water quality assurance.
- Use of contour planting techniques as a practice to avoid erosion.

<sup>20</sup> Assessing the Sustainability of Smallholder Sugar in Paraguay, Sustainable Food Lab, May 2013.



## Recommendations for Performance Measurement

Performance measurement practitioners often rely on monitoring agricultural practice adoption among a sample of the total population—asking farmers questions about the use of best environmental practices specific to the crops and ecosystem in which they are operating. Because the practices differ depending on crop and location, there is not one set of recommended metrics. Instead it is recommended that users develop metrics based on the priority issues in the cropping system and the recommended best practices that are being taught. This list does not cover energy use, input use, or waste management as these issues do not fit within the scope of a lightweight approach such as performance measurement.

Table 4. Environmental Performance Indicators

Indicator Area	Metric
Adoption of 3-5 key conservation practices	<ul style="list-style-type: none"> <li>• Producer adoption of 3-5 recommended key best practice being promoted for soil and water conservation and biodiversity</li> </ul>

## Beyond Performance Measurement

As a supplement to farm-level practice monitoring, it is also worth considering the feasibility and value of integrative outcome-based measures assessed at a larger scale—for example across an entire farmer cooperative, sub-watershed, or landscape. Indicators such as stream turbidity, percent of steep slopes conserved, percent natural habitat, and habitat

connectivity indices can be quantified through farm transects or remote sensing and may provide an aggregate portrait of environmental results at the supply chain level that is less costly and ultimately more informative than relying solely on farm-level data collection.

For a more in-depth look at indicators for understanding the environmental impacts of farming in a survey-based assessment process, see the COSA Indicators as one example.

## 3.4 Farm Productivity

Productivity is often a critical measure of success in programs that work with small-scale producers for whom average productivity is well below the potential. In Ghana and Côte d'Ivoire for example, small-scale cocoa producers are achieving an average of 400kg/ha relative to a potential of over 1000 kg/ha. Better access to planting materials, training, and increased access to affordable inputs are common investments to help farmers improve productivity, which can improve net income and even reduce the land needed for production, potentially decreasing the environmental impact per unit of production.

While productivity may appear to be a very straightforward indicator, in practice, it is often quite difficult to quantify accurately in a smallholder context. Key constraints include: 1) difficulty in obtaining accurate production volume information because small scale producers often do not keep records of crop production; and 2) lack of accurate information on farm size, which in some cases differs by a factor of two or more between farmer estimates and actual areas.

There are a few ways to ensure more quality practice adoption and productivity data is reported in smallholder systems. One method that many organizations use is to implement a

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farmer field book program with growers. Depending on the structure of the supply chain, farmer field books are not always possible, but where they are they promote more regular farmer record-keeping and can lead to better farm management since farmers are doing their own performance management. Additionally, many organizations are developing observational methods for tracking adoption of good agricultural practices. For example, as a part of a larger toolkit, the World Cocoa Foundation has developed an observational tool to verify that farmers are applying pest management techniques. The method asks enumerators to observe the presence of disease on each cocoa tree and record this. Illustrations are provided to the enumerator as a guide for what to look for.

#### Recommendations for Performance Measurement

For a typical performance measurement study where farmers have not been recording their practices and yields, it is most practical to look at farmer reported adoption of good agricultural practices and farmer estimated productivity.

The practices chosen for inclusion in the 3-5 questions around **farmer reported adoption of practices** should be carefully chosen based on their correlation to productivity. Typically, these will be the practices recommended in trainings and farmer field schools. Ideally, the farmer's response to the questions about adoption of these practices could be easily validated with observation (where there are resources for this). For example, in cocoa production in West Africa it has become clear to many that

the practices most highly correlated to productivity and most widely taught in farmer field schools are pruning, weed control, shade management, pest & disease control, harvest practices, renovation, and cocoa tree planting density.

**Farmer estimated productivity** will depend on farmer recall—their estimate of both production and the amount of land they have cultivated the crop on. Again, because farmers often don't keep records of sales or have accurate measures of plot sizes, there can be errors in this data, particularly for very small farms. Minor steps for improving the data without instituting farmer record-keeping or observational methods can include:

Table 5. Productivity Indicators

Indicator Area	Metric
Adoption of Best Practices	<ul style="list-style-type: none"><li>Adoption of 3-5 recommended key good management practices for this crop</li></ul>
Estimated Productivity	<ul style="list-style-type: none"><li>Focus crop yield calculated by estimated production / estimated cultivation area</li></ul>
Crop Revenue and Income	<ul style="list-style-type: none"><li>Focus crop revenue calculated from estimated sales</li><li>Net crop income (where possible) (costs of labor, inputs, land)</li></ul>



- Asking about both production and sales data as a cross reference.
- Cross checking farmer estimated productivity with other sales records such as recorded by a buyer.
- Training the interviewers with an understanding of what a reasonable yield is for the area so that they can double check if the reported yield is beyond the range of plausibility.

**Focus crop revenue** will be the farmer reported gross profit from the crop. This only gives a general sense of the profitability of the crop. Where possible, it is recommended that practitioners also gather data on costs of labor, land, and inputs to get a sense of net crop income.

To understand the results and what productivity data means in a given year, it is important to collect additional information to provide context on the weather and farming systems. Many of these data points are included in the section titled Characteristics, below:

- A reference point such as the potential yield for the region, or a comparison to the top producers in a given year.
- The weather's contribution to productivity (great year, average year, poor year).
- Use of good management practices and inputs.
- Primary variety planted.
- Farming system, such as planting density, intercropping, mechanization, production of other crops (this is easiest if there are a couple of clear types of farming systems).
- Changes in the farm over time: Looking at the balance between the production of certain crops over the years.

### Beyond Performance Measurement

For projects or supply chains with the capacity for more intensive analysis and the need for more accurate productivity, consider using measured productivity. Accuracy of the results can be increased by directly measuring the land area using GPS tools and directly monitoring the production and sales. This metric is more formally documented production or sales/measured cultivation area. This is a much larger investment. This may be done on the whole cultivation area for the farm or on sample plots where production is carefully measured.

The key innovation needs for improving the accuracy of the productivity data are cost effective ways to (a) measure, verify, and document actual production figures and (b) improve the accuracy of land cultivation measurement.

There are some specific crops in which further agreement on common approaches to productivity measurement could be quite beneficial such as coffee, cocoa, and tea. For example in cocoa, productivity can be estimated from pod counts (pods per tree), cocoa kg per hectare, bags per hectare, etc. In coffee, a recent meeting of coffee initiatives in east Africa focused on measuring productivity per tree because of the variability in planting density. Crop specific common metrics is an area ripe for more exploration, particularly in regions where there is clear collective investment in improving productivity such as cocoa in West Africa.

Even where measured productivity is being implemented for greater accuracy, it is recommended that practitioners continue to include estimated productivity so that they can better understand the estimation error and to maintain consistency since not all surveys will be able to support measured productivity.

### 3.5 Access to Agricultural Services

One hallmark for a more successful and sustainable supply chain is the ability of farmers to reinvest in their farms. While income and profitability are clearly critical to the ability to reinvest, so is the access to basic services that the farmers would like to use. In the New Business Models for Trading Relationships Project,<sup>21</sup> equitable access to services was identified as one of the key principles of a supply chain well adapted to the needs of small-scale producers.

Key services typically include:

- **Access to credit:** Can farmers borrow money to invest in their farms? At a reasonable rate?
- **Access to Training and Agronomy Services:** Do farmers have access to training and technical support for learning about best practices for their crops and have assistance in dealing with agronomic problems?
- **Access to inputs:** Do farmers have access to fertilizer, pesticides and herbicide that will also them to increase productivity and improve pest and disease management? Are these inputs affordable?
- **Access to planting material:** Do farmers have access to good planting stock or improved varieties for the crop that they are growing?
- **Access to markets:** Do farmers have access to markets for multiple crops and multiple grades of goods?

For some situations this might also include access to processing services and equipment: Do farmers have access to key processing services such as drying, warehousing, storage,

et cetera? The source of services may be important to measure in situations where the intervention heavily focuses on service provision to better understand where farmers have access.

Together these are key ingredients to farmer's ability to invest in their farm and improve productivity, quality and income.

Services can come from many sources—local banks, government extension, private services, cooperative, or from their buyers through the supply chain. It is less important where the services come from than whether they are available, and that their availability is “equitable” to farmers in different places, genders, and groups. That being said, in many contexts access to a capable farmer organization is an important vehicle to gain access to good quality services and to an aggregation and sales point. Membership in a farmer organization is one of the recommended context indicators to always include.

But to measure access to services it is important to be clear about what is meant by *access*. Is it reasonable physical access, access to affordable services relative to the incomes of the producers, or, is it access to quality services?

#### Recommendations for Performance Measurement

For performance measurement, it is recommended that users look at both the access and the actual use of services, looking at a minimum at technical assistance (training), fertilizer use, and credit. Perceived access can indicate a producer's perception of their physical access to affordable services, and of course can indicate their awareness of services available. Use of services is even a better metric since farmers “vote with their feet” when it comes to using inputs like services and credit. This is the best measure of their perception of the value of those services. It is recommended that users adopt both because farmers may not

Table 6. Access to Services Indicators

Indicator Area	Metric
Access to credit, training and inputs	<ul style="list-style-type: none"> <li>• Perceived access to training and technical assistance</li> <li>• Perceived access inputs such as fertilizer and seeds (planting material)</li> <li>• Perceived access to affordable credit and capital</li> </ul>
Use of credit, training, and inputs	<ul style="list-style-type: none"> <li>• Use of credit (in a given year). Source of credit</li> <li>• Use of inputs relative to desired or target</li> <li>• Participation in training or agronomic assistance</li> </ul>

be using credit for other reasons (they might not need it in a particular year) and therefore a perception of access can still be useful.

Asking about access to markets and specific market challenge can be important in some situations, but isn't as relevant when the performance measurement is coming through a specific trading relationship.

One metric being piloted through the *Trading Relationship Survey*<sup>22</sup> and the *Unilever Smallholder Livelihoods Assessment* pilot is *Satisfaction with Access to Services*. By asking producers about their satisfaction with their access to a service such as technical

assistance, one can get an overall perception rating (extremely satisfied, quite satisfied, not very satisfied or not at all satisfied) that combines the producer's perception of physical access, affordability, and quality. Of course this is a gross measure, but the objective is a rough overall measure that can both identify major gaps and chart progress. More detailed follow-up would

<sup>22</sup> [pubs.iied.org/G03429.html](http://pubs.iied.org/G03429.html) and <http://pubs.iied.org/16042IIED.html>



### “New Business Models for Sustainable Trading Relationships” principles to support inclusion, durability, and benefits:

- 1. Supply Chain Coordination:** mechanisms to proactively identify and address problems
- 2. Effective Market Linkages:** market linkages that provide good access to multiple buyers
- 3. Fair and Transparent Governance:** clear and constant standards, pricing, commitments, risk mitigation
- 4. Equitable Access to Services:** access to credit, inputs, TA, etc.
- 5. Inclusive Innovation:** product and process innovation that is inclusive of the ideas and potential of all actors in the chain

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be needed around an identified gap to understand what the specific issues are before defining a solution.

### 3.6 Trading Relationships

Characteristics of trading relationships are important to consider when assessing the sustainability of a supply chain. *Measuring Fairness in Supply Chain Trading Relationships*<sup>23</sup> reminds us “the development of sustainable supply chains requires a shift in buyer–supplier relationships from being opportunistic and arm’s length to strategic and collaborative.” The authors are right to point out that “collaborative buyer–supplier relationships involve trust, commitment, transparency and integrity and are one of the fundamental enablers for the efficient and effective flow of information and allocation of resources within and between organizations.”

For the reasons stated above, some key supply chain trading relationship interests include:

- Perceived good supply chain relationships are a good indicator of producer loyalty and willingness to invest
- For producers, the *quality* of the market offer—e.g. price, price structure, risk sharing mechanisms, contracting, communications and problem solving—can be as important a leverage point in some contexts as access

<sup>23</sup> [pubs.iied.org/16042IIED.html](https://pubs.iied.org/16042IIED.html)

to services for improving loyalty and outcomes for producers

- For some, creating fairer and more transparent relationships is an explicit objective

Projects such as the New Business Models for Sustainable Trading Relationships Project<sup>24</sup> have tried to articulate principles of trading relationships in which smallholders are more likely to have durable and beneficial relationships in formal markets.

The level at which one measures trading relationships within the chain is critical. Farm-level data collection, the level the Shared Approaches Framework focuses on, will likely only tell us about relationships between producers and producer organizations and/or processors and traders. This of course, will not give us the entire story.

Often much of the trade negotiation takes place between a farmer organization and a buyer. For this reason, it is difficult to get a sense of the critical issues from a farm level investigation. It is strongly recommended that users look deeper into the supply chain they are examining to identify if there are specific trading relationship investments being made or assumptions that can be tested. For example, in a fair trade supply chain, a focus on awareness and satisfaction with the social premium use can be a good measure. In supply chains where there are clear quality grades with price premiums, testing for understanding of those

<sup>24</sup> Think Big, Go Small.



grades can be a good test of transparency—and an important one since farmers need to be aware of the grades to maximize their potential income.

One good diagnostic indicator is the occurrence of side selling, which is a practical indicator of how attractive farmers find a particular buying channel against alternatives.<sup>25</sup> Inquiry into what constitutes side selling within a particular supply chain, and the reasons for side selling can reveal concrete opportunities for improving trading relationships.<sup>26</sup>

### Recommendations for Performance Measurement

To better understand the indicators relevant to the strength and durability of trading relationships, it is important to gather data around how trade functions within this chain. A simple map of how the raw material moves from producer to cooperative to the trader to the processor, for example, is critical to mapping out an approach to understanding and assessing trading relationships. Additionally, a few questions to ask about the chain—the answers to which will help determine what is important to measure—are as follows:

- Are the farmers in the chain organized? How?
- Do farmers contract with buyers in this supply chains?
- Is there a price premium for this crop?

Once there is a firm understanding of the chain and the key actors in it, one can determine which trading relationships indicators may be important to that context. From there one can begin to drill down to metrics, and specific survey questions.

<sup>25</sup> Ideally the delivery rate will be compared to the amount of product the buyer requests which is sometimes less than 100% of the producer's production.

<sup>26</sup> Understanding Sustainability: First global report on COSA findings in agriculture. COSA, 2013.

Table 7. Recommended Trading Relationship Indicators

Indicators Area	Metric
Organization	<ul style="list-style-type: none"> <li>• Membership in or access to a farmer organization</li> <li>• (If member) Perception that membership is beneficial*</li> </ul>
Loyalty	<ul style="list-style-type: none"> <li>• Length of relationship with primary buyer</li> <li>• Percent of harvest sold to primary buyer</li> <li>• Number and perceived quality of options for buyers</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>• Traceability</li> <li>• Understanding of quality standards &amp; price premiums (if they exist)*</li> <li>• Knowledge of certifications held</li> </ul>
Producer Perception*	<ul style="list-style-type: none"> <li>• Perception of quality of relationship with primary buyer</li> <li>• Most significant benefit from trade with primary buyer</li> </ul>
Access to Services	<ul style="list-style-type: none"> <li>• These metrics are covered in a separate chapter of the guide</li> </ul>

\* See page 32 for perception question examples.

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Table 8. Perception Question Examples

Indicator Area	Metric	Survey Question	Question Developer
Organization	(If PO member) Perception that membership is beneficial	<ul style="list-style-type: none"> <li>To what extent do you trust that your producer organizations makes decisions for the well-being of your household</li> </ul>	Root Capital
Transparency	Understanding of quality standards & price premiums (if they exist)	<ul style="list-style-type: none"> <li>What quality standards does your crop need to meet during growing, processing and delivering?</li> <li>Do you know how quality is remunerated?</li> <li>Do you know what the Nestlé quality standards are?</li> <li>Do you receive any premiums?                             <ul style="list-style-type: none"> <li>How are they allocated?</li> <li>In your opinion is this allocation fair?</li> </ul> </li> </ul>	Nestlé
		<ul style="list-style-type: none"> <li>You understand the mechanism that is used to determine the price of your product                             <ul style="list-style-type: none"> <li>Totally agree</li> <li>Somewhat agree</li> <li>Somewhat disagree</li> <li>Totally disagree</li> </ul> </li> </ul>	CIAT
Producer Perception	Perception of quality of relationship with primary buyer <sup>27</sup>	<ul style="list-style-type: none"> <li>Do you expect that your relationship with your primary buyer will continue for a long time? (Likert scale 1-5)</li> <li>Would you like to strengthen your relationship with your primary buyer in the future? (Likert scale 1-5)</li> </ul>	Unilever
	Most significant benefit from trade with primary buyer	<ul style="list-style-type: none"> <li>Since you began selling to primary buyer, do you feel that your quality of life has changed as a result? Yes/No</li> <li>(If yes) How has your quality of life changed? (Likert scale 1-5)</li> </ul>	Root Capital

Discussions through the performance measurement community identified five aspects of trading relationships that could be meaningfully assessed during interviews with individual farmers. Of course, if farmers sell through a producer organization, the relationship between that organization and their buyers

are just as important and should be examined. But from a farmer's perspective we can ask aboutThe current indicator recommendations are organized by into the following indicator areas: Organization, Loyalty / Dependency, Transparency, Producer Perceptions, and Access to Services

The following table lists recommended common metrics for assessing the quality of producer/buyer trading relationships in smallholder chains. These metrics are still in development and are being tested by members of the Shared Approaches Community of Practice. The current indicator recommendations are organized into the following indicator areas: Organization, Loyalty, Transparency, Producer Perceptions, and Access to Services.

Unilever, Root Capital, CIAT, COSA, ISEAL and Nestlé have all shared examples of their survey questions that relate to producer perceptions of trading relationships. A few of these are listed in Table 8 as a recommendation and starting point for increased alignment on how to measure the quality of trading relationships.

- **Organization:** While participation in a producer organization is not necessary for good trading relationships, it is one indicator that farmers are organized and therefore have potential for better negotiating power. If farmer participates in a farmer group, then asking how they feel about the capacity of the coop gives further insight.
- **Loyalty / Dependency:** Loyalty, by which we mean the choice of farmers to continue selling through to a specific buyer, is the best “voting with your feet” indicator from farmers. However, this is only an indicator of the relative attractiveness of a buyer when there are other options available to the farmer. If a farmer continues to sell to a specific buyer because they have no other choice, that is considered dependency rather than loyalty. This

<sup>27</sup> The Most Significant Change question is based on a technique developed by Rick Davies. (Dart, Jess; Davies, Rick (2003). “A Dialogical, Story-Based Evaluation Tool: The Most Significant Change Technique”. American Journal of Evaluation 24 (2): 137–155) Root Capital and the Sustainable Food Lab learned about this question from Keurig Green Mountain who use it in surveys in their coffee communities.



**The Committee on Sustainability Assessment (COSA) measures trading relationships by looking at the creation of Shared Value through:**

- Price transparency.
- Access to market information.
- Direct financial or capacity building support other than training.
- Access to training.
- Ratio of farm price to global market price (for commodities).

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metric is useful for buyers who are investing in providing services to farmers to assess whether it results in more consistent (e.g. loyal) sales from farmers.

- **Transparency:** Where farmers have access to information and communication challenges—prices, price structures, and quality grades—they are better able to make informed choices about market participation and investing in their production. Contracts are one vehicle for transparency. Participation in a traceability program is another enabler of supply chain transparency.
- **Producer Perceptions:** At the end of the day, perception matters and often defines the reality of how producers experience trade. These general “satisfaction questions” capture the farmer’s overall sense of the crop and trading relationship.
- **Access to Services:** Access to services —credit, inputs, training, etc.—are critical for farmers to reinvest in their farmers. Good trading relationships should ensure that the necessary services are included in the business services ecosystem of the supply chain.

#### Beyond Performance Measurement

In addition to farmer surveys, trading relationships can be also assessed with actors at different product aggregation points. For example, there are indicators that are more appropriate to ask at the enterprise level (cooperative or producer organization) rather than at the producer level. This allows us to determine the enterprise’s relationship with its customers up the value chain. This is where the product meets the market, and it is arguably the most important link in the value chain. For instance, is the cooperative a price maker or price taker? Knowing this information can help to shed light on the cooperative-farmer trading relationship.

The LINK Methodology developed by CIAT also contains tools to assess the fairness and sustainability of trading relationships. LINK Ket Tool #3 “The Business Model Principles” lays out methods for assessing a supply chain by; chain wide collaboration, new market linkages, fair and transparent governance, equitable access to services, inclusive innovation, and measurement of outcomes.

Also, mentioned above is the Trading Relationships Survey developed by IIED, Kent Business School, Oxfam, and Unilever. The methodology Guide and accompanying survey tool are designed to help businesses better understand the sustainability of their trading relationships. It does so by measuring how actors along the supply chain perceive the fairness of the relationships they are involved in.

The Committee on Sustainability Assessment (COSA) coordinated a network of 30 organizations, representing a mix of private, development, and research institutions with the goal to guide producer organizations (PO) toward sustainability. The PO assessment tool will be available to buyers, lenders, NGOs and producer organizations to move PO management systems and farmer services towards economic, social and environmental sustainability. This tool looks at Strength of Membership, Democratic Processes/Governance, Management of Operations, Finances, Farmer Services, and Risk management in POs. When this tool is complete in early 2015, it will be made available via COSA’s website ([thecosa.org](http://thecosa.org)).

### 3.7 Next Generation Farmers

One key indicator of the farm level sustainability of smallholder supply chains that is often overlooked is whether the supply chain is cultivating a next generation of producers. Without a new generation of capable, skilled producers to grow the crops the world depends on, food and beverage companies face supply risk. In sub-Saharan Africa, the average age of farmers is around 60 years old.<sup>28</sup>

“Given the dependence on small-scale farming for domestic, regional and global food production...how young people respond to opportunities and whether small-scale farming can meet their aspirations will be critical in terms of both future employment and food security. A key question is whether the agriculture sector and rural areas in general offer attractions to youth.”<sup>29</sup>

Youth are the future of a secure global food supply and as such, those investing in agricultural development initiatives would do well to monitor progress in this area in a common way in order to compare and share learning, adapt strategies and speed up progress and innovation.

According to the FAO, responsible investment in agriculture and food systems engages and empowers youth by:

- Advancing their access to productive land, natural resources, inputs, productive tools, extension, advisory, and financial services, education, training, markets, information, and inclusion in decision-making.
- Providing appropriate training, education, and mentorship programs for youth to increase their capacity and/or access to decent work and entrepreneurship opportunities, and foster their contribution to local development.
- Promoting development and access to innovation and new technologies, combined with traditional knowledge, to attract and enable youth to be drivers of improvement in agriculture and food systems.<sup>30</sup>

Table 9. Recommended Next Generation Indicators

Indicators Area	Metric
Attractiveness of farming focus crop	• Perception of producer regarding farming of focus crop as attractive profession for youth*
Youth participation in the commodity	• Age of household/family member doing primary work in target commodity or agribusiness chain
Equitable access to agricultural services for youth	• Age of household/family member attending training around the target commodity or agribusiness chain

28 "Making Agriculture Cool for Youth. July 9, 2014. Foodtank.com.

29 Proctor, F.J. and V. Lucchesi (2012) Small-scale farming and youth in an era of rapid rural change, IIED/HIVOS, London/The Hague.

30 FAO Committee on Food Security, Principles for Responsible Investment in Agriculture. <http://www.fao.org/3/a-ml291e.pdf>



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Table 10. Beyond Performance Measurement Next Generation Indicators

Indicator Area	Metric
Attractiveness of farming focus crop	<ul style="list-style-type: none"> <li>• Average net crop income for study population</li> <li>• Perception of study population regarding farming of focus crop as attractive profession*</li> </ul>
Youth participation in the commodity	<ul style="list-style-type: none"> <li>• Age of household/family member doing primary work in target commodity or agribusiness chain</li> </ul>
Youth participation in decision-making	<ul style="list-style-type: none"> <li>• Age of household/family member receiving the money from the sale of this commodity or agribusiness chain</li> <li>• Age of the person who, during the last growing season, generally made the decisions about which crops to plant and which business choices to take</li> <li>• Age of the household/family member represented in the farmer group/cooperative (if applicable) and position of the member in the group</li> </ul>
Equitable access to agricultural services for youth	<ul style="list-style-type: none"> <li>• Age of household/family member attending training around the target commodity or agribusiness chain</li> </ul>
Equitable access to credit for youth	<ul style="list-style-type: none"> <li>• Age of household/family member receiving credit around the target commodity or agribusiness chain</li> </ul>
Equitable access to land for youth	<ul style="list-style-type: none"> <li>• Age of farm manager</li> </ul>
Estimated Yield for Youth	<ul style="list-style-type: none"> <li>• Total production divided by land area</li> </ul>
Estimated Household Income for Youth	<ul style="list-style-type: none"> <li>• Total household net income where possible; when not possible use household revenue</li> </ul>
Education Level of Youth Heads of Household	<ul style="list-style-type: none"> <li>• Level of education completed</li> </ul>

### Recommendations for Performance Measurement

The recommended indicators and metrics for performance measurement as described below can improve our understanding of whether youth is participating in smallholder supply chains and how. They also provide insight into how young people access the benefits that participation may bring. The majority of these metrics are not new additions to the Shared Approaches Framework. They are already part of other themes. The recommendation here is that performance measurement practitioners dis-aggregate their data for the metrics below by those households headed by someone between the ages of 18-24<sup>31</sup> in order to analyze outcomes by age.

Dis-aggregating data by these metrics for youth requires only ensuring there is a characteristic indicator for the age of the primary farmer or farm manager and then analyzing outcomes by age of the primary farmer.

Metrics that are specific to the theme of Next Generation Farmers and not included in other themes are indicated here with an asterisk.

These recommendations will undergo further revision as the Performance Measurement Community of Practice tests them in smallholder supply chains throughout the world. Revision to these youth indicators will also be informed by experts and existing youth research.

### Beyond Performance Measurement

Where ensuring a next generation of farmers is a clear goal of the intervention being studied, additional metrics can be

<sup>31</sup> As defined by the ILO

analyzed by age of the head of household or primary farmer without adding additional questions to the survey or requiring additional interviews. For those who want to look deeper into the performance of youth in their smallholder supply chains, and how those youth are accessing the benefits of participation, we recommend the metrics in Table 10 for analysis.

Table 11. Characteristics

Characteristics	
Farm	<ul style="list-style-type: none"> <li>• Location</li> <li>• Farm size</li> <li>• Amount of land in production of target crop</li> <li>• Certifications held</li> <li>• Amount of land owned versus rented, leased or borrowed</li> </ul>
Household	<ul style="list-style-type: none"> <li>• Number of household members</li> <li>• Gender of household head</li> <li>• Age of household head</li> </ul>
Crop	<ul style="list-style-type: none"> <li>• Seasonal crop calendar</li> <li>• Target yields</li> <li>• Global commodity price (if applicable)</li> </ul>
Region	<ul style="list-style-type: none"> <li>• Agro-ecological zone</li> <li>• Recent weather patterns</li> </ul>

### 3.8 Farm & Household Characteristics

In addition to gathering data on the indicators identified as integral to the questions and results chain, basic information on farm, household, crop, and region characteristics plays an important role in data interpretation. This additional data allows for useful interpretation of that gathered on the indicators above. These data points are not connected to any specific indicator; rather they allow one to draw more meaning from other metrics. Without contextual assessments, the data gathered on our performance measurement indicators is much less useful. It is recommended that users document the contextual data in Table 11.

Even with seemingly simple indicators like household size, it is important to keep in mind that consistency matters. Household size can vary widely from one culture to another. And the definition of household or dependents can vary just as much. In many cultures, households will support a number of generations of extended family for one or more months during the year. For this reason, household size can be difficult to measure consistently.

Because so many important data points rely on accurate household size data, it is recommended that performance measurement practitioners look to peer-reviewed definitions of household like the one used by Grameen Foundation for the Progress Out of Poverty Index (PPI). The PPI defines the



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household as: “One person or a group of people, regardless of any blood relationship, who normally live in a particular residence, occupying it wholly or partially, and who together fulfill their nutritional needs (sharing the expenses of a common pot). A household is made up of all of those who:

- Normally live in the residence.
- Usually live in the residence, even though they may be temporarily absent on the day of the interview for reasons such as work, vacation, illness, school, etc. Count domestic servants who live in the residence for most of the year.

People who do not live with the other household members in the same residence are not considered to be normal residents, even if they send money or food to any members of the household being interviewed.”<sup>32</sup>

Similarly, farm size is a very important Characteristic indicator to get right. Reliable estimation or measurement of farm size is a crucial piece of any study focused on crop production. Farm size is often used to characterize or segment groups of farmers to target and design interventions. And practically speaking, calculations of yield, crop revenue and crop income all rely on farm size.

Interestingly, a recent synthesis study undertaken by the Food Lab, IFC, Nestlé, Mars, and Starbucks showed that in one piece of research, there was an average of 10% underestimation of farm size when self-reported by the farmer compared with the organization’s records, with significant deviations when the farm size was 10 hectares or more. Conversely, on 99 randomly selected farms, that research found that farmers overestimated

their farm size by 7% when compared to GPS plotting of the farm size.

Farmer self-reporting is considered by many as the least desirable method for gathering data on farm size. Yet it is typically the simplest and most plausible method. An error rate of +/-10%—as found in two of these studies—on 7 hectares produced a range of 6.3-7.7 hectares. Measurement practitioners should take this margin of error into account when weighing the costs of data collection with the level of accuracy needed. Plotting farm size with GPS can take up to an hour for a farm size of approximately 3 hectares.<sup>33</sup> This time is on top of that spent interviewing the farmer.

Each method of farm size data collection has its merits. Particular methods or combination of methods should be selected based on the learning questions and purpose of the study. Over or underestimation of farm size, which is associated with farmer self-reporting, might be a reasonable “price to pay” for a simple and streamlined data collection for performance measurement, but could undermine results for a more rigorous impact assessment study.

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<sup>33</sup> Personal communication. August 2014.

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<sup>32</sup> “Paraguay PPI Interview Guidelines”. Grameen Foundation. January 2013.

## 4.0 Conclusion

As more food companies, certifiers, traders, and development agencies take on data collection in agricultural supply chains, there is benefit to building some agreement on what aspects of smallholder sustainability are most important to measure, and how these things are measured. Again, taking a common approach when asking about the same indicators can be beneficial to promote **greater efficiency and effectiveness** through potential to share data, to **reduce the burden on suppliers and farmers** who are asking the questions of multiple organizations, to enable **more effective community learning** through more consistent approaches across supply chains.

In this paper the authors have proposed a shared set of indicators and metrics that represent the thinking of a community of performance measurement practitioners working in smallholder agricultural supply chains. Based on the thinking of this group, it has been established that Livelihoods, Gender, Productivity, Access to Services, Environmental Performance, Trading Relationships, and Next Generation Farmers make up the themes from which performance measurement practitioners should derive indicators of smallholder sustainability. These indicators are presented here. From these indicators, a common set of metrics—guidance on how to measure on the recommended indicators—is recommended. These allow some uniformity in reporting and increase the likelihood of gathering meaningful data.

In 2015, the Sustainable Food Lab and its partners will be taking the Shared Approaches Framework to the next level of specificity by developing a sample survey from the indicators and metrics in the Framework. This will serve as an example for

practitioners to use to understand how one might translate the Shared Approaches indicators into a more action-ready format. It is expected that our collective understanding and agreement on these themes, indicators and metrics will evolve over time as the group continues to learn and revise our practice in the field.

While this document has focused on what to measure for performance measurement, and the important goal of building agreement on a common core of questions and a commitment to ask questions the same way when possible, it is only one aspect of the critical challenge of learning from evidence.

It is essential that each organization be clear about their goals for measurement and the theory of change at play in the supply chain that they are learning about. Each organization's measurement approach must be designed with local context in mind, getting to very specific questions around the crop that supply chain revolves around. Designing surveys with good internal logic, checking survey questions for their appropriateness in country, and designing a survey flow that builds farmers trust is important. And last but certainly not least, reporting and making use of the information that results from these performance measurement studies within organizations and through supply chains is the linchpin of learning from evidence.

For more detail on developing a performance measurement approach—including considerations of who should be collecting data and how to choose a survey delivery method—please see *Performance Measurement in Smallholder Chains: A practitioners guide to developing a performance measurement approach*, a companion document to this paper also recently published by the Sustainable Food Lab. Additional resources can be found on the Food Lab's *Performance Measurement Microsite*.

### 4.1 Additional Resources

ISEAL Impacts Code for third party certification bodies (Fairtrade, Rainforest Alliance, etc.) measuring impact: [www.isealalliance.org/tag/iseal-impacts-code](http://www.isealalliance.org/tag/iseal-impacts-code)

COSA for attributable studies in developing countries: [sustainablecommodities.org/cosa](http://sustainablecommodities.org/cosa)

SAI platform SPA systems for environmental principles and metrics for all agricultural systems: [www.saiplatform.org/activities/alias/SPA](http://www.saiplatform.org/activities/alias/SPA)

[Assessing the Sustainability of Smallholder Sugar in Paraguay](#), Sustainable Food Lab, May 2013. This report includes the indicators, metrics, survey, and survey results from a smallholder performance measurement initiative the Food Lab developed with Paraguayan sugarcane producers.

[Performance Measurement in Smallholder Chains: A practitioners guide to developing a performance measurement approach](#), Sustainable Food Lab, December 2013. This nuts and bolts guide walks the reader through the process of setting up her/his own performance measurement approach.

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# APPENDIX FRAMEWORK WITH METRICS AND RATIONALE

Impact Areas	Guiding Question	Indicator Area	Metric	Rationale
Livelihood and Well Being	Are farmers meeting basic needs and seeing improvement?	Food Security	<ul style="list-style-type: none"> <li>Days and months without sufficient food in past year</li> </ul>	Food security is a key component of sustainable livelihoods, understood by many as a basic right, and is a CSR and sustainability risk. It is important to measure separately where possible because of cases where gains in income didn't lead to gains in food security.
		Income	<ul style="list-style-type: none"> <li>Progress out of Poverty Index</li> <li>Reported total household income</li> <li>Percent of revenue from focus crop</li> </ul>	Household revenue can show whether the household is above a poverty line and whether overall revenue is improving with crop income. But household income can be difficult to estimate in a quick survey. One approach is the Progress out of Poverty Index (PPI). The PPI is a 10 question, country-specific survey developed by the Grameen Foundation. It measures the likely percent of producers above an absolute poverty line, or above local poverty line.
		Assets	<ul style="list-style-type: none"> <li>Source of water for domestic use</li> <li>Access to electricity</li> <li>Total land area owned (versus rented or leased)</li> </ul>	Measurement of a few key assets like land-holding, bank accounts, access to electricity, ownership of a form of transportation, or communication device, and type of cooking fuel used allows us to learn more about the farmer's living conditions and is complementary to efforts to measure wealth.
		Perceived Well-Being	<ul style="list-style-type: none"> <li>Perception that focus crop could provide a viable livelihood for children</li> <li>Perceived change in economic situation in last year</li> </ul>	Farmer perception of well-being can be equally as important as other livelihood indicators as it gives a sense of whether farmers believe their basic needs are being met and whether they will continue with this crop.
Gender	What are gender roles and benefits in this crop?	Participation	<ul style="list-style-type: none"> <li>Gender of household member doing majority of work in focus crop</li> <li>Gender of the household member represented in the producer group if applicable</li> </ul>	It is important to understand the role of women in the supply chain in order to better target training and other interventions.
		Benefits	<ul style="list-style-type: none"> <li>Gender of household member attending training around the focus crop</li> <li>Gender of HH member receiving the money from the sale of this crop</li> <li>Gender of the HH member who, during the last growing season, generally made the decisions about which crops to plant</li> </ul>	If women are doing the work of the crop, but not going to trainings, trading, or involved in decision-making, there may be opportunities for improving inclusivity of women. It is also important that data is collected in a way that enables users to disaggregate finding by the gender of the head of household so outcomes can be examined by gender.
		Adoption of conservation practices	<ul style="list-style-type: none"> <li>Producer adoption of 3-5 recommended key best practice for soil and water conservation and biodiversity</li> </ul>	Indicators to track environmental stewardship should be an integrated part of a performance measurement design—both because the condition of the environment surrounding the farm can strongly impinge on crop productivity and livelihood sustainability—and because these are important outcomes in their own right.
Farm Productivity	Are farmers realizing the potential of their farm?	Adoption of best practices	<ul style="list-style-type: none"> <li>Adoption of 3-5 recommended key good management practices for this crop</li> </ul>	Training only has benefits if the new practices are adopted. Typical approaches look at 3-5 key practices that drive productivity or quality. Specific practices must be identified for each crop. Adoption signifies an investment on the part of the farmer and that they are following practices most likely to result in good productivity.
		Estimated Productivity	<ul style="list-style-type: none"> <li>Focus crop yield calculated by estimated production / land area cultivated</li> </ul>	It is important to measure productivity to track improvements in farming outcomes independent of price volatility. Look at farmer recollection of productivity through survey questions about 1) yield and 2) land area planted.
		Crop Revenue	<ul style="list-style-type: none"> <li>Focus crop revenue calculated from estimated sales</li> </ul>	Crop revenue (production times price) tracks the revenue contribution of the crop. Net crop income is much better whenever possible because profits are dependent on production costs. Typical key costs to measure are hired labor and inputs costs.
Access to Services	Do farmers have access to services?	Access to credit, training and inputs	<ul style="list-style-type: none"> <li>Perceived access to training and technical assistance</li> <li>Perceived access inputs such as fertilizer and seeds (planting material)</li> <li>Perceived access to affordable credit and capital</li> </ul>	Access to services like training, credit and inputs is critical for farmer success.
		Use of credit, training, and inputs	<ul style="list-style-type: none"> <li>Use of credit (in a given year)</li> <li>Use of inputs relative to desired or target</li> <li>Participation in training</li> </ul>	Use of services measures the functional attractiveness of the services. Only if farmer use the services can they improve farm outcomes.
Trading Relationships	Are farmers experiencing good trading relationships?	Organization	<ul style="list-style-type: none"> <li>Membership in or access to a farmer organization</li> <li>(If member) Perception that membership is beneficial</li> </ul>	While participation in a farmer organization is not necessary for good trading relationships, it is one indicator that farmers are organized and therefore have potential for better negotiating power. The capacity of the farmer organizations matters and should be included for in depth studies. See COSA's FO Framework here.
		Loyalty	<ul style="list-style-type: none"> <li>Length of relationship with primary buyer</li> <li>Percent of harvest sold to primary buyer</li> <li>Use of contract, if contracted, buyer's consistency in purchasing agreed upon quantities</li> </ul>	When farmers have options of who to sell to, loyalty—the choice of farmers to sell to a specific buyer—is the best “voting with your feet” indicator that the trading relationship is valued
		Transparency	<ul style="list-style-type: none"> <li>Understanding of quality standards &amp; price premiums (if they exist)</li> <li>Knowledge of certifications held</li> </ul>	Where farmers have access to information—prices, price structures, quality grades, etc.—they are better able to make informed choices about market participation and investing in their production. Contracts are one vehicle for transparency.
		Producer Perception	<ul style="list-style-type: none"> <li>Perception of quality of relationship with primary buyer</li> <li>Most significant benefit question e.g., What has been the most significant benefit of trade with primary buyer?</li> </ul>	Perception matters. These general “satisfaction questions” capture the farmer's overall sense of the trading relationship and to some degree, his/her likelihood to continue farming the crop/selling to the primary buyer.
Next Generation Farmers	Is the supply chain cultivating a next generation of farmers?	Attractiveness of Growing Crop as Profession	<ul style="list-style-type: none"> <li>Attractiveness of farming focus crop</li> <li>Youth participation in commodity</li> <li>Equitable access to agricultural services for youth</li> </ul>	Youth are the future of a secure global food supply and as such, those investing in agricultural development initiatives would do well to monitor progress in this area in a common way in order to compare and share learning, adapt strategies and speed up progress and innovation.

The mission of the Sustainable Food Lab is to accelerate market-driven progress toward a sustainable mainstream food system by supporting diverse and influential leaders.

The Sustainable Food Lab is a global network of organizations working together to facilitate market-based solutions to key issues necessary for a healthy and sustainable food system to feed a growing world. From peer to peer leadership networks, to global learning events, to supply chain innovation projects, to measurement tools, the Sustainable Food Lab brings organizations together to help them accelerate progress towards a more sustainable food system.

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