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Integrated Natural Resource Management (INRM)

# HEARTH Monitoring and Evaluation Toolkit: *Conservation Enterprise (CE) Benefits*

APRIL 2022

## **Integrated Natural Resource Management (INRM)**

Sound management of natural resources is central to long-term development and resilience. Faced with an urgent need to reduce environmental degradation while improving human well-being, solutions that effectively integrate investments in natural resource management with economic and social development are increasingly urgent. INRM promotes integrated programming across environment and non-environment sectors and across the Program Cycle. INRM supports USAID to amplify program impacts, strengthen gender equality and social inclusion, and identify best practices for integration.

For more information:

<https://land-links.org/project/integrated-natural-resource-management-inrm-activity/>

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<b>Front Cover photo:</b>	By setting up their own community-based sorting and processing 'bodega' for xate, the community of Uxactun has created an opportunity for a majority of the families in the community to earn a better basic base income. Uaxactun, Guatemala. Photograph by Jason Houston for USAID

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# Acronyms

CE	Conservation Enterprise
CIFOR	Center for International Forestry Research
CPI	Consumer Price Index
DHS	Demographic and Health Surveys
FTF	Feed the Future
HEARTH	Health, Ecosystems, and Agriculture for Resilient Thriving Societies
INRM	Integrated Natural Resource Management
IP	Implementing Partner
LCU	Local Currency Units
MERL	Monitoring, Evaluation, Research, and Learning
PEN	Poverty Environment Network
PPP	Purchasing Power Parity
STARR II	Strengthening Tenure and Resource Rights II
USAID	United States Agency for International Development
USD	United States Dollar
USG	United States Government

# Overview

Together, Health, Ecosystems, and Agriculture for Resilient Thriving Societies (HEARTH) and INRM have created the HEARTH Monitoring and Evaluation Toolkit, a suite of indicators and guidance that will help United States Agency for International Development (USAID) Missions and implementing partners (IPs) monitor progress and aggregate common metrics to build the evidence base around the effectiveness of integrated strategic approaches. This document is an individual module from the toolkit, presented separately to facilitate use by individual HEARTH activities. Before using this module, we recommend first accessing the full toolkit and reviewing the list of sectors covered by each module, and determining which are most relevant for your activity:

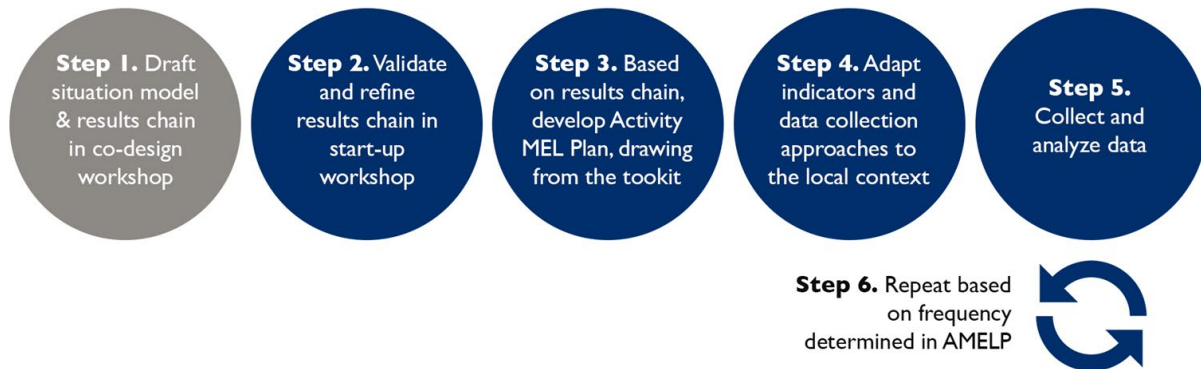
[Access Full Toolkit on Biodiversity Links Here.](#)

## How To Use This Toolkit

This toolkit presents a **menu of options** for outcomes and recommended indicators across the HEARTH activities. Before using this toolkit, activities should have developed a robust theory of change – through first drafting their situation model and results chains during the co-design workshops, many of which have been completed already, and then validating and refining those results chains during start-up workshops.

Based on the activity theory of change, HEARTHs should develop their Activity Monitoring, Evaluation, Research, and Learning (MERL) Plan, which should draw directly from the toolkit. It is not expected that all outcomes or indicators will be relevant for all activities, but that activities should select those in line with their results chains and activity theory of change. Additionally, there might be activity-specific outcomes not included in this toolkit because they were not generally applicable across the HEARTH portfolio, and Missions and IPs should therefore include additional indicators in their MERL plans, as relevant.

When developing activity MERL plans, the indicators in this toolkit are intended to be used both to **standardize reporting for monitoring data, as well as a basis for evaluation data collection**. While monitoring trends in these indicators over time may be important for some activities, USAID anticipates that Missions and IPs will also identify important questions about the causal impact of their activities during the start-up activities, best answered using evaluation approaches. Which indicators will be part of monitoring systems, and which will be used to answer evaluation questions, will affect how the toolkit is operationalized. In addition, it is expected that MERL plans will likely include **qualitative data sources**, important to further explaining monitoring and evaluation results and exploring learning questions in more depth, in addition to the quantitative data collected using the approaches from the toolkit.



## Indicator Guidance and Core Household Questionnaire

This document contains guidance for defining and collecting data for each of the recommended indicators for Missions and IPs, including Performance Indicator Reference Sheets throughout. This guidance draws heavily on established best practices, such as the Demographic and Health Surveys (DHS) and Feed the Future programs. In addition to this guidance, INRM developed a core questionnaire to provide a basis for household surveys to facilitate ease of take-up. While most indicators will be measured through household surveys, one exception is the indicator for number of full-time equivalent jobs created, which should be measured by collecting administrative data from private sector enterprises or implementer monitoring data.

It should be emphasized that it is important for Missions and IPs to adapt the questionnaire to their local country context – which might include adding/removing answer choice options, updating question text or translations, etc. Areas where edits for local context are typically required are identified in the tool and following guidance. The full toolkit includes additional guidance on respondent identification and inclusion of household rosters, as well as more in-depth discussions on sampling approaches, data collection administration and frequency, data management, privacy, and ethics, which should be considered.

# Outcomes and Indicators for Conservation Enterprise Benefits

*Table 1: Overview of Outcomes and Recommended Indicators for the CE Benefits Sector.*

Outcomes	HEARTH Portfolio Indicators
<a href="#">Increased benefits from conservation enterprises</a>	<ul style="list-style-type: none"><li>• <a href="#">Average household income from environment products</a></li><li>• <a href="#">Percent of households that used or benefitted from any community services provided by the project</a></li><li>• <a href="#">Number of full-time equivalent jobs created</a></li></ul>

# Conservation Enterprise Benefits

## Pathways To Change

All HEARTH activities include conservation enterprises as one of their strategic approaches, which should provide benefits both for those directly participating in them (employment, income) as well as community benefits (via using profits to invest in the community). It is also expected that households who participate in conservation enterprises or otherwise benefit from them will have increased conservation knowledge and/or perceptions of ecosystem benefits/services, and as a result will reduce behaviors that are threats to biodiversity, ecosystems, and climate.

## Recommended Outcomes and Indicators

Outcome	Description	Recommended Indicator & Duration
Increased benefits from conservation enterprises	<p>USAID’s “The Nature of Conservation Enterprises”<sup>1</sup> identifies three types of monetary benefits: employment, payment for collection of inputs (like non-timber forest products [NTFPs]), and dividends. This indicator focuses on payment for collection of inputs measured via household surveys. Supplemental guidance is provided at the end of this chapter for collecting employment data from implementing partners (given that few beneficiaries will be directly employed by enterprises or along the supply chain), and dividend payments are unlikely based on the results chains reviewed to date and the 5-year timeline for HEARTH activities.</p> <p>Depending on the HEARTH Activity, the list of raw materials/wild products might overlap with those in the “percent of households who engaged in unsustainable use</p>	<p><b>Indicator:</b> Average household income from environment products</p> <p><b>Source:</b> Center for International Forestry Research (CIFOR) Poverty Environment Network (PEN) questionnaire, direct forest income (Section B) and non-forest environmental income (Section E)<sup>2</sup></p>

<sup>1</sup> Note that this document does not seem to consider sustainable agriculture activities as CEs. Nevertheless, the monetary benefits from sustainable agriculture interventions would be covered under the results discussed here or in the agriculture section: “The Nature of Conservation Enterprises: A 20-Year Retrospective Evaluation of the Theory of Change Behind This Widely Used Approach to Biodiversity Conservation.” USAID BiodiversityLinks. United States Agency for International Development, 2018. <https://biodiversitylinks.org/learning-evidence/conservation-enterprises/ce-documents/the-nature-of-conservation-enterprises-a-20-year-retrospective-evaluation-of-the-theory-of-change-behind-this-widely-used-approach-to-biodiversity-conservation/view>.

<sup>2</sup> “A Comprehensive Global Analysis of Tropical Forests and Poverty.” Poverty Environment Network, n.d. <http://www.cifor.org/pen/>.



Outcome	Description	Recommended Indicator & Duration
	<p>of ecosystem resources” indicator from the conservation knowledge, attitudes, and practices module. If so, the list of materials/products should only be asked about once, followed by relevant questions.</p> <p>HEARTH activities should note that this survey module can become relatively long, depending on the number of products included and the number of seasons (if relevant).</p>	<p><b>Duration:</b> 5-7 minutes per product/income source</p>
	<p>Given that non-cash/monetary benefits will be specific to each HEARTH, it is recommended that each activity develop a custom list of non-monetary services that households might benefit from due to the conservation enterprise (e.g., security, education, spiritual/cultural benefits). Then for each, questions would be asked about whether the household uses the benefit/service, how often, how important the service is for their well-being, and whether there is equitable access/use. This is a custom indicator, based on findings from the “The Nature of Conservation Enterprises” retrospective study related to non-monetary benefits from CE.<sup>3</sup></p>	<p><b>Indicator:</b> Percent of households that used or benefitted from any community services provided by the project</p> <p>Source: N/A</p> <p><b>Duration:</b> 2-5 minutes (depending on how many services)</p>
	<p>Employment is one of the three primary types of monetary benefits identified by USAID<sup>4</sup> As relatively few individuals will be employed directly by conservation enterprises or along the supply chain, relative to the number of overall program participants and beneficiaries, it is not recommended to measure this indicator through household surveys. Instead, this indicator should be measured by collecting administrative data from private sector enterprises or implementer monitoring data. For more details on collecting information from private sector</p>	<p><b>Indicator:</b> Number of full-time equivalent jobs created</p> <p>Source: N/A</p> <p><b>Data Source:</b> Administrative data collected from private sector enterprises</p>

<sup>3</sup> “The Nature of Conservation Enterprises: A 20-Year Retrospective Evaluation of the Theory of Change Behind This Widely Used Approach to Biodiversity Conservation.” USAID BiodiversityLinks. United States Agency for International Development, 2018. <https://biodiversitylinks.org/learning-evidence/conservation-enterprises/ce-documents/the-nature-of-conservation-enterprises-a-20-year-retrospective-evaluation-of-the-theory-of-change-behind-this-widely-used-approach-to-biodiversity-conservation/view>.

<sup>4</sup> Note that this document does not seem to consider sustainable agriculture activities as CEs. Nevertheless, the monetary benefits from sustainable agriculture interventions would be covered under the results discussed here or in the agriculture section.

Outcome	Description	Recommended Indicator & Duration
	partners, please see the <a href="#">supplementary guidance</a> at the end of this section.	

# Performance Indicator Reference Sheets

## INDICATOR TITLE: Average household income from environment products

### DEFINITION:

Income from collection of inputs/resources will be measured by adapting the approach developed by the CIFOR as part of the PEN. PEN provides a standardized tool to measure environmental income across countries and contexts.<sup>5</sup> A custom list of raw-material forest products and/or wild products related to conservation enterprises for each HEARTH Activity should be developed, followed by up to 9 questions per product that the household collects; repeated for each product and each season.<sup>6</sup> These nine questions include (1) who in the household collected the product in season X, how much each household (2) used and (3) sold during season X, and if the household sold any of the product, (4) the price per unit, (5) what type of market the product was sold in, and total (6) transportation, (7) marketing, (8) inputs, and (9) labor costs in season X.

The HEARTH core questionnaire includes an example module with a seasonal recall period. Both the set of products and the recall period (or mix of recall periods) will need to be determined by each HEARTH. Once the adaptations are made, annual income from the CE can be calculated and reported consistently across HEARTHS.

It should be noted that measuring only income from conservation enterprises will not capture substitution between different sources of income, and therefore not be a reliable measure of socio-economic status overall. While measuring income from CEs can provide information about the CE theory of change, it is recommended to supplement this with other measures of household economic well-being, as described in the socio-economic status outcome section.

Income should be reported by respondents in the appropriate local currency and converted into United States Dollar (USD) for comparison across the HEARTH portfolio.<sup>7</sup> To convert Local Currency Units (LCU) for the survey year (*t*) into 2020 USD, HEARTH activities should first adjust for inflation from 2020 to the year and month of the survey. In all cases, the official source

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<sup>5</sup> PEN research tools (the prototype questionnaires and the associated technical guidelines; the template for data entry; the code book; and the data cleaning procedures) can be downloaded from their website Prototype questionnaires are available in English, French, Spanish, Portuguese (Brazilian and Mozambican), Chinese (Mandarin), Nepalese, and Khmer: "A Comprehensive Global Analysis of Tropical Forests and Poverty." Poverty Environment Network, n.d. <http://www.cifor.org/pen/>.

<sup>6</sup> For a more detailed example, activities may consider adapting the baseline questionnaire from the Impact Evaluation of Hariyo Ban II Livelihood Interventions on Biodiversity Outcomes: Baseline Report (Nepal) – Section D, Forest Based Income: "Impact Evaluation of Hariyo Ban II Livelihood Interventions on Biodiversity Outcomes: Baseline Report." United States Agency for International Development, December 2019. [https://pdf.usaid.gov/pdf\\_docs/PA00WZW2.pdf](https://pdf.usaid.gov/pdf_docs/PA00WZW2.pdf).

<sup>7</sup> For additional details on calculating interest rates and other conversions, please see the Feed the Future Survey Implementation Document: Guide to FTF Statistics section on guidelines for constructing poverty indicators.

## INDICATOR TITLE: Average household income from environment products

for the Consumer Price Index (CPI) should be used. Then, the inflation adjusted LCU should be converted into 2020 USD using the 2020 purchasing power parity (PPP) conversion factor of private consumption based on the International Comparison Program.<sup>8</sup> The PPP 2020 conversion factors can be obtained from the World Development Indicator database.<sup>9</sup> The formula for this calculation is as follows, and reporting should include the CPI and PPP used in the calculation for full transparency.

$$USD_{2020} = LCU_t \times \left( \frac{CPI_{2020}}{CPI_t} \right) \times (PPP_{2020})$$

### DATA COLLECTION:

It should be emphasized that income is difficult to accurately and reliably measure, in part due to high seasonal variability month to month, as well as biases related to recall periods.<sup>10</sup> Generally, longer recall periods lead to lower income estimates, and the magnitude of these impacts can be large – for example, one study using the PEN tool in Nepal found that differences in direct forest income were almost halved when reported over a 3 month recall period as opposed to 1 month.<sup>11</sup>

While best practice may be to collect forest income on a high-frequency (quarterly) basis to mitigate some of these data quality concerns,<sup>12</sup> this is likely not feasible for HEARTH activities given the significant resource requirements for quarterly data collection. Angelsen and Lund provide three options when high-frequency surveys cannot be conducted: “1. Ask about income for the last 12 months (appropriately decomposed, for example, by product). 2. Ask about income for, say, the last month or last three months, and multiply to get the annual income. 3. Divide the year into a few (normally two or three) distinct seasons and ask about income in each of these.

<sup>8</sup> The International Comparison Program conducts comprehensive market surveys that are used to compute global PPP and real expenditures: “The International Comparison Program.” World Bank, 2011. [http://siteresources.worldbank.org/ICPEXT/Resources/ICP\\_2011.html](http://siteresources.worldbank.org/ICPEXT/Resources/ICP_2011.html).

<sup>9</sup> “World Development Indicators.” Data Bank. World Bank, 2021. <https://databank.worldbank.org/source/world-development-indicators>.

<sup>10</sup> For more discussion, see: Poirier, M.J.P., Grépin, K.A. & Grignon, M. Approaches and Alternatives to the Wealth Index to Measure Socioeconomic Status Using Survey Data: A Critical Interpretive Synthesis. *Soc Indic Res* (2020). <https://doi.org/10.1007/s11205-019-02187-9>.

<sup>11</sup> See Box 7.2 “The importance of recall periods” in “Chapter 7: Designing the Household Questionnaire” by Angelsen, A., & Lund, J.F. (2011) in *Measuring Livelihoods and Environmental Dependence: Methods for Research and Fieldwork*. [https://www.cifor.org/publications/pdf\\_files/Books/BAngelsen1102.pdf](https://www.cifor.org/publications/pdf_files/Books/BAngelsen1102.pdf).

<sup>12</sup> Angelsen, A., Jagger, P., Babigumira, R., Belcher, B., Hogarth, N. J., Bauch, S., ... & Wunder, S. (2014). Environmental income and rural livelihoods: a global-comparative analysis. *World development*, 64, S12-S28. <https://www.sciencedirect.com/science/article/pii/S0305750X14000722?via%3Dihub#fn6>.

**INDICATOR TITLE: Average household income from environment products**

Therefore, it is recommended that HEARTH activities assess the (1) frequency of collection and (2) seasonality for each product to determine the appropriate recall period:

- For any seasonal products, the year should be divided into locally relevant seasons, and income should be asked about for each. It is anticipated that most products will fall into this category.
- For any products that do not have much seasonal variation in availability/use:
  - Regularly collected products (e.g., collected daily or weekly) should use a one-month recall period, which can then be multiplied by 12 to estimate annual income
  - Infrequently collected products (e.g., collected once every few weeks, or less) should use a three-month recall period, which can then be multiplied by 4 to estimate annual income

HEARTH activities should note that this survey module can become relatively long, depending on the number of products included and the number of seasons (if relevant).

**ADAPTATION:**

Both the set of products and the recall period (or mix of recall periods) will need to be determined by each HEARTH. A custom list of raw-material forest products and/or wild products related to conservation enterprises for each HEARTH Activity should be developed. See above for suggested exceptions/adaptation based on the product relevant for each CE and the appropriate recall period(s). In addition, answer choices for all questions should be reviewed and adapted as relevant for the local context. For example, the question on types of markets should be adapted to reflect the markets available, and the type of costs should be adapted based on the type of enterprise. Finally, questionnaires should allow reporting in local currencies.

<p><b>UNIT:</b></p> <p>Number (USD)</p>	<p><b>DISAGGREGATE BY:</b></p> <p>Sex of Primary Person who Collects the Product (if included): Female, Male</p> <p>Type of Product (if more than one)</p> <p>Season (if more than one)</p>
<p><b>TYPE:</b></p> <p>Outcome</p>	<p><b>DIRECTION OF CHANGE:</b></p> <p>Higher is better</p>

<b>INDICATOR TITLE: Average household income from environment products</b>	
<b>MEASUREMENT NOTES</b>	
<b>INTENDED RESPONDENT:</b>	Primary household decision-maker (male or female) from sample households. Ideally, this should be the person primarily responsible for decisions related to generating income from the products/resources of interest, or otherwise participating in the conservation enterprise. If this person is not available, another adult from the household may be used for reporting.
<b>REPORTING NOTES</b>	
In addition to reporting the average income from products/resources of interest across households, the number of participant households of the conservation enterprise activity must be reported, to allow a weighted average to be calculated across HEARTH activities for reporting. Additionally, activities should report on the total sample size (including any disaggregation for participant households vs. comparison/control households if an evaluation is being conducted). Finally, activities should also report on the standard deviation.	

**INDICATOR TITLE: Percent of household that used or benefitted from any community services provided by the project**

**DEFINITION:**

“The Nature of Conservation Enterprises” retrospective study<sup>13</sup> emphasizes the importance of community services as non-monetary benefits from conservation enterprises, and thus this indicator focuses on such services. Other non-cash benefits, such as increased provision of subsistence resources (fuelwood, fodder, timber, etc.) or general positive attitudes towards conservation and knowledge of ecosystem services, are covered in the conservation knowledge, attitudes, and practices module. Additionally, direct health and education outcomes from use of these services will be measured in their respective modules.

For this indicator, each HEARTH activity should develop a custom list of community services related to their conservation enterprises, followed by up to 4 questions per service that the household uses. A suggestive list of possible services includes water and sanitation infrastructure, energy infrastructure, roads, education/schools, and/or healthcare facilities.

Then for each service, questions would be asked about (1) whether the household uses the benefit/service, (2) how often, (3) how important the service is for their household’s well-being, and (4) whether there is equitable access/use. The indicator will be constructed as the percentage of households who use any of the benefits/services provided.

**ADAPTATION:**

The list of community services provided above and in the core questionnaire is suggestive and should be adapted based on those provided by the conservation enterprise. Additionally, answer choices for Q4 regarding who might benefit most from services should be updated to include specific definitions for youth/elderly based on local context, as well as to include any marginalized groups which might not already be included.

<p><b>UNIT:</b></p> <p>Percent</p>	<p><b>DISAGGREGATE BY:</b></p> <p>By benefit/service (if multiple)</p>
<p><b>TYPE:</b></p> <p>Outcome</p>	<p><b>DIRECTION OF CHANGE:</b></p> <p>Higher is better</p>

<sup>13</sup> “The Nature of Conservation Enterprises: A 20-Year Retrospective Evaluation of the Theory of Change Behind This Widely Used Approach to Biodiversity Conservation.” USAID BiodiversityLinks. United States Agency for International Development, 2018. <https://biodiversitylinks.org/learning-evidence/conservation-enterprises/ce-documents/the-nature-of-conservation-enterprises-a-20-year-retrospective-evaluation-of-the-theory-of-change-behind-this-widely-used-approach-to-biodiversity-conservation/view>.

**INDICATOR TITLE: Percent of household that used or benefitted from any community services provided by the project**

MEASUREMENT NOTES

INTENDED  
RESPONDENT:

Primary household decision-maker (male or female) from sample households. If this person is not available, another adult from the household may be used for reporting.

REPORTING NOTES

In addition to reporting the percent value, the number of participant households of the conservation enterprise activity must be reported, to allow a weighted average to be calculated across HEARTH activities for reporting. Depending on the sampling strategy (i.e., if respondents are selected from the wider community and not just direct program participants), the total number of households in communities with conservation enterprises would also need to be reported. Additionally, activities should report on the total sample size (including any disaggregation for participant households vs. comparison/control households if an evaluation is being conducted).



**INDICATOR TITLE: Number of full time equivalent jobs created**

**DEFINITION:**

This indicator counts all types of employment held during the reporting year in agriculture or rural-related enterprises (including paid on-farm/fishery employment) that were created with U.S. Government assistance. It counts existing jobs that were created in the current or in previous reporting years.

Jobs lasting less than one month (or less than 20 days excluding weekends) are not counted in order to emphasize those jobs that provide more stability through length.

Jobs should be converted to Feed The Future (FTF) One FTE equals 260 days (excluding weekends) or 12 months. Thus, a job that lasts 4 months should be counted as 1/3 FTE and a job that lasts for 130 days (excluding weekends) should be counted as 1/2 FTE. Number of hours worked per day or per week is not restricted as work hours may vary greatly.

“With U.S. Government assistance” includes farm and non-farm jobs where HEARTH investments are intentional in assisting in any way to expand employment and where an objective of the HEARTH activity is job creation.

**ADAPTATION:**

**UNIT:**

FTEs

**DISAGGREGATE BY:**

**Location:** Urban/peri-urban, Rural

**Duration:** Continuing, New (the FTE held was newly created during the reporting year with U.S. Government assistance; Continuing—the FTE held during the reporting year was created in a previous reporting year with United States Government (USG) assistance)

**Sex of Job-Holder:** Male, Female (if one FTE is evenly split by a male and a female, then it would be 0.5 FTE for females and 0.5 FTE for males)

**TYPE:**

Outcome

**DIRECTION OF CHANGE:**

Higher is better

**MEASUREMENT NOTES**

<b>INDICATOR TITLE: Number of full time equivalent jobs created</b>	
INTENDED RESPONDENT:	Activity-level, direct beneficiaries, attributed to U.S. Government programs
REPORTING NOTES	
This is a direct measure of improved livelihoods, as it measures creation of employment and related income. However, HEARTH is concerned about creation of sustainable employment, not temporary employment (of short duration such as a period of less than one month).	

# Collecting Information from Implementing Partners and The Private Sector

HEARTH activities will be working with a diverse set of private sector partners alongside more traditional implementing partners such as international and local NGOs. Data obtained from implementing partners and the private sector for monitoring and evaluation purposes can help demonstrate the potential benefit of integrated programming (including the financial benefit for private sector enterprises), thereby strengthening and increasing sustainability of public-private relationships, and potentially stimulating further investment.

Ideally, HEARTH consortiums should discuss potential data sharing needs during procurement, so that data sharing requirements and protocols can be included in the award. For activities that have already been awarded, discussions should be had around options including developing separate data sharing agreements and/or finding a champion in the private sector enterprise who can facilitate getting access to the necessary information. In many cases, formal data sharing agreements may be required by private sector partners to protect against data misuse and set standards for data handling and use, especially considering that these data will likely be proprietary information. For more information on when to use data sharing agreements, and what they should include, please see [Annex I. Data Sharing Agreements](#).

Depending on the agreement reached with private sector enterprises and other implementing partners, there are different approaches for access to and use of data: (1) the company providing the data analyzes the data internally and then shares the relevant statistics with the agency; (2) the company transfers the data to the agency for the agency to compute the statistics; (3) the data are transferred to a trusted third party for analysis, and (4) the statistical agency's functions, including data collection and processing, are outsourced to the private firm.<sup>14</sup> Generally, (2) and (3) will allow for greater reporting transparency and may be preferred.

**Agricultural Commodity Price Data.** Data from the agriculture sector can be varied, including from small-holder farmers to commercially produced products within the agro-food chain. Relevant data may need to be collected from different sources including farmers, retailers, and corporate entities. Some types of agricultural data that may be of interest for HEARTH activities to monitor and may already be collected by implementing partners includes the following:<sup>15</sup>

- **Agronomic Data:** This includes crop and field information, such as planting data, seed type, yield, disease and pest management application, fertilization, and prescriptions. Household surveys are a likely source of this data; see more information in the [Agriculture and Land](#) section of this guidance document.
- **Land Data:** This includes soil and fertility data, topographical, elevation, watershed, and drainage data, geospatial information, and tillage and conservation data.

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<sup>14</sup> Innovations in Federal Statistics: Combining Data Sources While Protecting Privacy. (2017). National Academies Press (US). <https://doi.org/10.17226/24652>.

<sup>15</sup> AG Data Use Model Agreement. Ag Data Transparent. (n.d.). Retrieved from <https://www.agdatatransparent.com/model-agreement>.

- **Farm Management Data:** This includes information related to financial, tax, employment, commodity price, regulatory compliance, supply chain, and other management data.
- **Machine Data:** This includes telematics information, machine health, fuel consumption, load, use, and other machine performance data.
- **Climate and Weather Data:** This includes precipitation, wind speed and direction, temperature, and other weather information.
- **Livestock Data:** This includes animal identification and pedigree, genetic and genomic information, feed consumption, and other data related to livestock.

**Employment Data.** Employment data requires adherence to more rigorous standards when it comes to data sharing agreements. This is due to the sensitivity and identifiability of the data; therefore, employment data demands strict compliance with laws and regulations related to data privacy and security. These data may include salaries, wage, pay per product, hours worked, benefits packages, number of employees, etc.

# Annex I. Data Sharing Agreements

## When to use data sharing agreements:<sup>16</sup>

- Proprietary data are being shared across organizations
- There is a need to document which organization will be responsible for releasing data and what role the other organization(s) should take in assisting with that release
- There is a need to document the acceptable use of preliminary or provisional data by a partner or collaborator
- One or more of the organizations require a data sharing agreement

## What should be addressed in a data sharing agreement:<sup>17</sup>

- Period of agreement
  - Clearly define when the provider will give the data to the receiver and how long the receiver will be able to use the data.
  - Once the receiver agency no longer has the right to use the data, what will happen?
    - Will the data be returned to the provider, or will it be destroyed (deleted from hard drives, shredded, burned, etc.)?
- Intended use of the data
  - State as specifically as possible how the receiver will use the data.
  - What studies will be performed, what questions will be asked and what are the expected outcomes?
  - Can the receiver use the data to explore additional research questions without the approval or consent of the provider?
- Constraints on use of the data
  - List any restrictions on how the data or data findings can be used.
  - Is the receiver required to document how the data are used?

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<sup>16</sup> USGS. (n.d.). Data Management. Data Sharing Agreements. Retrieved from <https://www.usgs.gov/products/data-and-tools/data-management/data-sharing-agreements>.

<sup>17</sup> The University of Chicago. (n.d.). University Research Administration. Data-sharing Agreements. Retrieved from <https://ura.uchicago.edu/page/data-sharing-agreements>.

- Can the receiver share, publish or disseminate data findings and reports without the approval or review of the provider?
- If the receiver generates a report based on the data, does the report belong to the receiver or the provider?
- Can the receiver share, sell or distribute data findings or any part of the database to another agency?
- Data confidentiality
  - Describe the required processes that the receiver must use to ensure that data remain confidential.
  - Because some data may contain information that can be linked to individuals, it is important to put safeguards in place to ensure that sensitive information (e.g., salaries, exam results) remains private.
  - Personal data should remain confidential and should not be disclosed verbally or in writing to an unauthorized third party, by accident or otherwise.
  - Will the receiver report information that identifies individuals?
  - What safeguards are in place to prevent sensitive information from becoming public?
- Data security
  - Describe the methods that the receiver must use to maintain data security.
  - Hard copies of data should be kept in a locked cabinet or room and electronic copies of data should be password protected or kept on a secure disk.
  - Will everyone at the receiver agency have the same level of access to data, or will some people have restricted access?
  - What kind of password protections need to be put in place?
  - Who will have physical access to the data, including the servers and the paper files?
  - What will happen to the data after the data-sharing period ends?
- Methods of data-sharing
  - Identify the way in which data will be transferred from the provider to the receiver.
  - Will data be transferred physically or electronically?
  - If data are to be sent over the Internet, how can a secure connection be guaranteed?
  - Will the data be encrypted before being transferred?
- Financial costs of data-sharing
  - Clarify who will cover the monetary costs of sharing the data (if any)
  - Will there be expenses related to sharing the data?
  - Will the provider or the receiver share the costs, or will one agency pay for all data-sharing expenses