Interoperability of Sustainability Data

Understanding the Critical **Entity** and **Geospatial** levels

Domains of interoperability

The 3 major domains of interoperability include:

1. **Semantic:** ***Definition*** *or detailed meaning or purpose of indicators & metrics*

   For example, is child labor defined as age 13 or 15? Is working on family farm outside of school hours prohibited?

2. **Syntactic:** ***Rules*** pertaining to the data.

   For example, who, when, how… So, what process or resolution level is required to determine deforestation and what sat. data sets or frequency are acceptable.

3. **Structural:** ***Format*** *for how data is stored and transmitted.*

   For example, *JSON vs csv, wide vs narrow.*

Interoperability

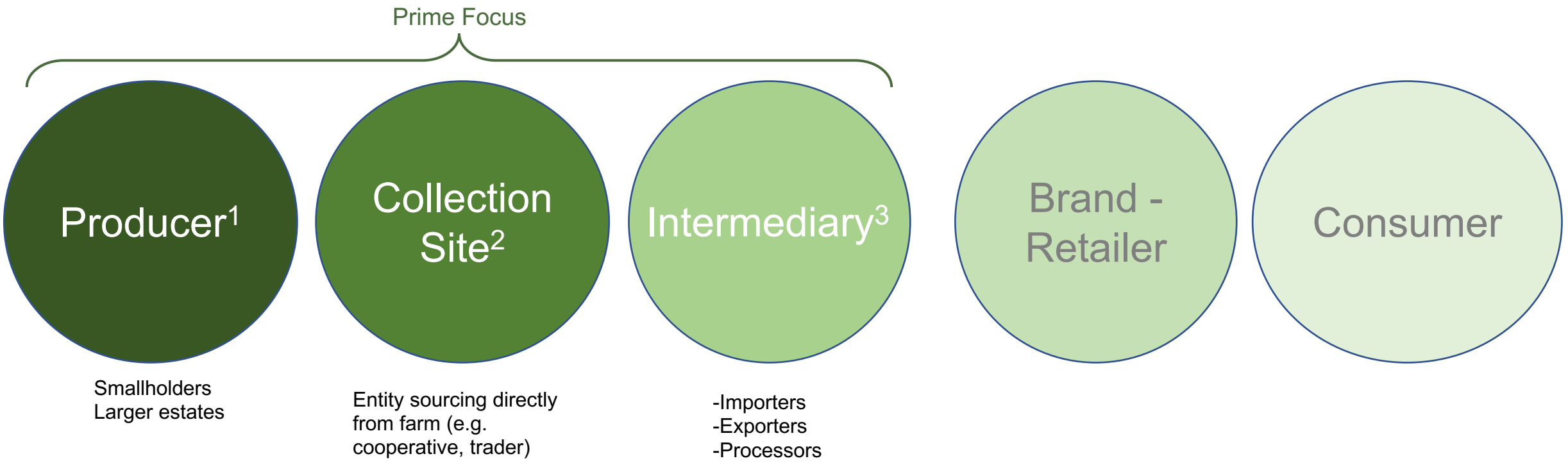
Consists of the **guidelines** that allow different information systems to functionally comprehend and utilize information shared between them.

To succeed, interoperability must be:

- **Pragmatically useful** or fit for purpose
- **Commonly accepted** as credible and science-based
- **Accessible to most** (cost + ease of use)

Entity-level understanding of Farm Income...

Entity Types



Examples of entity-level attributes

1. **Demographic Identifiers**
   - Location
   - Gender
   - Total Area

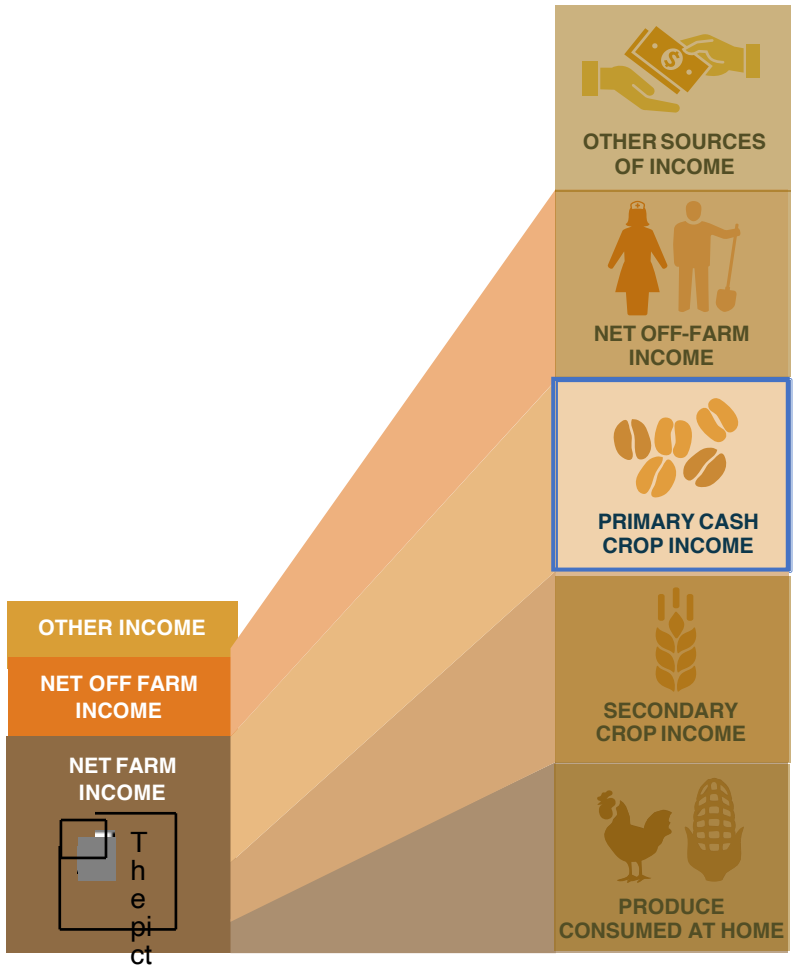
2. **Compliance**
   - Child or Forced Labor
   - Banned Pesticides
   - Deforestation

3. **Sustainability Performance**
   - Climate Resilience
   - Food Security
   - Income & Productivity

Interoperability requires agreement, not this:

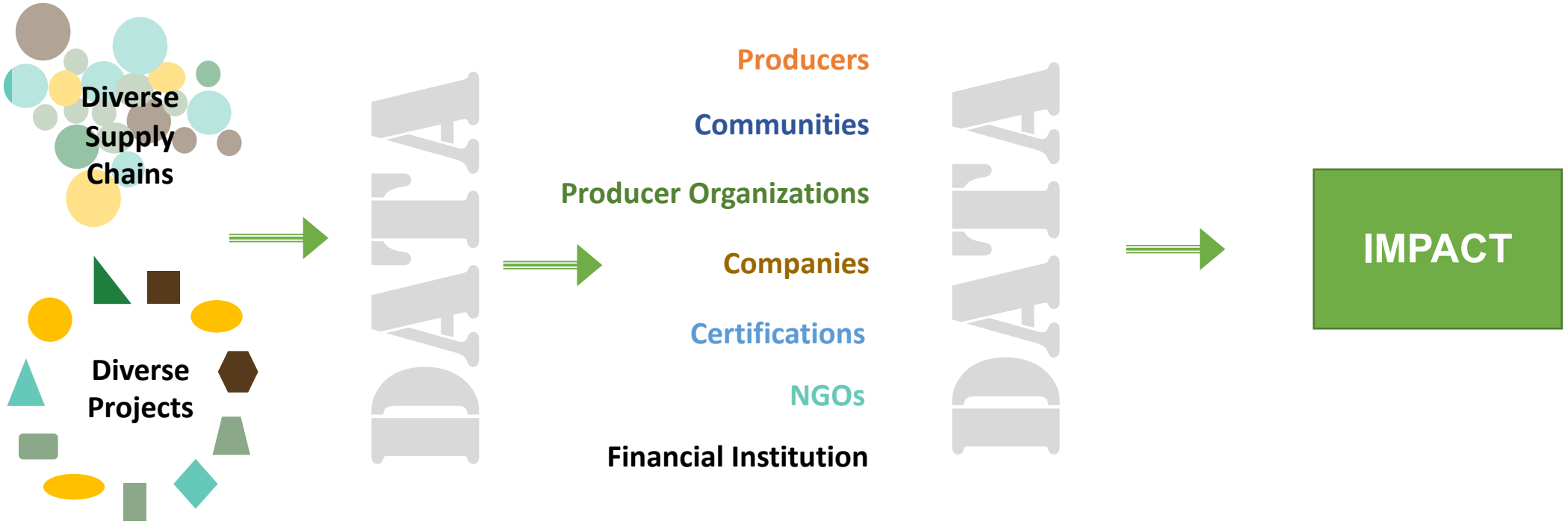
Company A	Project B	NGO C	Company Z
Revenue	Net Income	Farm Gate Price	Living Income
Water Footprint	Water Mgmt.	Irrigation type	Water Volume
Worker Housing	Human Rights	GAP	Labor contracts

Entity-level topic: Farm Income



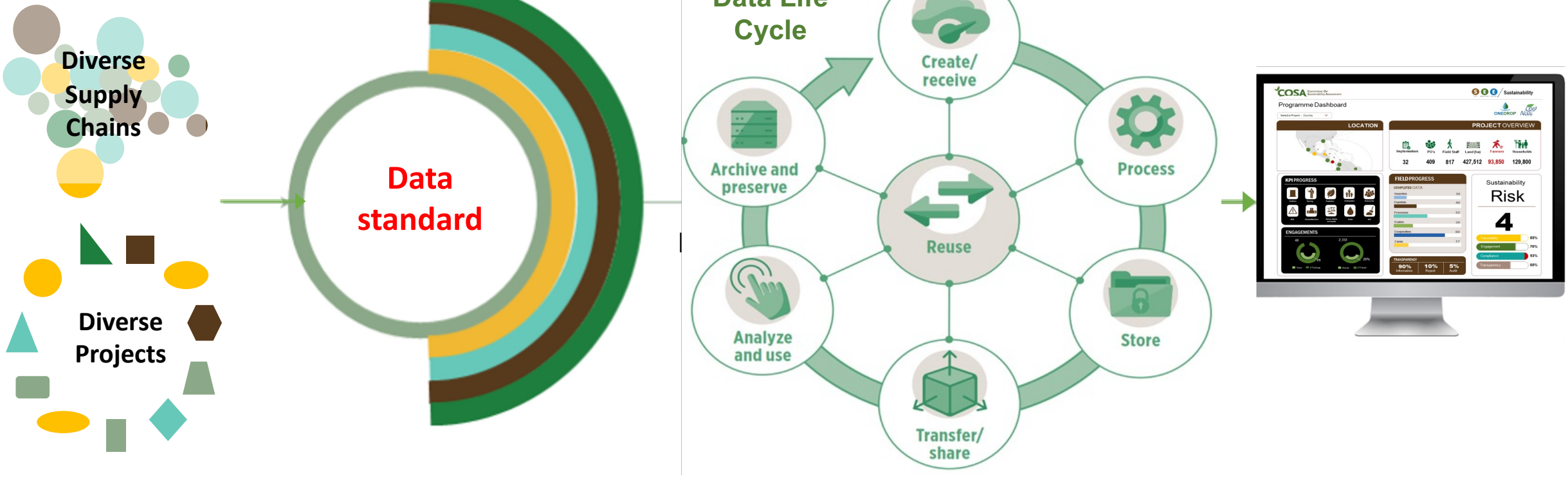
Living Income relies on regular and reliable data to accurately calculate income gaps to support the awareness and the understanding of Living Incomes

Complex case study



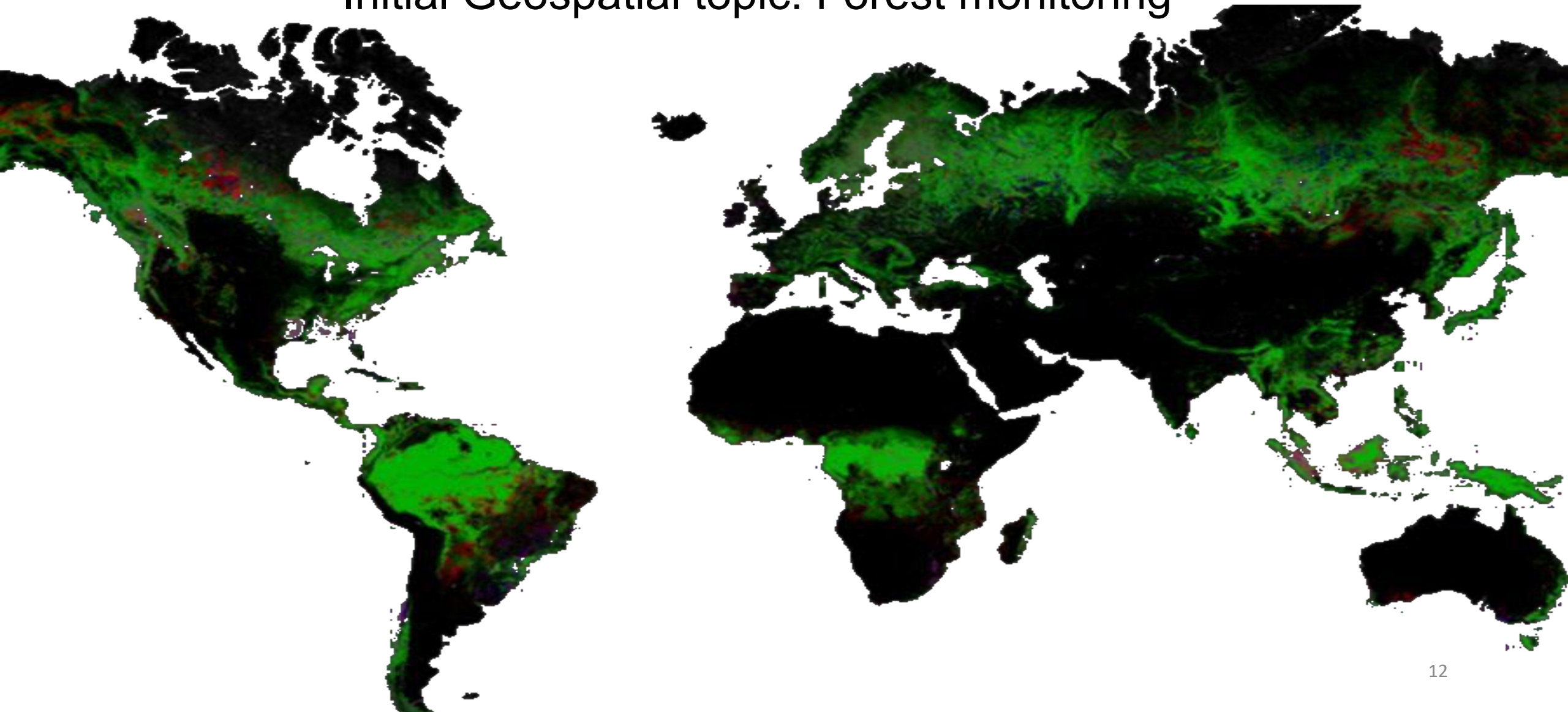
Complex case study

Measure What Matters CONSISTENTLY → Learning and benchmarking → Data-based decisions



Geospatial: start with Forest Monitoring

Initial Geospatial topic: Forest monitoring



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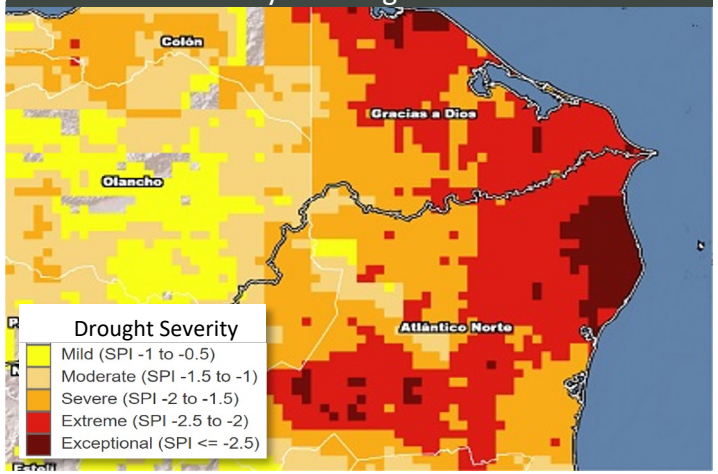
DIASCA Digital Integration of Agricultural Supply Chains Alliance

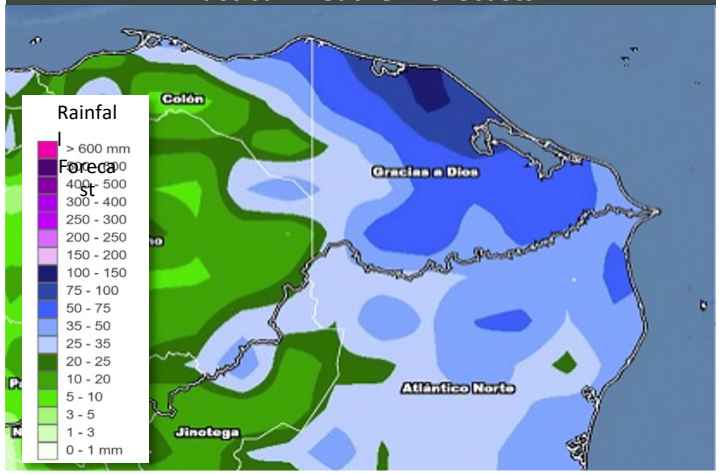
Considerable Functionality of Geospatial data

…Data associated with or attributed to a geographic area

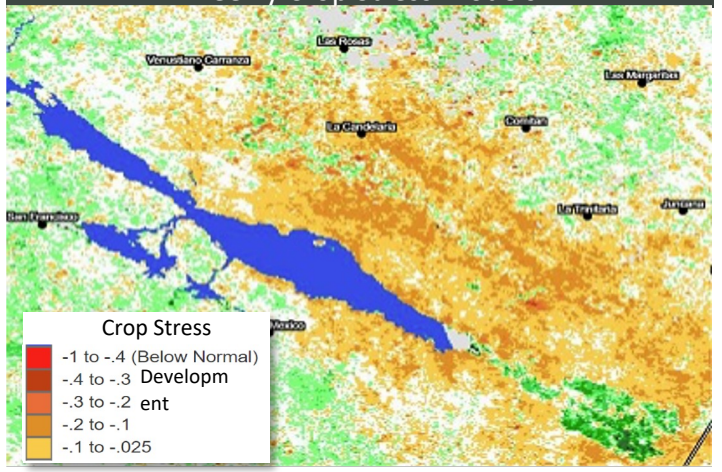
Early Warning Models



Tactical Weather Forecasts



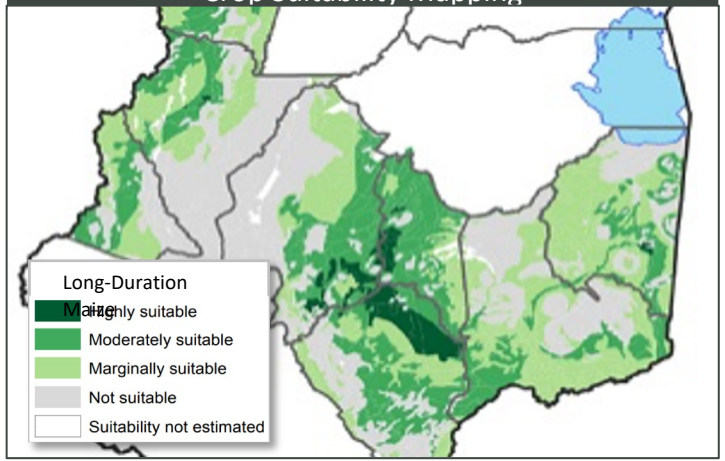
Weekly Crop Stress Models



Field-Level Crop ID

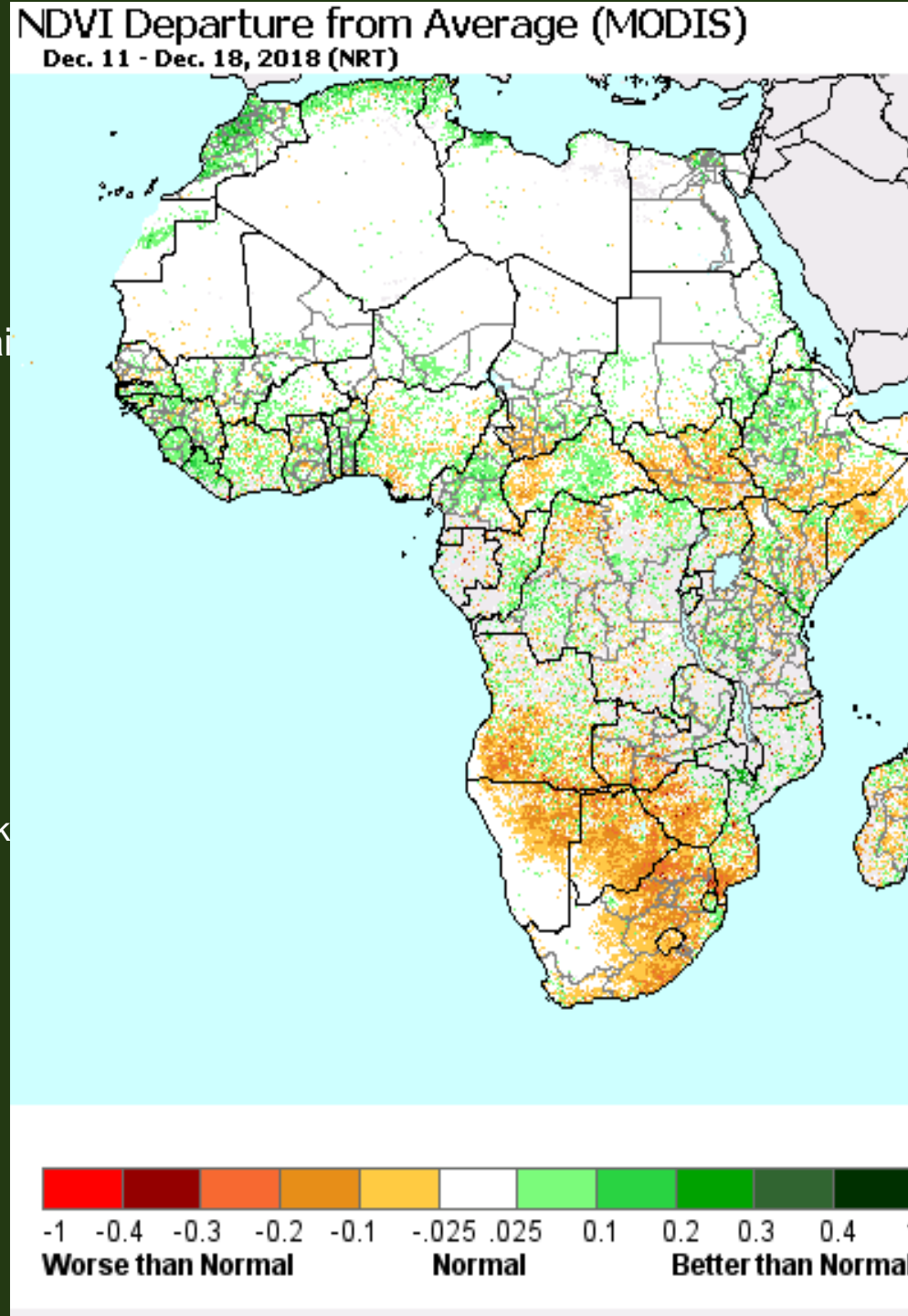
Crop Productivity Mapping

Crop Suitability Mapping

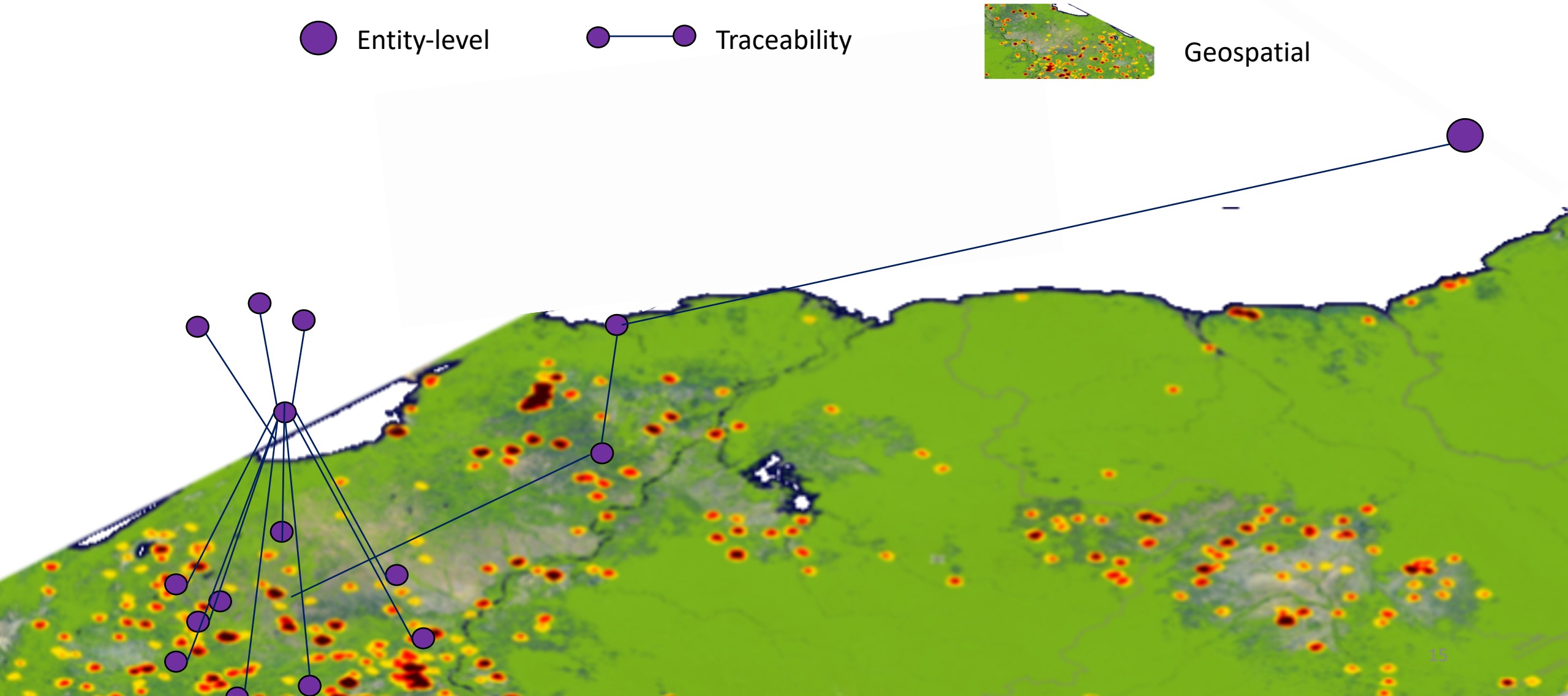


Sample of the 235 available GADAS datasets

1. Percent Normal Rainfall (6 international sources, updated daily) + 7-14 day Rai
2. NASA Microwave soil moisture (surface, subsurface, percent total)
3. Temperature forecasts (weekly Minimum & Maximums)
4. MODIS NDVI Vegetation Index anomaly (8-day summaries)
5. SPI Drought Alert (monthly)
6. Global Agricultural Lands e.g. rice lands (30-meter and mask)
7. Specific Croplands globally (500-meter and mask)
8. Global Crop Distribution IFPRI (34 crops; Area, Yield, Production, masks at 10-k
9. Global Total Land Cover (30m & 500m)
10. Lakes & Rivers (SRTM & Hydrosheds scale-dependent)
11. Global Reservoirs, Dams (including major use categories)
12. Global Irrigated Cropland – FAO
13. Geonames in detail - National Geospatial Intelligence Agency
14. Landscan Global Population Densities Oak Ridge National Laboratory



Relationship between Entities, Traceability and Geo-spatial data



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Appendix

About COSA

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Our Partnerships Bridge Worlds for Best Practices to Create Impact

UN & Development Agencies

Scaling up globally to better reach the poor

UNFSS — A Platform of International Dialogue on Voluntary Sustainability Standards
IISD International Institute for Sustainable Development
IDB LAB
UNCTAD
FAO
UNEP
International Trade Centre
FORD FOUNDATION
IFAD International Fund for Agricultural Development
IFC International Finance Corporation World Bank Group

Governments

Improving public programs and policies

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
USDA
SAGARPA Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
CIHEAM
ICCRI Indonesian Coffee-Cocoa Research Institute

Research Institutions

Ensuring science-based rigor

IITA Transforming African Agriculture
World Agroforestry Centre
CIAT
FAO
MIT Massachusetts Institute of Technology
University of California
IFPRI International Food Policy Research Institute
William Davidson Institute at the University of Michigan
Bioversity International
CATIE Solutions for environment and development
Euricse European Research Institute on Cooperative and Social Enterprises

Companies

Facilitating more responsible sourcing practices

McDonald's
McCain
Nestlé Nespresso
Coca-Cola
Martin Bauer
Yogi
Mondelēz International
MARS
Farmer Income Lab
PepsiCo
Keurig Green Mountain
Sustainability Consortium
The J.M. Smucker Co
Global Coffee Platform for a sustainable coffee world
Lindt

Local Partnerships

Ensuring local relevance

Aldea Global
ISSER
CRECE Centro de Estudios Regionales Cafeteros y Empresariales
IEP Instituto de Estudios Peruanos
Federación Nacional de Cafeteros de Colombia

NGOs

Enhancing public good

Conservation International
iseal alliance
Hivos people unlimited
CRS Catholic Relief Services
Lutheran World Relief
Fairtrade
Rainforest Alliance

Aligned with International & Normative References

- CITES Convention
- Convention on Biological Diversity
- FAO Rome Declaration on World Food Security
- FAO GAP
- Global Compact - UN
- Global Forum on Responsible Business Conduct
- IFC Performance Standards on Environmental & Social Sustainability
- ILO Core 8 Conventions
- International Covenant on Economic, Social and Cultural Rights
- International Plant Protection Convention
- OECD Agri-Environmental Indicators
- OECD-FAO Guidance: Responsible Agricultural Supply Chains
- Ramsar Convention on Wetlands
- Rio Declarations
- Stockholm Convention on Persistent Organic Pollutants
- Sustainable Development Goals
- UN Guiding Principles on Business and Human Rights
- UN Framework Convention on Climate Change
- Universal Declaration of Human Rights
- Winnipeg Principles
- WHO Guidelines for Water Quality

and others…

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Appendix

Related earlier work

100s Standardized Indicators

Samples
:

1. Living and Working Conditions
2. Basic Human Rights & Equity
3. Community
4. Trading Relationship

1. Resource Management
2. Soil
3. Biodiversity
4. Climate Change

1. Producer Livelihoods
2. Risk and Resilience
3. Competitiveness
4. Producer Organization

Tested hundreds of thousands of times

Taxonomy & Parameters for Data Architecture

Sample Indicator Description & Technical Representation

Indicator Description Fields

Indicator Name	Women's Participation in Training
Indicator ID/Code	Number XX.xx
Element / Theme	Social / Gender
Description	Women attending and completing trainings
Metric	Number and % of participants that complete specifically defined trainings who are women
Unit	Expressed as a number and a percent of total people attending
Report Frequency or Timing	Annually, can be updated as needed
Disaggregation	Data could be disaggregated by regional, municipality, or group level to reduce naming duplications and to determine potential target or focal areas
Benchmarking	UN SDG—5. Gender Equality https://www.un.org/sustainabledevelopment/gender...
Performance Standard	A value of 0.5 indicates that the gender gap is zero or close to zero (gender equity).
Limitations	*Completion is limited as an output indicator and should be paired with: a) satisfaction; adoption of the training topic objective(s); and outcomes of the adoption.*

Taxonomy & Parameters for Data Architecture

	Indicator Name	Women's Participation in Training
Calculation Fields	Calculation: NUMERATOR	For each training conducted, the number of participants who are women
	Calculation: DENOMINATOR	For each training conducted, the total number of participants
	Data Source	Producer Database held by co-op, trader, exporter, or NGO: FarmGender (Gender of farmer) TrainingsAttended (Number of trainings attended)
	Survey Question(s)	For this indicator, data would come from project-level databases that track training attendance (by gender and age). The minimum producer-level question is as follows: Write the name, gender, and age of the persons attending the training sessions: Name Gender Age Training Topic 1. _____ _____ _____ _____ 2. _____ _____ _____ _____
	Validations	FarmGender: three options are valid-- "male", "female" or "other, or prefer not to say" TrainingsAttended: a positive integer
	Subject of analysis	Supply chain, program/ project, PO or community level
	Exclusion/ Inclusion Criteria	Includes: Farmers where FarmGender is "FEMALE" Farmers where TrainingsAttended is greater than 0

Sample Pseudo Coding	Example of coding for the indicator to work in a chosen database.	women = 0 totalFarmers = 0
		for farmer in farmers {
		if (farmer.FarmGender = "FEMALE") then {
		if (farmer.TrainingsAttended > 0) then women += 1
		}
		totalFarmers += 1
		}

Existing Standards: GCP