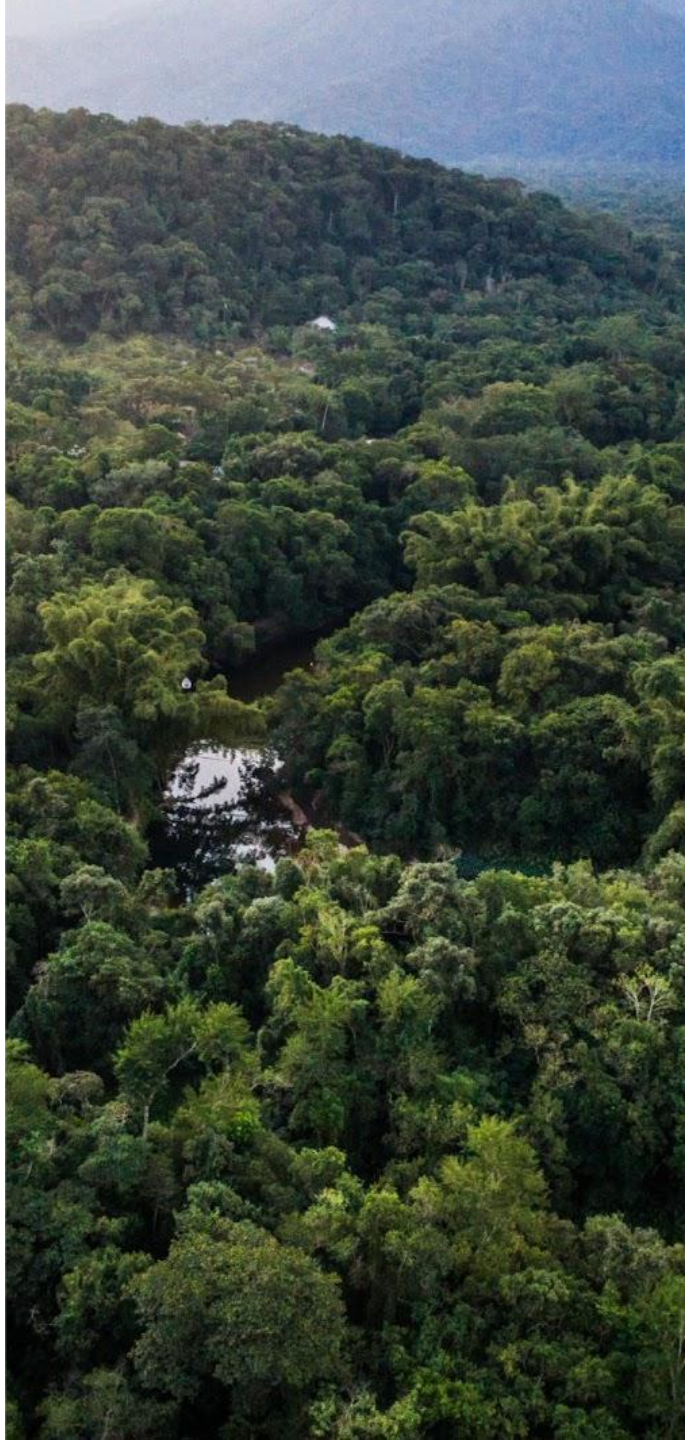
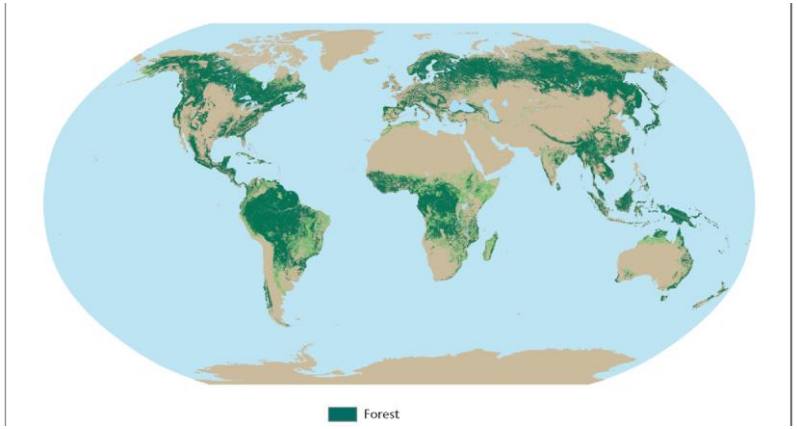
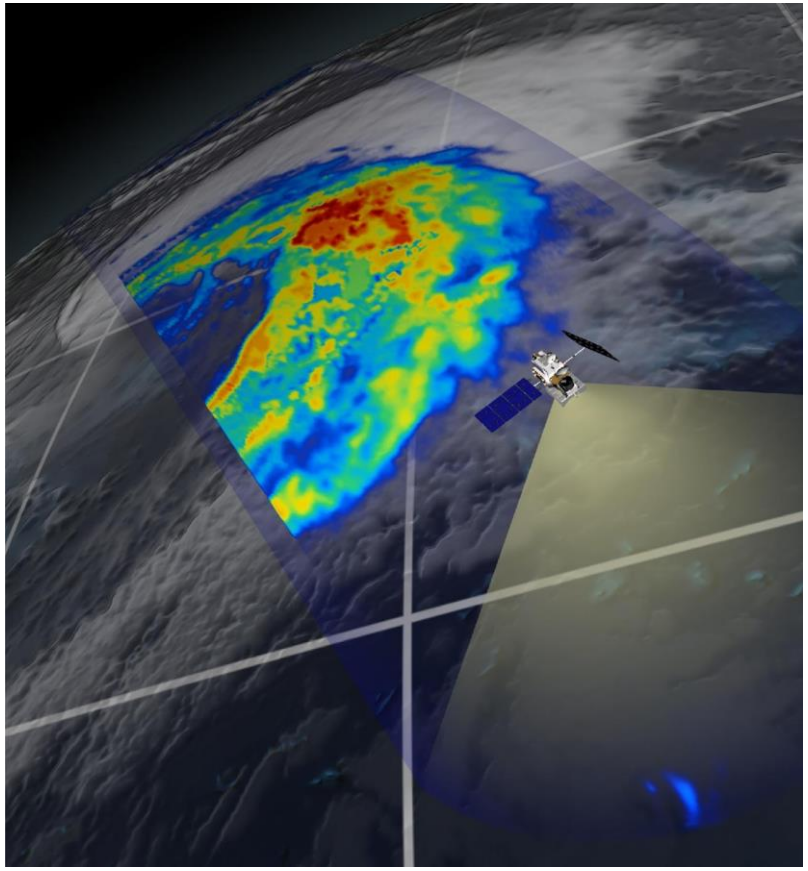
Traceability and Geolocation: emerging solutions through Digital Public Infrastructure

FOREST DATA Partnership

Unites organizations, governments and private sector partners around **trusted, transparent geospatial data solutions** that enable credible monitoring, verification and disclosure of progress in reducing deforestation and restoring degraded lands.







Article

An unexpectedly large count of trees in the West African Sahara and Sahel

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Check for updates

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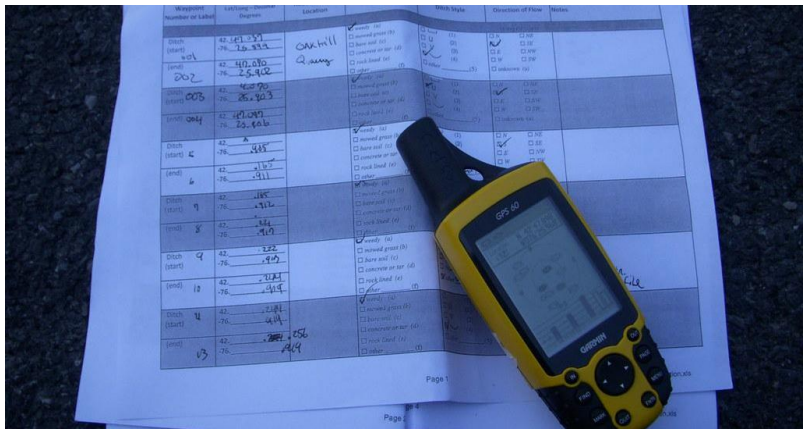
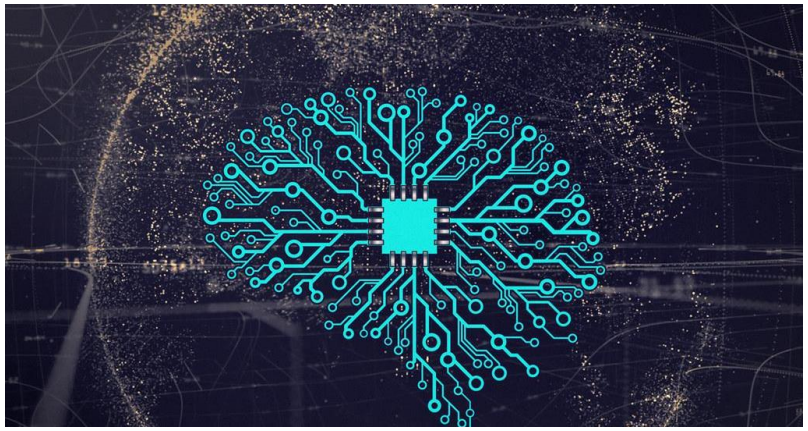
A large proportion of dryland trees and shrubs (hereafter referred to collectively as trees) grow in isolation, without canopy closure. These non-forest trees have a crucial role in biodiversity, and provide ecosystem services such as carbon storage, food resources and shelter for humans and animals[1,2]. However, most public interest relating to trees is devoted to forests, and trees outside of forests are not well-documented[3]. Here we map the crown size of each tree more than 3 m^2 in size over a land area that spans 1.3 million km^2 in the West African Sahara, Sahel and sub-humid zone, using submetre-resolution satellite imagery and deep learning[4]. We detected over 1.8 billion individual trees (13.4 trees per hectare), with a median crown size of





Data Landscape Fragmentation

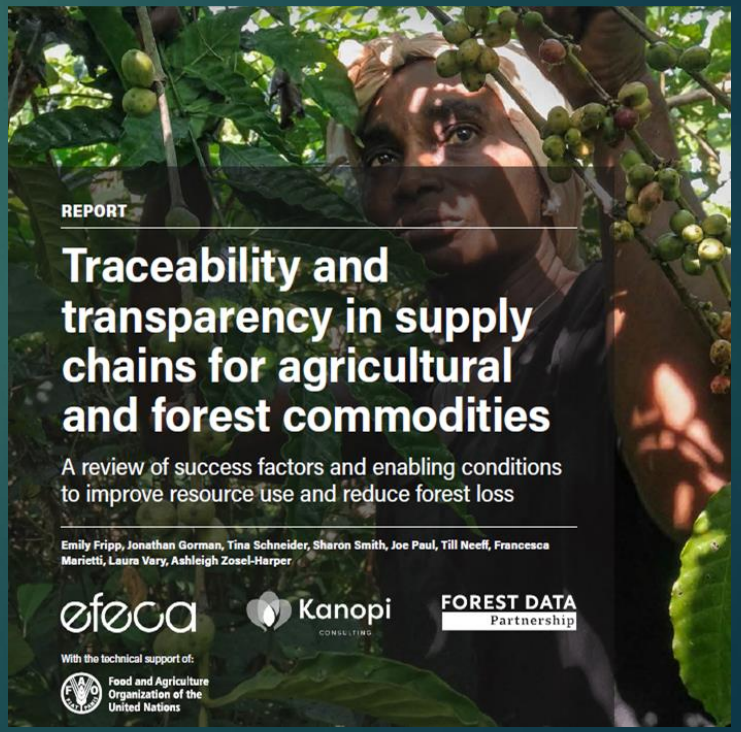
TABLE 5 | Examples of types of data at commodity origin relevant to traceability and transparency systems

TOPIC	EXAMPLES OF DATA POINTS	PURPOSE
Location of production areas	▪ Location of the production areas, e.g., shapefile of concession/farm	▪ Cross-check information with other spatially explicit information related to sustainability aspects ▪ Understand risk of encroachment in protected areas ▪ Allow for independent verification of sustainability claims, such as absence of forest loss, using satellite imagery, for example
Commodity production	▪ References on average production (or authorized production, notably for timber) of the sourcing area ▪ Volumes sourced from the region	▪ Control of data coherence and identification of leakage risks
Producers	▪ Type and number of producers, producer organizations, and intermediaries (structure of the first steps of the supply chain)	▪ Map suppliers and related risks regarding the chain of custody
Environmental	▪ Rates and locations of forest loss/land conversion ▪ Locations of high natural value; for example, with High Carbon Stock or High Conservation Value	▪ Cross-check with locations of commodity production and assess environmental or carbon footprint of activities
Social	▪ Evidence of slave labor, migrant labor, child labor, occupational health and safety, complaints mechanism ▪ Livelihood incomes for farming households	▪ Identification of risk of human rights abuses and exploitation, as well as poor pay, prices, or working conditions
Legal	▪ Land registration (e.g., CAR in Brazil) ▪ Legally protected areas (e.g., Indigenous land, legal reserves) ▪ Permits (to produce commodities) ▪ Laws pertaining to production and processes of commodities ▪ Specific local laws and rights of different stakeholders (e.g., plantation owners and smallholders may have different legal permissions for different activities)	▪ Assist governments in enforcing laws that protect citizens from exploitation and environmental degradation ▪ For some commodities and contexts, legality is an important precondition and partial proxy metric to assess sustainability and is a requirement for many stakeholders
Ownership	▪ Land tenure ▪ Legal identity of landowner ▪ Evidence of Free, Prior and Informed Consent	▪ Rights to access and use the land resource

Note: CAR = Cadastro Ambiental Rural (Rural Environmental Registry).

Sources: Analysis by authors based on Transparency Pathway 2023 and IDH et al. 2021c.

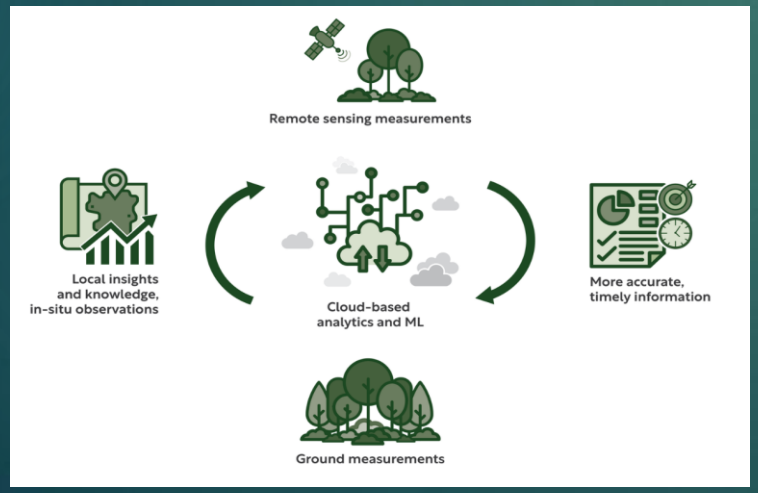
What data is needed?



Data Challenges

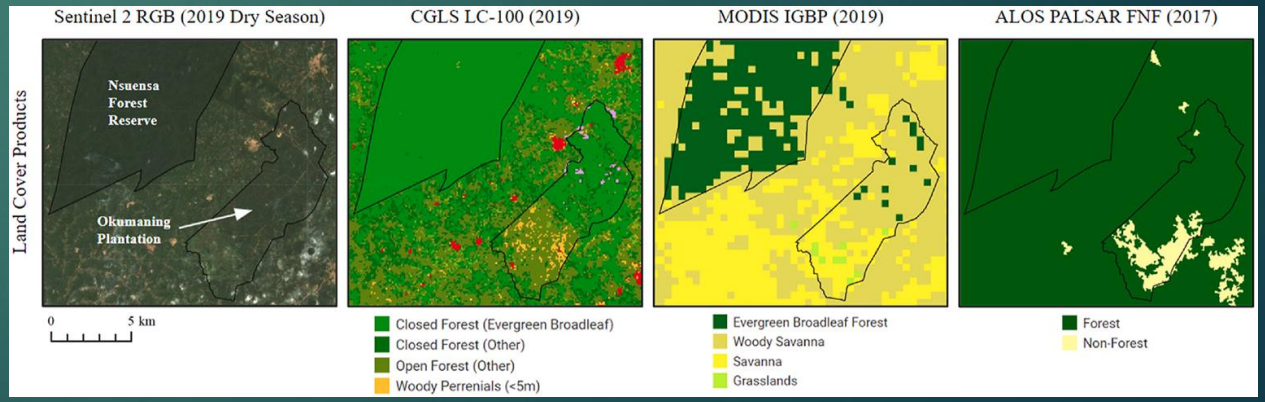
Locations and Traceability

- Data interoperability and standardization
- Data Sharing
- Geolocation data gap



Forest and Land Monitoring

- Definitions
- Land Use/Land Cover mapping (extent and change)



Abramowitz, J., et al. 2023. Differentiating oil palm plantations from natural forest to improve land cover mapping in Ghana. Remote Sensing Applications: Society and Environment

Defining **Digital Public Infrastructure**

A set of **technology building blocks**

powered by **interoperable open standards/specifications**

operated under **a set of enabling rules**

with **open, transparent, and participatory governance**

to **drive innovation, inclusion, and competition** *at scale*

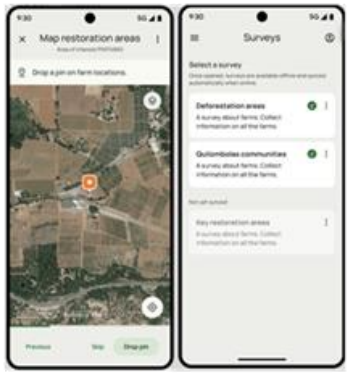
Source: DPI Thinking Extended- CDPI (gitbook.io)

DIGITAL PUBLIC INFRASTRUCTURE

Source: menafn.com

Digital Public Infrastructure

FOREST DATA Partnership



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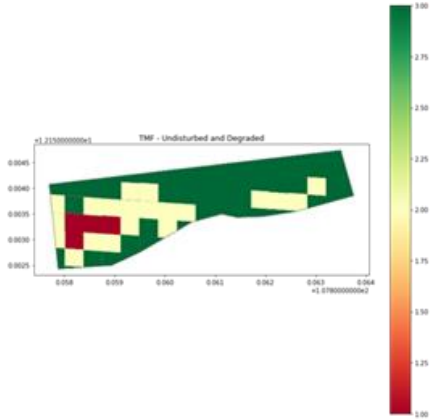

Points/Polygons
- From the field
- From digital platforms

Unique Geo-IDs
- GDSP compliant
- Anonymous
- Attribute-less
- Automatic boundaries

Public geodata
- Land cover
- Weather
- Biophysical
- Soil

Public library
- AI models
- GUI
- Validation

Standardized
information
at scale

AgStack
A Linux Foundation Project

DIASCA
Digital Integration of Agricultural Supply Chains Alliance


Questions?
Please visit:
forestdatapartnership.org