Developing country roadmaps

Terms of Reference for Developing Capacities for a national Monitoring, Reporting and Verification System to support REDD+ participation of Guyana

Background, Capacity Assessment and Roadmap

Prepared by

Guyana Forestry Commission

Version 1.0

November 16, 2009

Federal Democratic Republic of Ethiopia
Ministry of Agriculture

ROYAL NORWEGIAN EMBASSY

Federal Democratic Republic of Ethiopia
Environmental Protection Authority

Terms of Reference for Developing Capacities for a national Measuring, Monitoring, Reporting and Verification System to support REDD+ participation of Ethiopia

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Prepared by

MoA, EPA, with support from the Norwegian embassy and Wageningen University

Version 4.0

June 30, 2013

Terms of Reference for Developing Capacities for a National Forest Monitoring and Measurement, Reporting and Verification System to support REDD+ participation of Liberia

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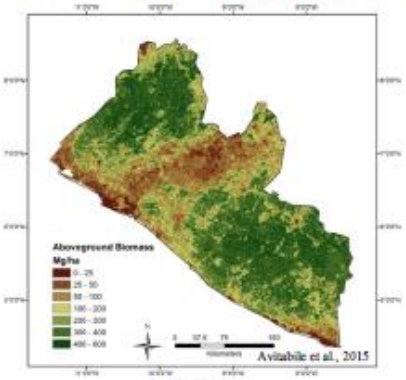

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Final draft
January 12, 2015

FORESTRY DEVELOPMENT AUTHORITY

NORWEGIAN MINISTRY OF CLIMATE AND ENVIRONMENT

WAGENINGEN UNIVERSITY

Establishment of a system for monitoring, reporting, and verification of REDD+ in Guyana

- Requirements for national MRV system:
  - **International**: principles and procedures specified by the IPCC (2003, 2006) Good Practice Guidance and Guidelines
  - **National**: needs and priorities of the national REDD policy and implementation strategy
- Bridging the capacity gap:
  - **Assessment**: of existing national forest monitoring technical capabilities versus the requirements for NFMS and MRV
  - **Develop a roadmap**: to build sustained in-country capacities

Developing a roadmap for MRV system

- Facilitated, country driven process
- Requires engagement of key stakeholders
- "Independent facilitation"
- Develop a roadmap to establish long-term, sustained capacities:
  - Capacity gap analysis
  - Any REDD+ MRV development progress needs to improve national and sub-national MRV capacities
  - National steering mechanism and institutional arrangements need to be in place
  - Take a step-wise approach with near-term priorities and long-term goals (development of ToR)

Developing a roadmap for Liberia

- Process initiated by a partnership of:
  - Forestry Development Authority (FDA) of the Republic of Liberia
  - Norway forest and climate initiative
  - Worldbank FCPF
  - Wageningen University

October 2015	October 26, 2015 & October 27, 2015	November 2015	December 2015 & January 2016
• Develop & revise concept note • Assess available documents (drivers, capacities, etc) • Institutional arrangements and workshop preparation, consultation and invitation of stakeholders	• National REDD+ MRV road map development workshop (1 day) incl. all key national stakeholders • Consultation with national and international partners	• Synthesize and review workshop outcomes and develop ToR	• First roadmap draft before UNFCCC COP 21 in Paris • Develop, review and finalize REDD+ MRV road map

Objectives of national MRV roadmap workshop

1. Summary of Ethiopia's national REDD+ process, review of policy opportunities and strategies
   - **SESSION 2**
2. Assessment of drivers of forest carbon change
   - **SESSION 3**
3. Assessment of current data and capacities of Ethiopia
   - **SESSION 4 & 8**
4. Training/introduction of IPCC Guidelines on LULUCF
   - **SESSION 5**
5. MRV capacity gap assessment
   - **SESSION 6 & 7**
6. Discuss an institutional setup and role and responsibilities of different national actors, including the role of local experts and communities
   - **SESSIONS 9 & 10**
7. Development of road map for building a sustained MRV system within the country as basis for developing the road map ToR
   - **SESSION 11& 12**

Defining policy priorities

Macro levers	Levers	Description
Reduce pressure from agriculture on forests	Agriculture intensification on existing land	Decrease requirements for new agriculture land by increasing yield and value of crops
	Prepare new land for agriculture through medium- and large-scale irrigation	Shift of new agricultural land from forest to degraded land brought into production due to irrigation and use of organic fertiliser
	Prepare new land for agriculture through small-scale irrigation	Shift of new agricultural land from forest to degraded land brought into production due to irrigation and use of natural fertiliser
Reduce demand for fuel wood	Fuel wood efficient stoves	Reduce wood requirements due to efficient stoves (mostly in rural areas)
	Electric stoves	Switch to electric stoves (mostly in urban areas)
	LPG stoves	Switch to LPG stoves
	Biogas stoves	Switch to Biogas stoves (in rural areas)
Increase sequestration	Afforestation and reforestation	Large-scale afforestation and reforestation of degraded areas
	Forest management	Large-scale forest management programmes

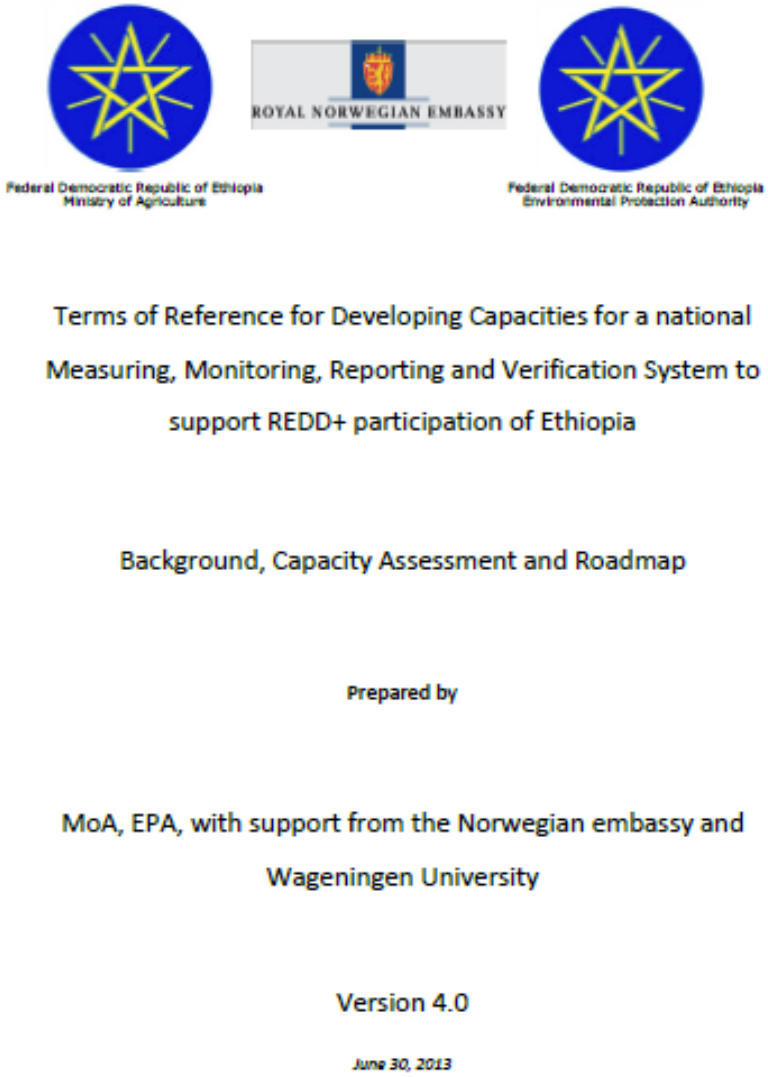
Table 2 - Identified levers for GHG mitigation. [21]

Capacity gap assessment for Guyana

Variable	Focus	Existing observations	Existing information
Area changes (activity data)	Deforestation	• Archived satellite data airphotos • Forest maps and field data • Maps of forest use and human infrastructures	• Deforestation maps/rates • National statistical data • Land-use change maps
	Degradation		• Area affected by degradation and rates
Changes in carbon stocks / emission factors	Land-use change (deforestation)	• Forest inventory, permanent sample plots, research sites, in-situ measurements • Forest/ecosystem stratifications • Forest concessions/harvests • Volume to carbon conversions • Regional carbon stock data/maps	• Carbon stock change and emission/ha estimates
	Degradation		• Long-term C-reduction measurements
	Other pools (i.e., soils)		• Long-term measurements of soil carbon changes
Biomass burning	Emissions of several GHGs	• Records of fire events • Satellite data • Emission factor measurements	• Satellite data products • Fire regime, area, frequency, and emissions
Ancillary (spatial) data	Drivers and factors of forest changes	• Topographic maps • Field surveys • Census data	• GIS-datasets on population, roads, land use, planning, topography, settlements, etc.

Example: REDD+ MRV roadmap for Ethiopia

1. Establish institutional arrangements.
2. Improve national forest-monitoring: activity data.
3. Improve national forest monitoring: carbon stocks and emission factors.
4. Improve estimation and international LULUCF, GHG inventory, and REDD+ reporting capacities.
5. Prepare for MRV of REDD+ activities on the national level.
6. Implement a program for continuous improvement and capacity development.
7. Continued national and local communication mechanism on REDD+ monitoring



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Example: REDD+ MRV roadmap for Liberia

Table 4. Roadmap summary of key actions: activities, responsible agencies, other stakeholders and partners, timeframe for proposed activities

Activity	Responsible agencies	Other stakeholders and potential (international) partners	Timeframe
1. Establish institutional arrangements			
1.1 Establish steering/coordination body for the REDD+ NFMS/MRV system	EPA, FDA, MFDP	**LISGIS**, Ministries, CSOs, INGOs, WB FCPF, donors	Immediate (within first 6 months)
1.2 Establish technical working group(s) and facilities within FDA and with partners	FDA, EPA	**EPA**, **LISGIS**, MoA / MoGD / MIA / MoPEA / MLME, CSOs	Short-term (within first year)
1.3 Establish a mechanism for local engagement and exchange of capacities, experiences and data between national and local forest monitoring activities	FDA	**CSOs**, Communities, NGOs	Short-term
1.4 Develop a framework to engage with research and higher education institutions	FDA	**Universities, research institutions**, LISGIS, WRI, CI, EPA	Short-term
2. Improve national forest monitoring: activity data			
2.1 Decide on a forest definition	FDA, EPA	**FAO/UN-REDD**, WB FCPF,	Immediate
2.2 Update and improve national forest map and/or land use map	FDA, LISGIS	**International consultants**, **FAO/UN-REDD** and other institutes for training	Short-term

Remarks

- Approach was country driven, facilitated process to kick-start country REDD+ monitoring and capacity development
- Can be important tool for countries to prioritize actions and for donors to support (bilateral)
- Not needed if you have a well-established UN-REDD or FCPF country program
- Countries are different but fundamental structure of roadmap is quite similar
- All three roadmaps are being implemented

2. Phased approach to improving greenhouse gas inventories in Mexico

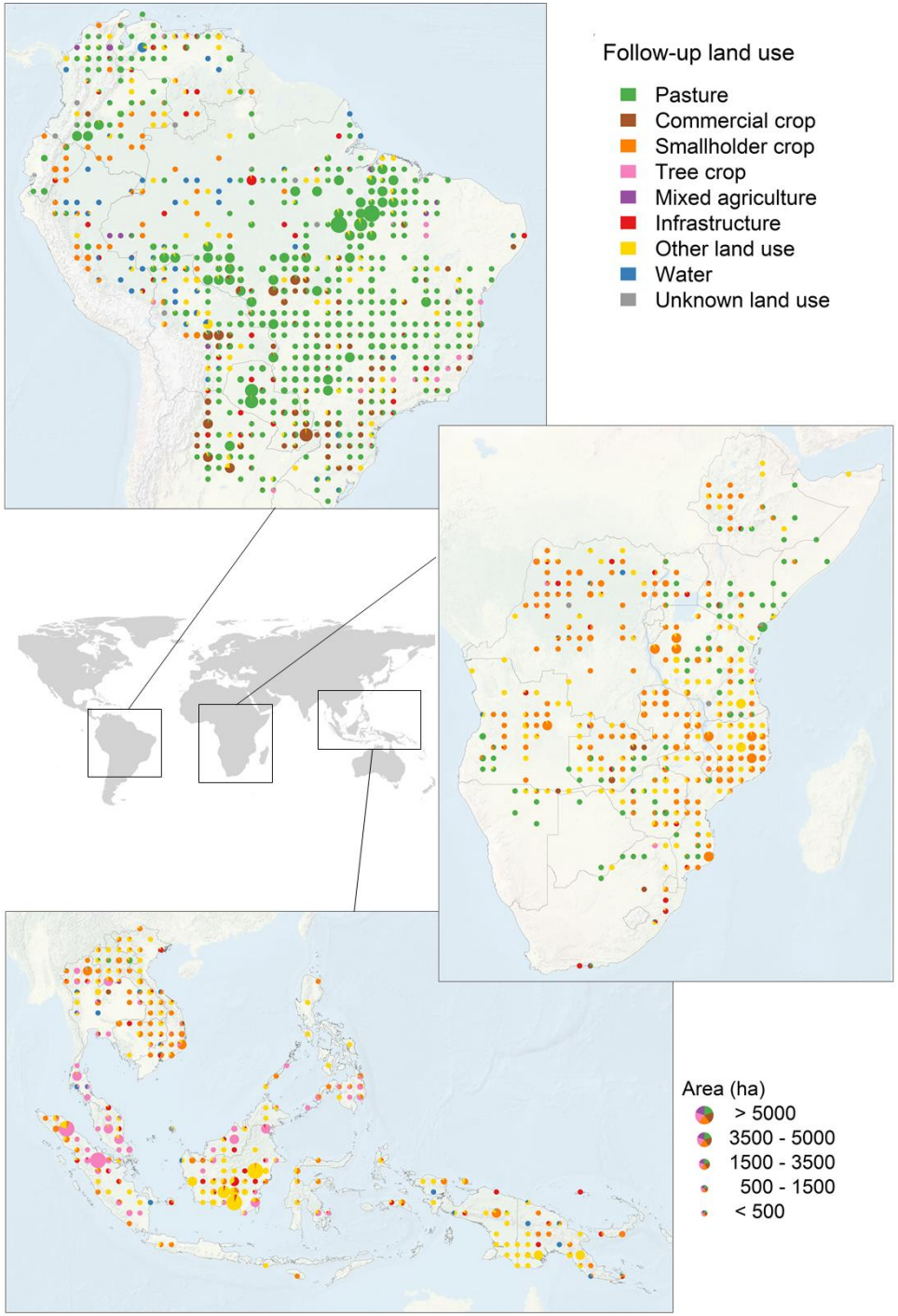
Factors	National inventory			
	1st inventory	2nd inventory	3rd inventory	4th inventory
Year	1990	1996	1990-2002	1990-2006
IPCC guidelines used	IPCC 1994	IPCC 1996	IPCC 1996	IPCC 2003
Activity data				
Land-use change data	Land use statistics	Land use statistics	Two land use maps: 1993 and 2002	Three land use maps: 1993, 2002 and 2007
Level approach	**1**	**1**	**2**	**2–3**
Forest types	Five major forest classes	Four major forest classes[d]	Seven major forest classes	Ten major forest classes
Forest management	Statistics	Statistics	Statistics	Statistics
Emission factors				
Pools considered	Biomass + part soil	Biomass + soil	Biomass + soil	Biomass + soil
Biomass data	Literature	Literature	7000 inventory plots of 3000 m^2	25 000 inventory plots of 1600 m^2
Allometric equations above ground	n.a.	n.a.	Brown *et al.* 1989[b]; Brown 1997[c]	National database, complemented by derived generic equations
Allometric equations below ground	n.a.	n.a.	Cairns *et al.* 1997[d]	Cairns *et al.* 1997[d]
Tier biomass	**1**	**1**	**1–2**	**2–3**
Expansion factors	IPCC	IPCC	IPCC	Nationally derived
Soil carbon	Literature	Literature	Database of 4400 soil samples	Database of 25 000 soil samples
Tier soil	**1**	**1**	**2**	**2**
Uncertainty analysis	High-low estimates	No estimate	IPCC Tier 1, identifying major sources for activities and emission factors	IPCC Tier 1, identifying major sources for activities and emission factors

- Activity data: from national statistics to multiple spatially explicit land-use maps
- Stratification: from 5 to 10 major forest classes
- Emission factors: from data based on literature to 25,000 inventory plots of 1600 m^2
- Emission estimates: from Tier 1 to Tier 2–3 (biomass) and Tier 2 (soil)

a Open forest excluded from the analysis.
b Brown *et al.* 1989.
c Brown 1997.
d Cairns *et al.* 1997.

Source: De Jong 2012.

Land use change after deforestation

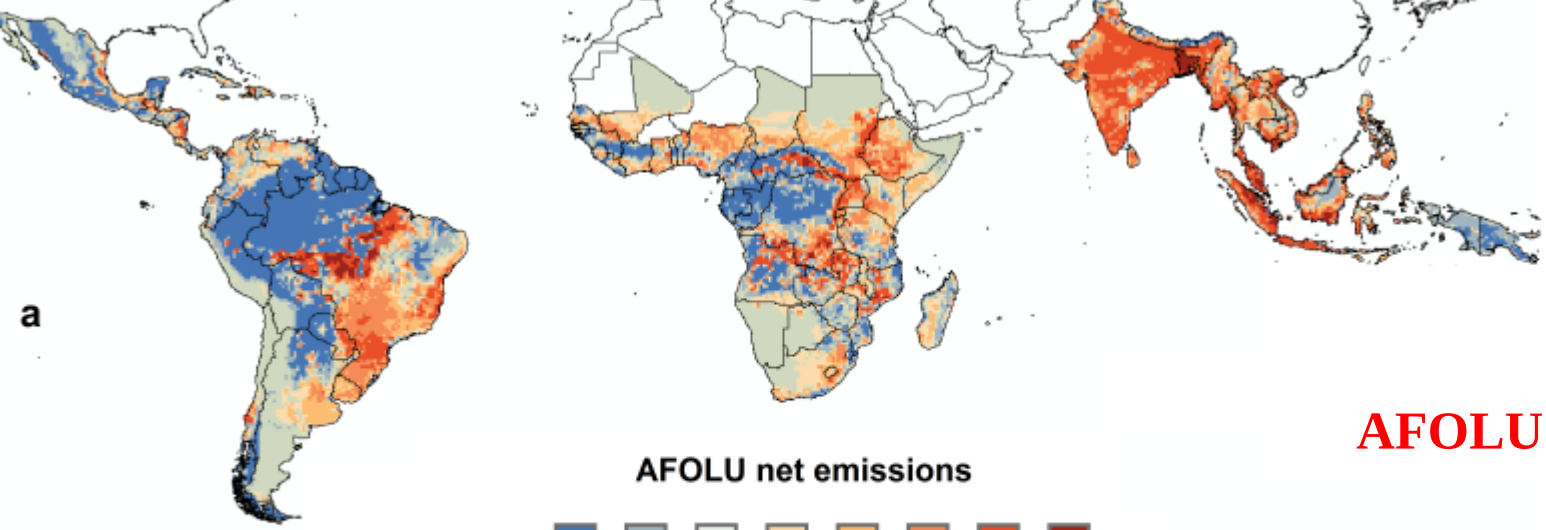


Using JRC TREES III and FAO remote sensing survey data 1990-2005

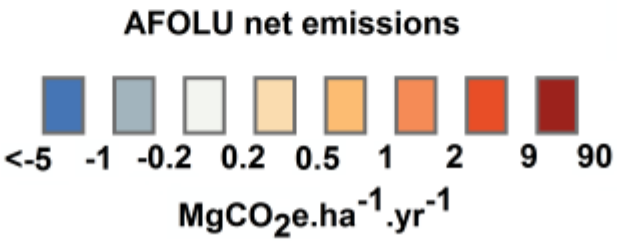
Land use following deforestation 1990-2005	Area (1000 ha)	%
Smallholder crop	12123	18.8
Commercial crop	4326	6.7
Tree crop	5584	8.7
Pasture	27305	42.3
Mixed agriculture	404	0.6
Total Agricult.	**49781**	**77.1**
Infrastructure	2210	3.4
Other land use	11230	17.4
Water	1073	1.7
Unknown	200	0.3
Total other	**14748**	**22.9**
Total	64529	100.0

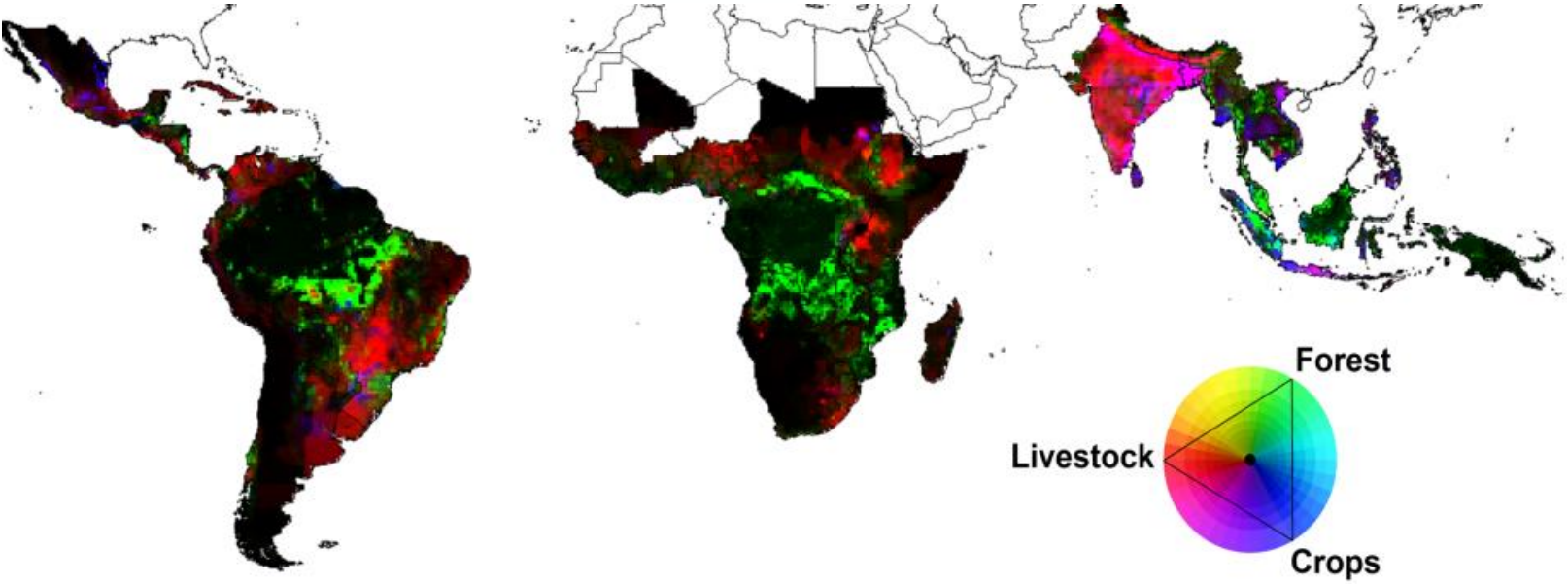
(preliminary)

De Sy et al., 2015, ERL (LA)



AFOLU net emissions





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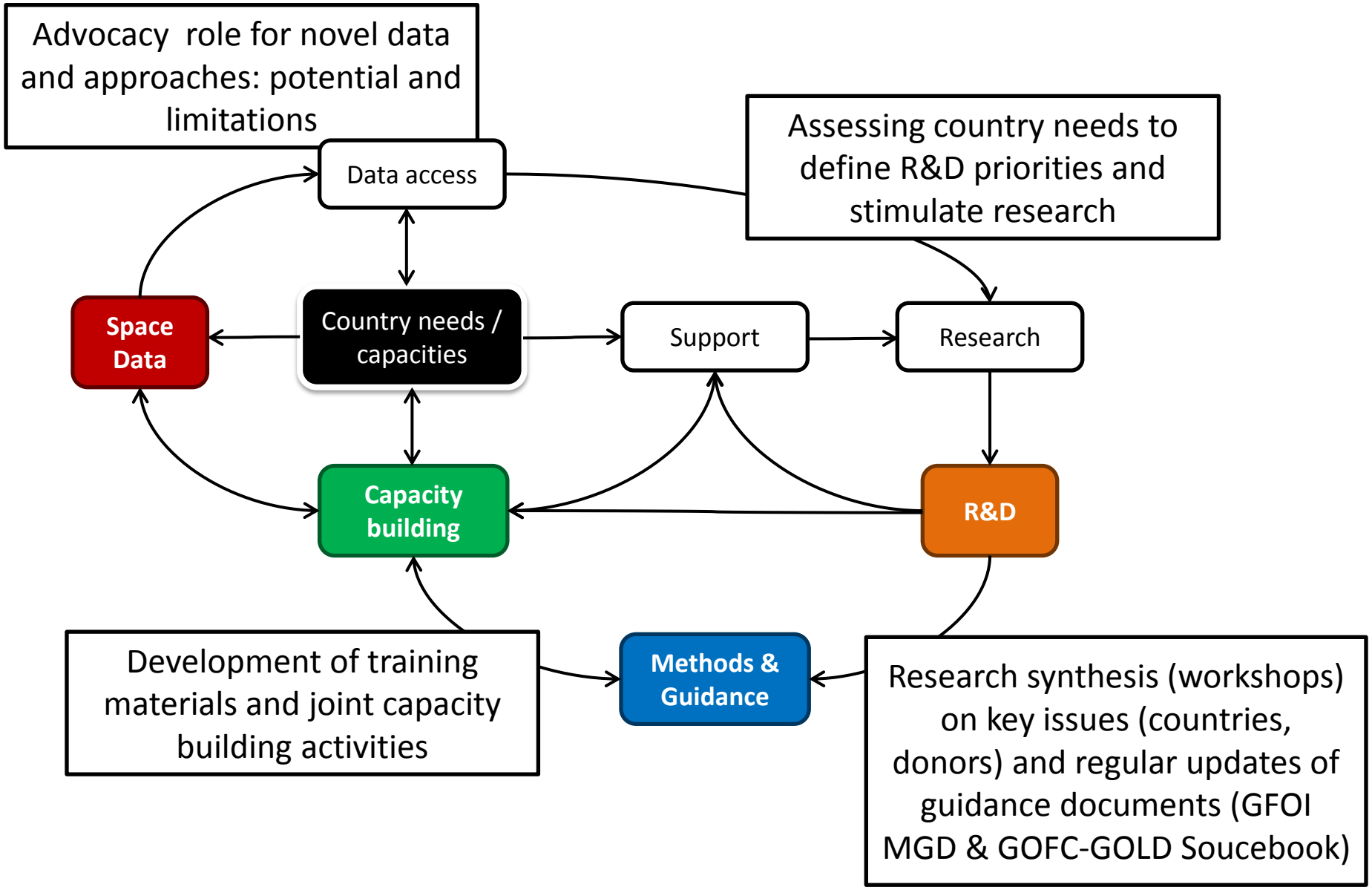
Contribution of emission sources per pixel (0.5°)

Roman et al., 2016, BGS (Discussions)

Research & development (R&D) as part of the GFOI



Remarks (2)

- With higher education institutions and research activities in your country/region
- Thinking beyond the forest sector is important for many REDD+ countries
- The international community is working on coordinating research, derive synthesis into training materials and guidance documents, and develop open source tools for countries