DRIVERS OF DEFORESTATION AND FOREST DEGRADATION

A Synthesis Report for REDD+ Policymakers

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Appendix II of the December 2010 Cancún Decision 1/CP.16 requests the SBSTA to:

(a) Identify land use, land-use change and forestry activities in developing countries, in particular those that are linked to the drivers of deforestation and forest degradation, identify the associated methodological issues to estimate emissions and removals resulting from these activities, and assess the potential contribution of these activities to the mitigation of climate change, and report on the findings and outcomes of this work to the Conference of the Parties (COP) at its eighteenth session on the outcomes of the work referred to in this paragraph;

Overview of presentation:

- Assessment of current and future drivers
- Drivers in REDD+ policy development and implementation
- Interventions at relevant scales and key actors
- The role of drivers in national forest monitoring and in developing forest reference (emission) levels
- Conclusions and recommendations

Methodology:

- 31 country Readiness Plan Idea Notes (R-PIN) and Readiness Preparation Proposals (R-PP) prepared for the World Bank Forest Carbon Partnership Facility (FCPF) and UN-REDD Programme
- Study on proximate drivers of deforestation throughout history for 25 tropical countries (Matthews et al., 2010),
- CIFOR country profiles (CIFOR, 2012)
- UNFCCC National Communications (see Hosonuma et al., 2012)
- Above data sources resulted in analysis of 46 non-Annex I countries (78% of total forest area of 100 (sub)tropical non-Annex I countries (FAO, 2010a; Romijn et al., 2012).
- Broad synthesis of literature, synthesis and analysis of REDD+ readiness plans and proposals.
- 26 peer reviewers- REDD+ negotiators, researchers and academics, NGO representatives.

Definitions:

Proximate/direct causes: human activities or immediate actions that directly impact forest cover and loss of carbon

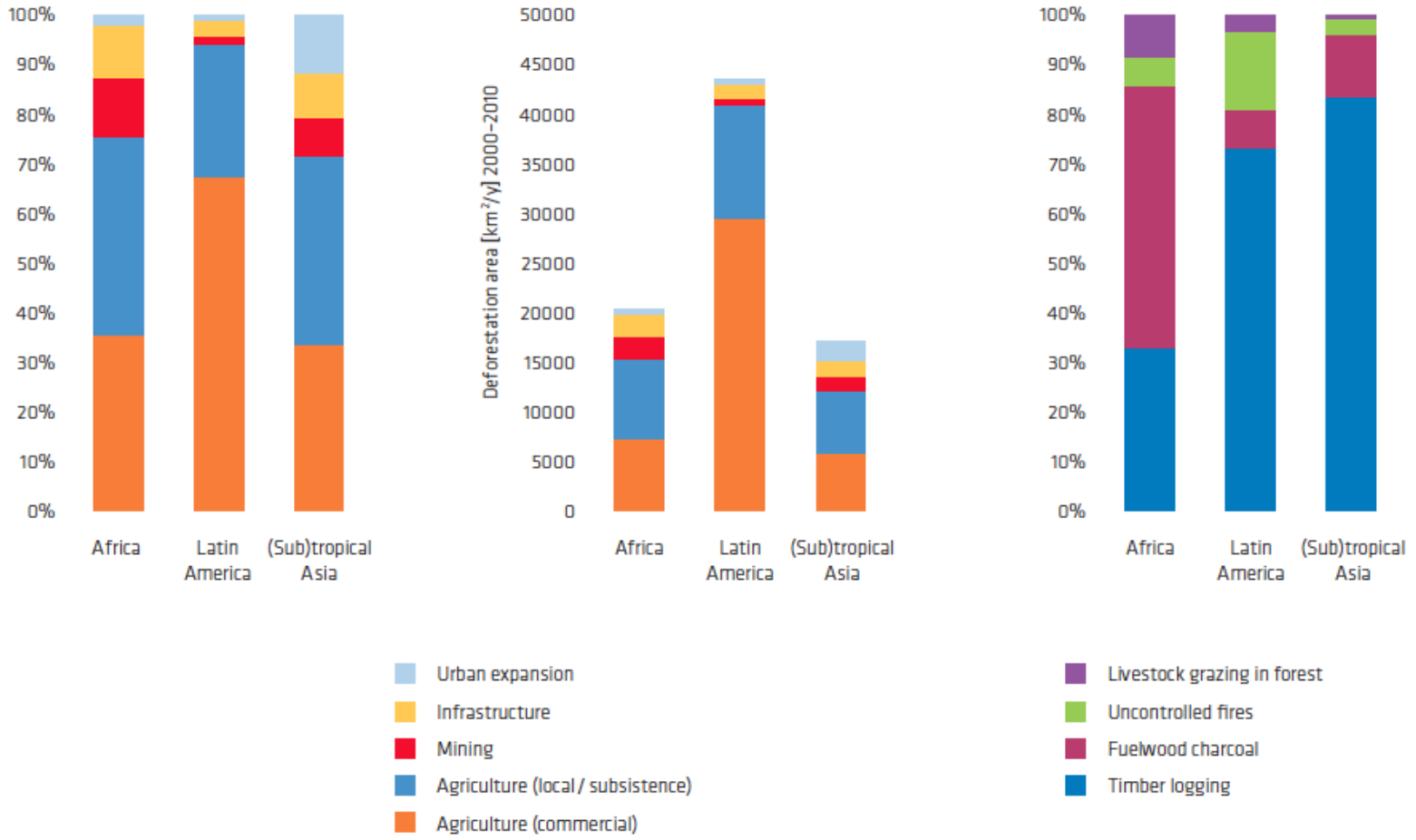
-Ex: Agriculture expansion, illegal logging, firewood extraction

Underlying/indirect causes: complex interactions of fundamental social, economic, political, cultural and technological processes that are often distant from their area of impact.

-International (i.e. markets, commodity prices), national (i.e. population growth, domestic markets, national policies, governance) and local circumstances (i.e. change in household behaviour)

Assessment of current and future drivers

Overview of direct/proximate drivers:



Direct/proximate for deforestation:

- Agriculture estimated to drive 80% of deforestation worldwide
- Commercial agriculture: biggest driver in Latin America (2/3 of total deforested area)
- Commercial agriculture in Africa and (sub)tropical Asia (1/3 of total deforested area) and of similar importance to subsistence agriculture
- Mining, infrastructure and urban expansion important but less prominent

Direct/proximate for forest degradation:

- Latin America and (sub)tropical Asia: Commercial timber extraction and logging > 70% of total degradation
- Africa: Fuel wood collection, charcoal production, livestock grazing

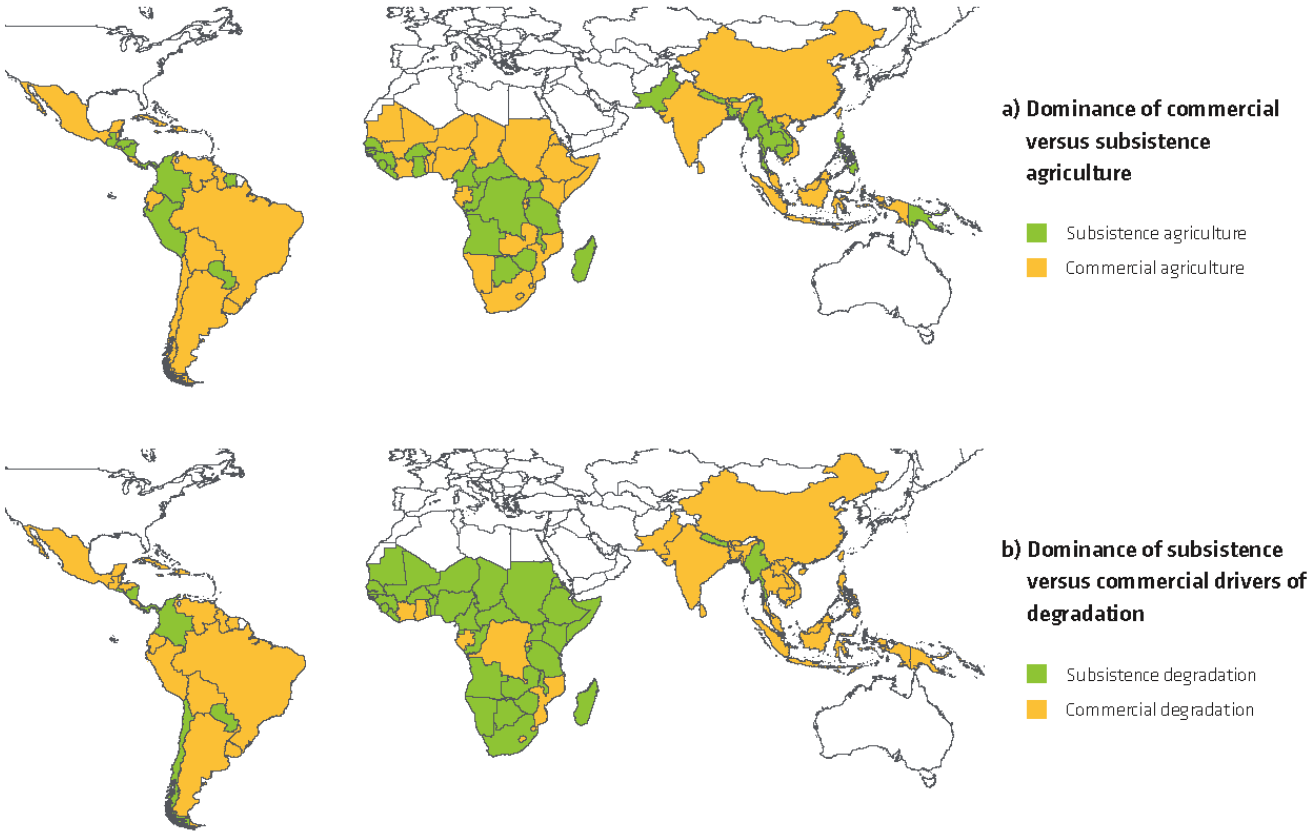


FIGURE 2.2 *Spatial distribution of dominance (importance < 50%) of subsistence agriculture versus commercial agriculture (a); and of subsistence drivers of degradation (fuel wood collection, charcoal production and livestock grazing in forest) versus commercial drivers of degradation (timber/logging) (b) for 100 (sub)tropical non-Annex I countries*

Indirect/Underlying drivers:

- Economic growth based on the export of primary commodities + increasing demand for timber and agricultural products in a globalizing economy are critical.
- 93% of countries: identify weak forest sector governance and institutions, including conflicting policies beyond the forest sector (lack of cross-sectoral coordination), and illegal activity (weak enforcement). *See Appendix A*.
- Population growth next most common reported underlying driver (51%), followed by poverty (48%) and insecure tenure (48%).
- 41% of countries mention international and market forces (commodity markets, prices, and foreign direct investment).
- Some countries that reference agricultural export commodities as direct drivers don't make linkage to international and market forces as underlying drivers.

Future Trends: Global population:

- Global increase, predominantly in urban areas, to 8.2 billion in 2030
- Largest increases in population in Africa (+235 million) and Asia & Pacific (+255 million)
- Stabilized population level of 8 to 10 billion after 2050 due to rising living standards, urbanization, and declining birth rates

Future Trends: Economic growth:

- Brazil, the Russian Federation, India and China are anticipated to continue growing over the next ten years at 8% per annum (OECD/FAO, 2012)
- Developing world will account for more than half of global economic growth throughout 2012/14 (World Bank, 2012)

Future Trends: Agricultural commodities:

- Overall, 70% increase in demand for food products by 2050 (FAO, 2009)
- Oil seeds: 23% production increase 2011 – 2020, 2/3 of which to occur in non-Annex 1 countries (OECD/FAO, 2011)
- Oil palm: 45% rise in palm oil output, mainly by Indonesia and Malaysia(OECD/FAO 2011)
- Meat: 85% increase in volume of meat produced by 2050 (FAO, 2009), 78% of the additional output to occur in developing countries (Latin America-Brazil), growth in demand: large economies in Asia, Latin America and oil exporting countries (OECD/FAO 2011)
- Biofuels: By 2020, 21% of the increase in global coarse grains production above current levels, 29% of the global vegetable oil production's increase, and 68% of global sugar cane production's increase will go to biofuels (OECD/FAO, 2011). EU, US, Brazil, China, India and others have biofuel targets.

Future Trends: Wood products (pulp, paper, sawlogs):

- Annual plantation production capacity: 1.8 billion m^3 per year by 2020
- > 80% production potential located in tropics and southern hemisphere
- Brazil, China and Russia to dominate, India and Vietnam increase market share of the international trade of wood products by 2020 (FAO Advisory Committee on Paper and Wood Products, 2007). Note: domestic consumption, domestic fuel wood use and illegal logging not represented in trade statistics.
- EU and US Import controls stemming illegal logging, however int'l and domestic trade willing to source illegal wood will increase.

Future Trends: Fuel wood/Charcoal:

- People reliant on traditional biomass use globally to decrease by 175 million between 2008 and 2030
- Demand for charcoal likely to increase due to increased urbanization
- 34% increase in fuel wood consumption from 2000-2020 in Sub-Saharan Africa (FAO, 2009)

Future Trends: Mining

- Projected increases due to population growth and economic development
- Developing countries and emerging markets will see greatest supply and demand expansion (PriceWaterhouseCoopers, 2012).

Drivers: REDD+ policy development and implementation:

National-level interventions:

- Incentives, disincentives and enabling measures
- Policy- or incentive-based interventions
- Need to focus interventions on direct and underlying drivers simultaneously for success.
- Need a mix of incentive investments, disincentives and enabling measures, under a comprehensive REDD+ strategy, aimed at the most important proximate and underlying drivers for greatest success. Measures pursued singly, e.g. agricultural intensification, will be less effective or counter-productive.

Table 3.1: Summary of national REDD+ readiness plan interventions and strategies to address drivers

INTERVENTION/STRATEGY	Percentage of countries reviewed pursuing interventions/strategy as part of REDD+
Sustainable forest management	55%
Fuel wood efficiency/cookstoves	55%
Illegal logging/enforcement/institutional strengthening	45%
Community forest management/CBFRM/ Participatory Forest Management	45%
Agroforestry	42%
Tenure and rights	42%
Policy and governance reform	42%
Zoning and land-use planning	35%
Cross-sectoral coordination	32%
Agricultural intensification	32%
Reforestation	29%
Livestock/rangeland management	29%
Shifting expansion to/reforestation on degraded lands	26%
Payments for ecosystem services	23%
Protected areas strategies	23%
Afforestation	19%

Land tenure security:

- 48% list insecure tenure as a key underlying factor of unsustainable forest use (refer to Appendix A).
- R-PP's: tenure directly relates to legal and illegal forest clearing activity, and government roles in management and enforcement of policies.
- Land tenure security = less deforestation, and secure tenure more important than the form of tenure for designing policies to influence forest outcomes (Robinson et al., 2011)

Adequate information systems:

Countries need:

- Integration of information beyond the forest sector: track driver activity, social and environmental safeguards, and evaluation of trade-offs and livelihood implications
- Simultaneous climate change mitigation and adaptation impacts and measures (food security)
- Established uniform criteria on land-use classifications + ↑ capacities of sectoral and regional information systems
- Acknowledge IPCC LULUCF guidance; some countries want further UNFCCC guidance on reporting frameworks for REDD+ MRV system design and inventory reporting formats to support assessing drivers of land use change

REDD+ compensation, opportunity costs and good governance:

- Distinguish between legal and illegal activity and status of land use rights.
- How to compete?: NPV of oil palm plantations: US $6000 – US $9000/ha, but carbon credits incentives yield US $614 – US $994 per hectare (Pacheco et al., 2012; Fisher et al., 2011).

Solutions:

- Strengthen laws and regulations, fiscal mechanisms (e.g. taxes and subsidies), and public investments (e.g. tenure reform, benefit-sharing, rehabilitating degraded land) rather than opportunity costs to affect rates and drivers of deforestation (Gregersen et al., 2010).
- Should be national in scale: avoids leakage between regional or project scales and overpaying for high opportunity cost emission reductions.

Intensifying agricultural production without causing deforestation:

- Land-sparing hypothesis is flawed
- Brazil, Ghana and Indonesia: three key levers across regions and commodities:
  - provision of up-front public finance, followed by low-interest loans,
  - establishment and enforcement of the correct enabling policy and regulatory frameworks,
  - the need for significant public investment in increasing the capacity of agricultural producers, particularly smallholders (Prince's Charities' International Sustainability Unit, 2012)

Intensifying agricultural production without causing deforestation (cont.):

Brazil:

- Cereal, pulse and oilseed production ↑ 185% (1990 – 2012), but deforestation ↓ almost 75% since 2004.
- Agricultural intensification + policies promoting use of degraded lands—dependent on there being enough degraded land (Macedo et al., 2012)
- Combination of market pressure, forest code enforcement, technical guidance and land-use planning, financing and incentives, increasing areas under multiple uses (crop-livestock-forest integration, silvopastoral and agroforestry systems). "Land-Neutral Agriculture Expansion" mechanism (Strassburg et al., 2012).

Indonesia:

- Palm oil cultivation from 9.7 million ha to 18 million ha by 2020 without deforestation possible via a properly planned and spatially explicit development strategy (Koh and Ghazoul, 2010).

Cross-sectoral commitments: Acre State, Brazil

Acre State's REDD+ programme:

- Encompasses all land-use types, including the full range of agricultural uses that affect Acre's forests,
- Mix of incentives and payments, bundled under an umbrella REDD+ programme linked directly to Acre Sustainable Development Plan, bringing small-, medium- and large-scale producers,
- Emission reduction targets are nested within federal targets, based on multi-sector land-use plans and commitments,
- Governance of the programme, including enforcement abilities, appears strong.

Cross-sectoral commitments: Mexico

Mexico's readiness proposal: original design more akin to a PES programme, now based on multi-sectorial strategies embedded in the context of rural sustainable development:

- Institutional agreements and public policy;
- Financing schemes;
- Forest reference level and measurement, reporting, and verification (MRV) system;
- Capacity building and communication, social participation, and transparency (Mexico National Forest Commission, 2010).

Challenges:

- Leakage/displacement—Tracking across borders and across regions complex! Could combine information from national systems and international sources, enabling countries to design synergistic REDD+ strategies. Also increase REDD+ participation.
- Indirect land-use change (ILUC)— EU Renewable Energy Directive and US Renewable Fuel Standard: methods to assess ILUC; national information systems should include
- Foreign Direct Investment— Information sharing between countries on risks and benefits needed + identify compatible strategies (legal, standards-based, financial) with investors and stakeholders.


Interventions at relevant scales and key actors

Interventions at relevant scales: International

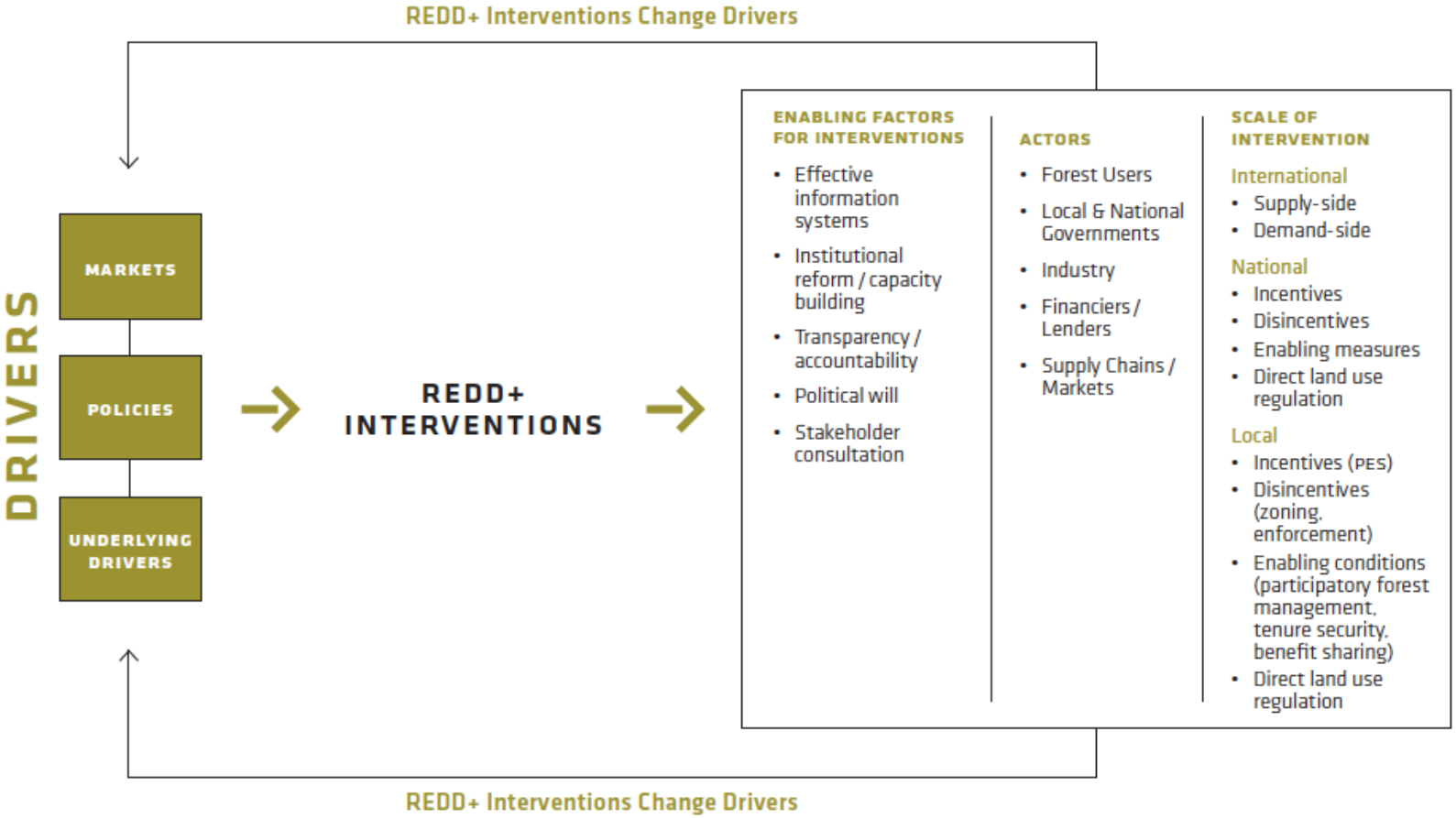
Supply- and demand-side tools:

- Voluntary measures (e.g EU FLEGT Voluntary Partnership Agreements, procurement and sourcing commitments) or regulatory (e.g. import controls)
- Exploring synergies—how addressing one driver affects other underlying drivers—of importance in designing interventions.
  - Example: international efforts to control illegal logging has spin-off effects in generally improving forest sector governance, a key underlying driver (Lawson and McFaul, 2010).

Interventions at relevant scales: International

- Large purchasers: Consumer Goods Forum zero net deforestation by 2020, initial focus on beef, soy, palm oil and paper/pulp.
- Government facilitated commitments: The Netherlands—all imported palm oil sustainable by 2015. The UK mapping supply chains of palm oil. EU member countries' timber and sustainable wood procurement policies.
- Import controls, laws, bilateral agreements and trade accords: e.g. EU Voluntary Partnership Agreements on FLEGT and the US Lacey Act.
- Commodity roundtables, sustainability standards and certification: RSPO, RTRS, Bonsucro, Better Cotton Initiative, RSB, FSC (chain-of-custody, national controlled wood or group certification).
- Public-private sector partnerships: e.g. US announcement at Rio+20 to promote sustainable supply chains with Consumer Goods Forum.
- Impact and carbon disclosure: e.g. Global Canopy Programme's Forest Footprint Disclosure Project, now part of Carbon Disclosure Project.

Interventions at relevant scales and key actors:



The role of drivers in national forest monitoring and in developing forest reference (emission) levels

National capacities for monitoring drivers:

Identifying forest change drivers (locally, nationally, internationally) is needed to:

- help track their activities over time,
- attribute emissions to specific causes,
- design dedicated mitigation actions that address them,
- assess the impact of mitigation actions,
- facilitate engagement with non-forest sectors

National capacities for monitoring drivers:

- Countries starting to quantitatively identify drivers at the national level
- National forest inventories and carbon stock data still does not provide activity and land use management data needed for driver assessments.
- Attribution and estimation of GHG emissions associated with different drivers have commonly not been performed on the national level.
- Underlying causes (international markets, trade policies, technological change), require economic and social indicators, data sources, statistical analysis and modeling.

COUNTRY FOREST AREA CHANGE MONITORING CAPACITY

Quality of reported driver data	Low	Medium	High	Total
Low (listing)	8	7	3	18
Medium (ranking)	3	10	2	15
High (quantitative)	2	4	6	12
Total	13	21	11	45

TABLE 5.1 *Comparing country capacities for forest area change monitoring (derived from FAO, 2010a; see Romijn et al., 2012) with the quality of reported data on drivers from REDD+ readiness reports of 45 countries (i.e. R-PP, CIFOR reports, see Hosonuma et al., 2012)*

National capacities for monitoring drivers:

- Some activities or land uses also result in additional GHG emissions; i.e., agriculture.
- Measuring and monitoring land use emissions requires different methods and approaches, and additional capacities and resources.
- Opportunity for greater linkage between REDD+ and agricultural mitigation and adaptation—Nationally Appropriate Mitigation Actions (NAMAs) provide financial stream to influence farming practices, complementing forest governance and a results-based REDD+ program.

Linking area change monitoring with proximate drivers:

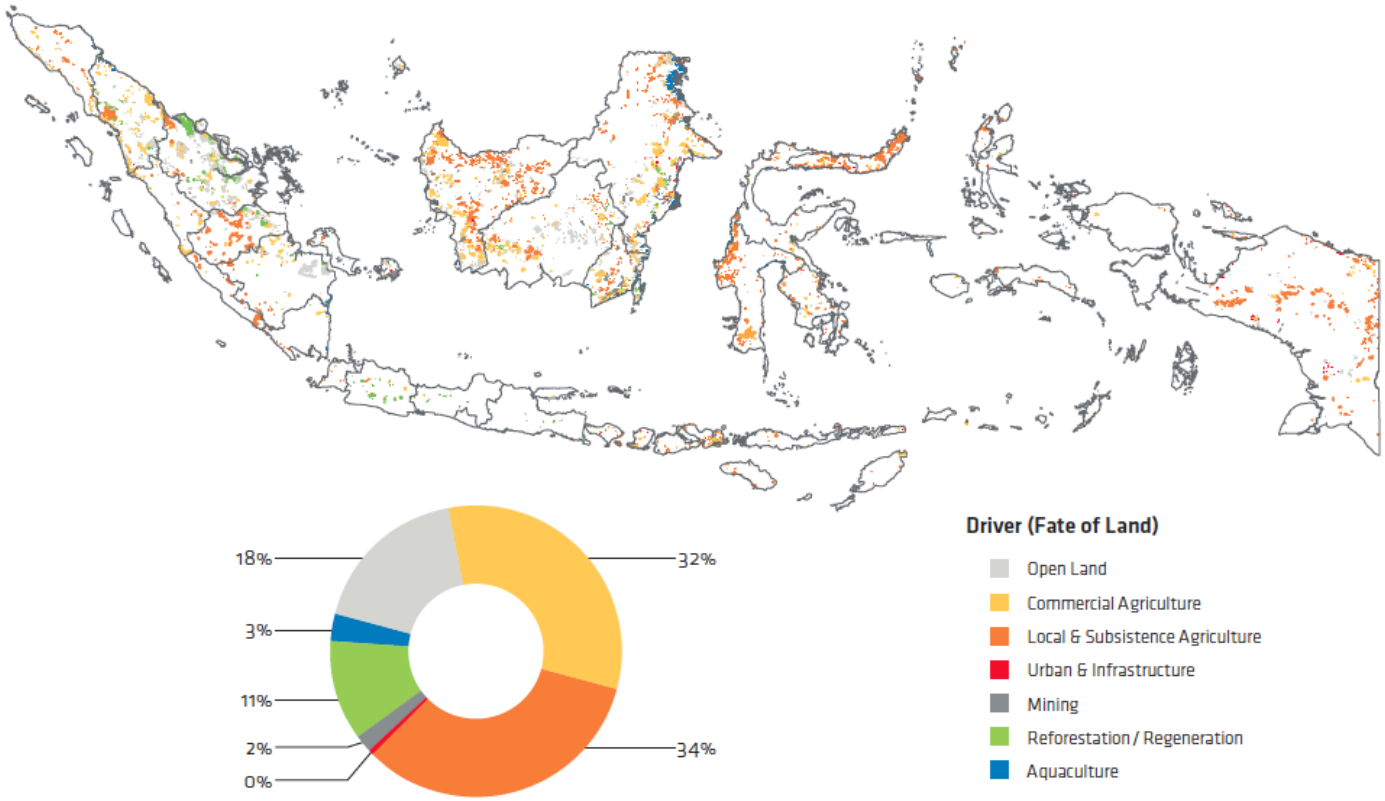


FIGURE 5.1 *Spatial distribution of deforestation areas and its follow-up land use and links to drivers for Indonesia mapped from Landsat remote sensing data from 2000–2009 (Source: MOFOR, 2011).*

Role of drivers for developing forest reference (emission) levels :

- Historical data and understanding forest change patterns and underlying causes are important– to take national circumstances into account, and to construct plausible future scenarios that may deviate from historical trends.
- The availability of data on drivers is uncertain in many REDD+ countries, thus:
  - a stepwise approach provides a starting point that matches the available data and their quality with the choice of reference level methods, its uncertainties and country circumstances,
  - National capacities and the quality of reference levels can be improved over time.

Conclusions and Recommendations

Conclusions and recommendations: National levels

- Most countries lack data to quantitatively identify drivers, and thus need:
  - Support through resources and assistance in readiness activities.
  - Integration of information beyond the forest sector
  - Methodological guidance on tracking drivers: improved data quality on drivers, land use and land use change, est. emissions, IPCC methods
  - Assessment of historical, recent and projected future drivers: critical for design of REDD+ strategies, and can help quantify and justify adjustments to forest reference (emission) levels (step-wise approach)

Conclusions and recommendations: National levels

- **Look beyond the forest sector to design and frame interventions to address drivers**—assess sector policies (in agriculture, mining, infrastructure, energy, and forestry) that conflict with REDD+ objectives, and develop comprehensive plans to meet sustainable development objectives, enabled with cross-sectoral commitments and political/institutional support.
  - Low carbon development plans/national climate change action plans
  - REDD+ incentives alone not enough—need effective land use planning, policies and incentives
  - Incentives, disincentives and enabling measures need to reach key actors and at right scale
  - Demand- and supply-side initiatives (e.g. commodity roundtables) not prominent enough in readiness plans. Align with REDD+.
  - Livelihoods of local communities may depend on current drivers of deforestation and forest degradation: intervention strategies must consider impacts (*ex poste* and *ex ante* and adhere to safeguards.
- **Foundational activities for success in addressing drivers**: improve governance, transparency, capacity and enforcement, combat illegal activities and provide secure tenure

Conclusions and recommendations: International levels

- Countries focused on national and local level drivers, but **face international drivers that are expected to increase** in pressure.
- **Engage finance as a tool to change driver activity**: e.g. codes of conduct or sustainability guidelines for providing international finance, such as Equator Principles, International Finance Corporation Performance Standards, etc.
- **Promote government-facilitated commitments on sustainable commodities, public-private partnerships** (can influence indirect land use change and foreign direct investment).
- **International information sharing**: cross-border trade, domestic and trans-boundary drivers, best practices and lessons learned, periodic global assessments.
- **Recognize linkages between REDD+ and emerging agricultural mitigation and adaptation**—orchestrated and complementary funding streams to countries (link and integrate REDD+ activities and NAMAs, particularly agriculture).

Thank you!

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