Forest Carbon Partnership Facility

REDD+ Reference Levels:
Insights from FCPF Country Early Work

Ken Andrasko
Rajesh Koirala

World Bank/Environment/Carbon Finance Unit and
FCPF Facility Management Team

UNFCCC Expert Meeting on REDD Reference Levels
Bonn, Germany November 14-15, 2011

FCPF Has 37 REDD Country Participants

Established collaborative partnership & transparent platform for meaningful exchanges on REDD issues

- 18 Donor Participants in Readiness Fund and Carbon Fund
- 6 Observers
- Pioneered REDD readiness preparation process
- Carbon Fund seeks ~ 5 large pilot emissions reduction programs

Reference Level (RL) Problem Statement for FCPF Countries – Currently Appears to be How to:

1. Define national interests in RL issue in negotiations
2. Resolve national / subnational RLs and C accounting
3. Construct a RL, reflecting drivers of defor., and REDD-plus activities mix (of the 5) in REDD strategy, & to monitor them
4. Identify if "national circumstances" exist to make case for RL other than historic trends
5. Assess current capacity and data, and then fill gaps in order to build capacity required for your REDD strategy
6. IPCC GPG, GOLFC-GOLD & other methods need to be adapted to the REDD RL problem, including projections (if desired)
7. Consult with stakeholders & institutions about proposed RL.

Definitions Remain Unclear: E.g., Forest Reference Emission Level (REL), Forest Reference Level (RL)

- **Forest REL - the amount of gross emissions from a forest estimated within a reference time period ? ?**
- **Forest RL - the amount of net/gross emissions and removals from a forest estimated within a reference time period ? ?**
- **RL – "The BAU baseline developed by taking into account historic emissions and removals, adjusted as required by national circumstances to improve accuracy". (Angelsen et al, 2011, CIFOR)**
- **Crediting or compensation level: Estimate that "crediting" will be based on, reflecting conservativeness and country dev. plans ?**
- **FCPF has used "RL" as shorthand for FREL and/or FRL. Countries are developing both. If including REDD-plus sequestration activities , probably need to use FRL net emissions and removals . . .**

Source: http://www.dnpi.go.id/mrv2/Sesi%20I/Reference%20Emission%20Levels%20International%20Perspective_Rogier%20Klaver.pdf

REL Definition Includes "National Circumstances"

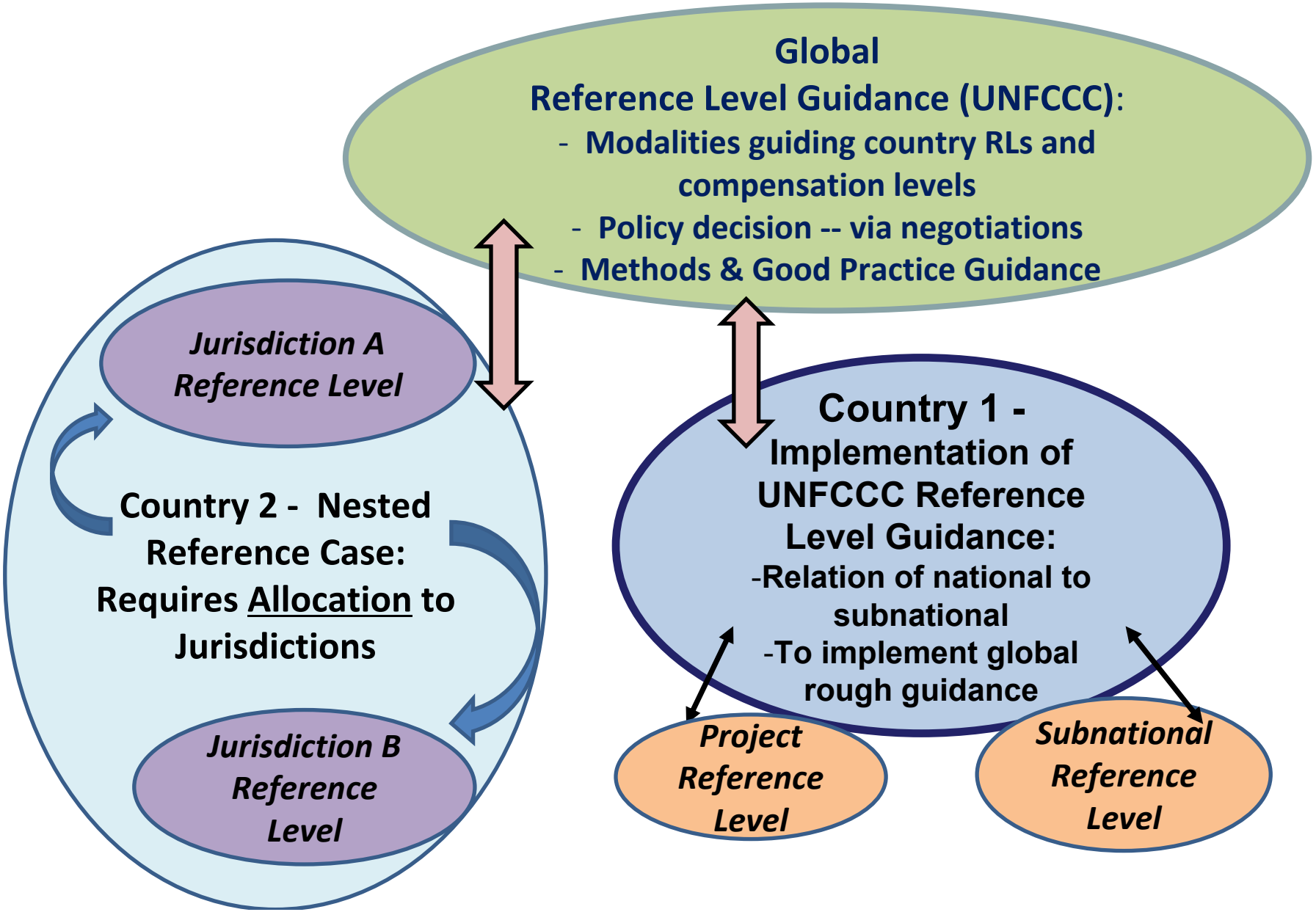
- The SB 28 decision describes Reference Emissions Levels (REL) as:

"means to establish reference emission levels, based on historical data, taking into account, inter alia, trends, starting dates and the length of the reference period, availability and reliability of historical data, and other specific national circumstances."

- FCPF countries are only just beginning to explore what "national circumstances" means for their specific contexts (e,g, a High Forest, Low Deforestation country; for x and y defor. drivers) .

. . . and for how they would set RLs

Reference Levels: Requires Harmonizing Global Guidance with Country National & Subnational RL Requirements



Countries Are Using 3 Major Approaches (for both historic and forward-looking RLs)

1. Statistical approach: Use forest inventory or remote sensing data periodic estimates

2. Geospatial (GIS) approach: Use key variables to represent land use change patterns, and to predict future patterns

3. Economic modeling approach: use economic and other variables to model nonlinear relationships driving land use

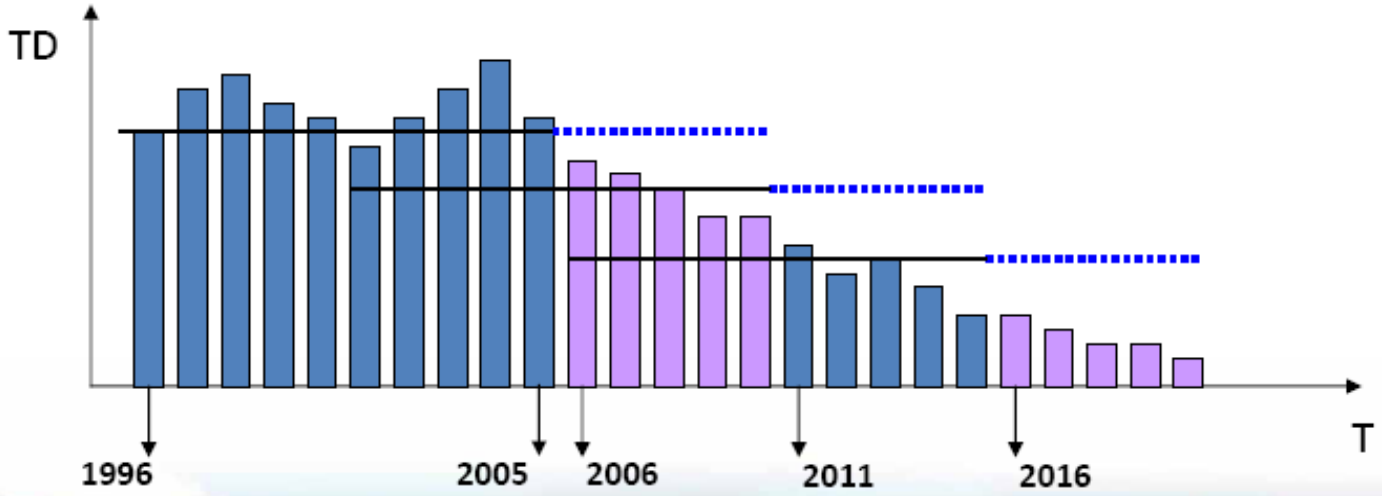
Point: Most FCPF countries use combination of 1 & 2, and some plan to use economic modeling (e.g., Congo Basin)

Brazil's Amazon Fund: Example of Statistical Approach for Historic Reference Scenario Using Annual + Default Data

AVERAGE DEFORESTATION RATE

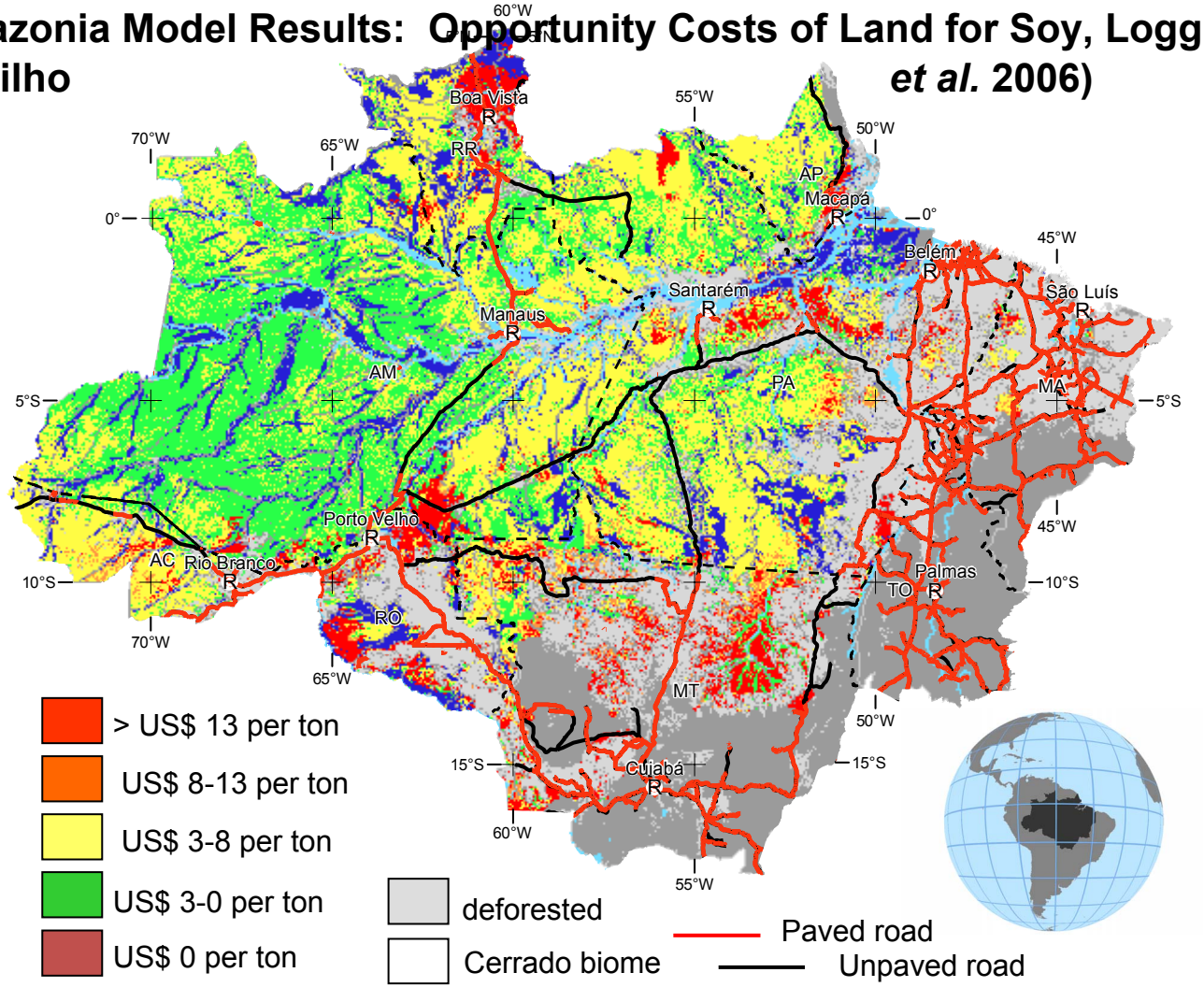
- Using 10 years average
- ADR revised every 5 years

Carbon density data limited, so use conservative 100tC/ha as default.



Year of Reference	Period for ADF calculation	ADF
2006 to 2010	1996 to 2005	1,95 million ha

Example of Geospatial Approach: Brazil's Capacity for Complex Approaches is high: SimAmazonia Model Results: Opportunity Costs of Land for Soy, Logging, Cattle (Soares-Filho *et al.* 2006)



Opportunity costs

AMAZON SCENARIOS

Trends from FCPF country R-PPs: 1
National and Sub-national RLs

- Countries that appear to be using national RL, e.g.,:
  - Indonesia and DRC (but developing RLs for provinces)
  - Cambodia, Liberia, Nicaragua, Tanzania, Kenya, Vietnam
  - Argentina (but with RL for each region)
- Countries that appear to be starting at sub-national level, eventually building to national level, e.g.:
  - CAR, Peru (using political units), Colombia, Nepal, Ghana. Guatemala: (nested, starting with large ecosystems).
- Majority of countries plan to use some kind of nested approach, in reality: But methods guidance is needed.
  - Reflecting country capacity constraints, and
  - Early actor regions or projects in countries, pressuring gov't.

Trends from FCPF Country R-PPs: 2

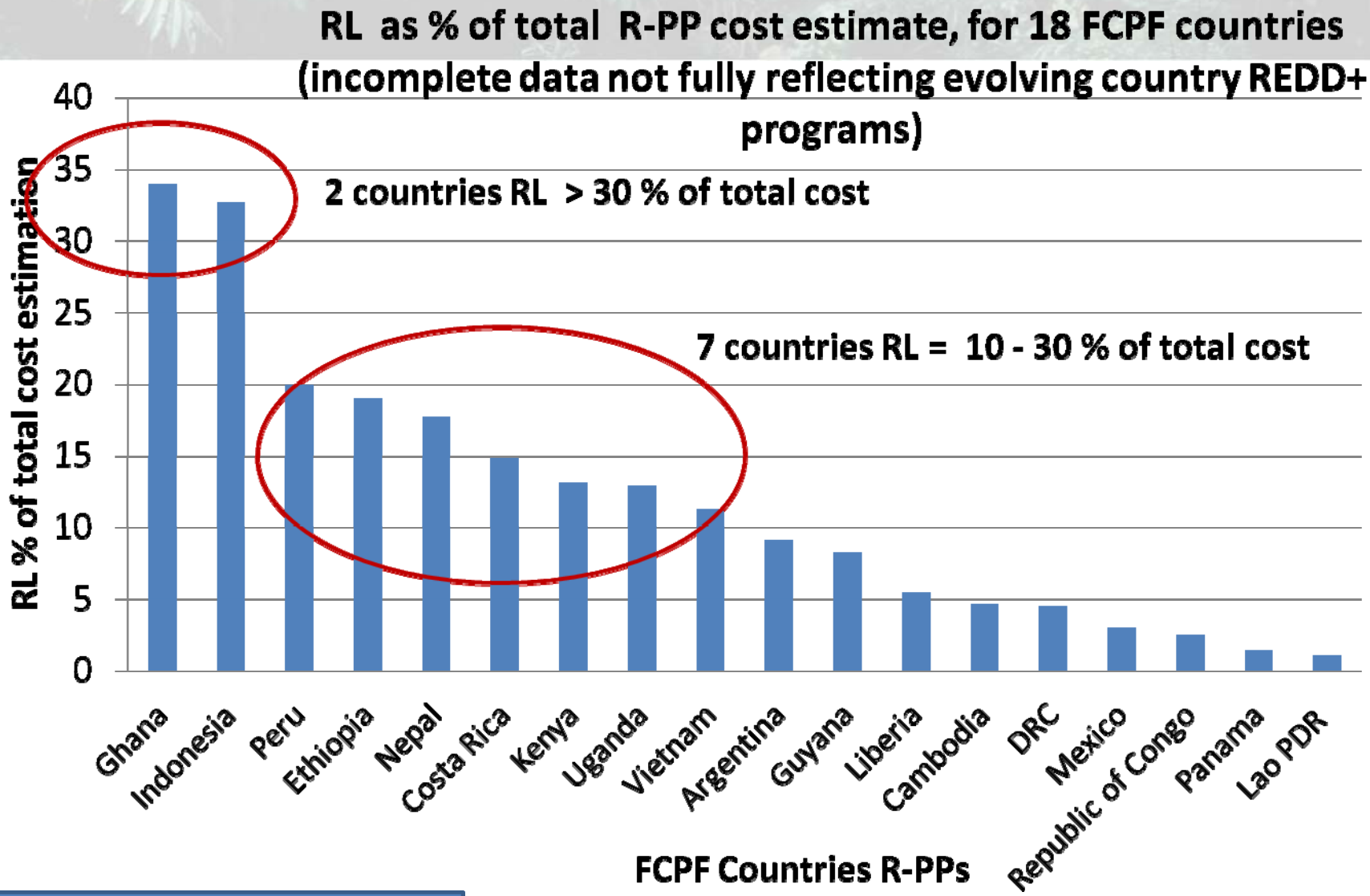
- General RL Approach: 64% countries (16 out of 24) have proposed developing RL by analyzing historic trends, and projecting into the future somehow.
  - Liberia: to develop reference scenario from combination of spatial analysis and econometric models, rather than applying standard linear trend.
  - Lao PDR: proposes to use simple projection of its 10-year development plan
- Timeframe of RL historic or projected RL: 67% (8 out of 12) countries using 2000 as base year. Guidance is needed on starting date; and timeframe for RLs.
  - 3 countries (25%) will use 1990
  - 1 country (8%, Lao) will use 1980.
  - How far into the future the countries will project trends is not identified (except for Lao, projecting until 2020).

Many FCPF Countries Following a Rough Progression of Activities Preparing for RLs & Monitoring Design

1. Reviewing data availability (NFI, remote sensing), and seeking data needed
2. Developing C density, deforestation, & forestation maps
3. Reviewing forest definition for REDD+ context
4. Relying on foreign experts for developing R-PP sections on RL and MRV… and then beginning to seek tech assistance and training to build in-country capacity.

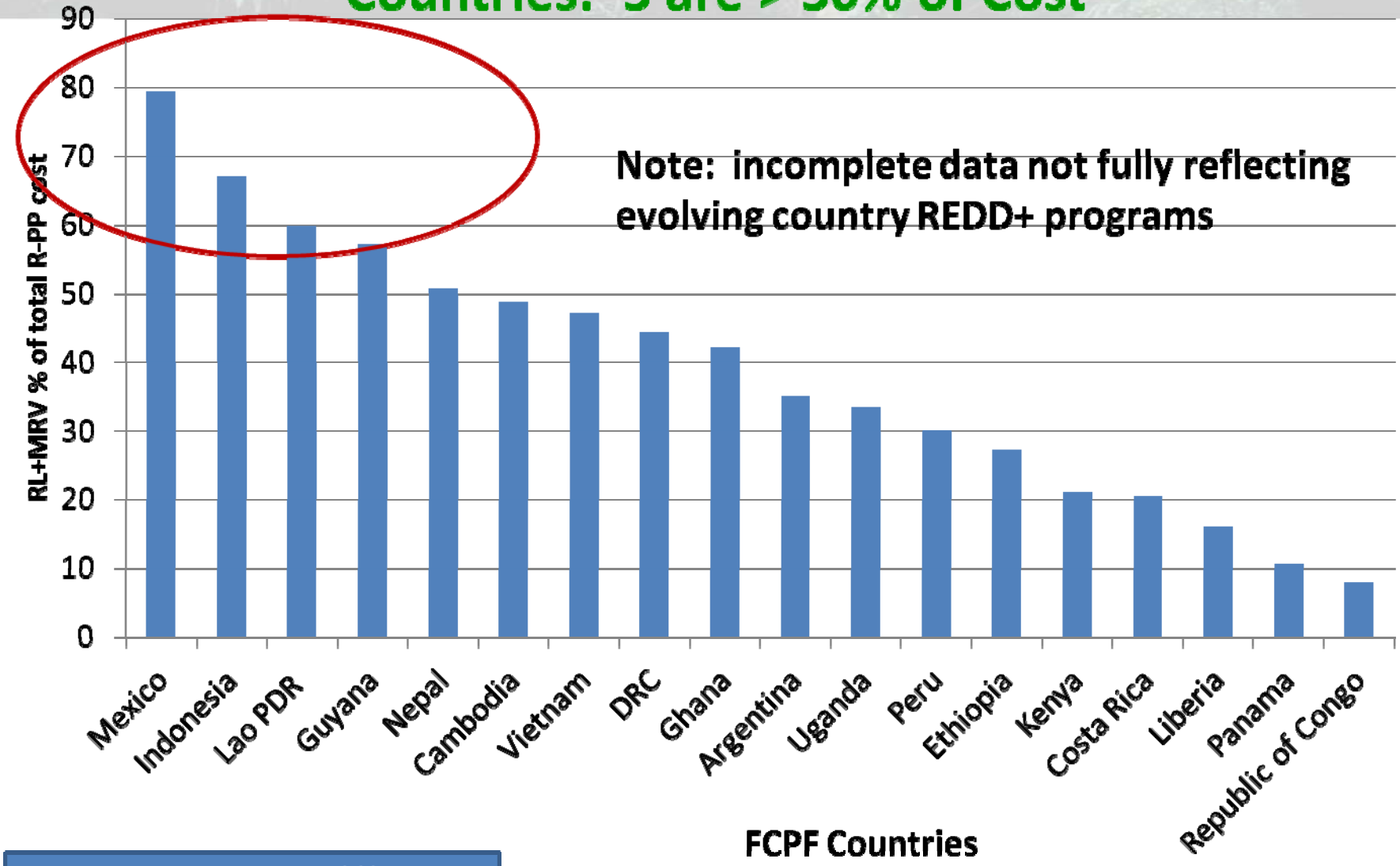
- **Projections being done for several reasons:**
  - Estimate potential REDD benefits, on scenario basis
  - Help plan how to implement REDD programs & allocate
  - Explore modalities of setting RL, & defining "national circumstances" – what are the arguments, and what difference could it make?

Cost Estimates of RL & MRV in Country R-PPs Are Significant



Source: FCPF Countries R-PPs available at http://www.forestcarbonpartnership.org/fcp/

RL and MRV % of Total R-PP Cost for 18 FCPF Countries: 5 are > 50% of Cost



Source: FCPF Countries R-PPs available at http://www.forestcarbonpartnership.org/fcp/

Example: FCPF Country Considering A Wider Range of RL Approaches

CAR Proposes to Divide Country into 4 zones for Sub-national RL -> National RL, & to Use Regional Modeling

Zones:

(i)southwestern forest

(ii)Bangassou Forest or southeastern range

(iii) pseudo steppe with acacias and grassland savannas

(iv) transition between the humid forest and the Sahelian zone

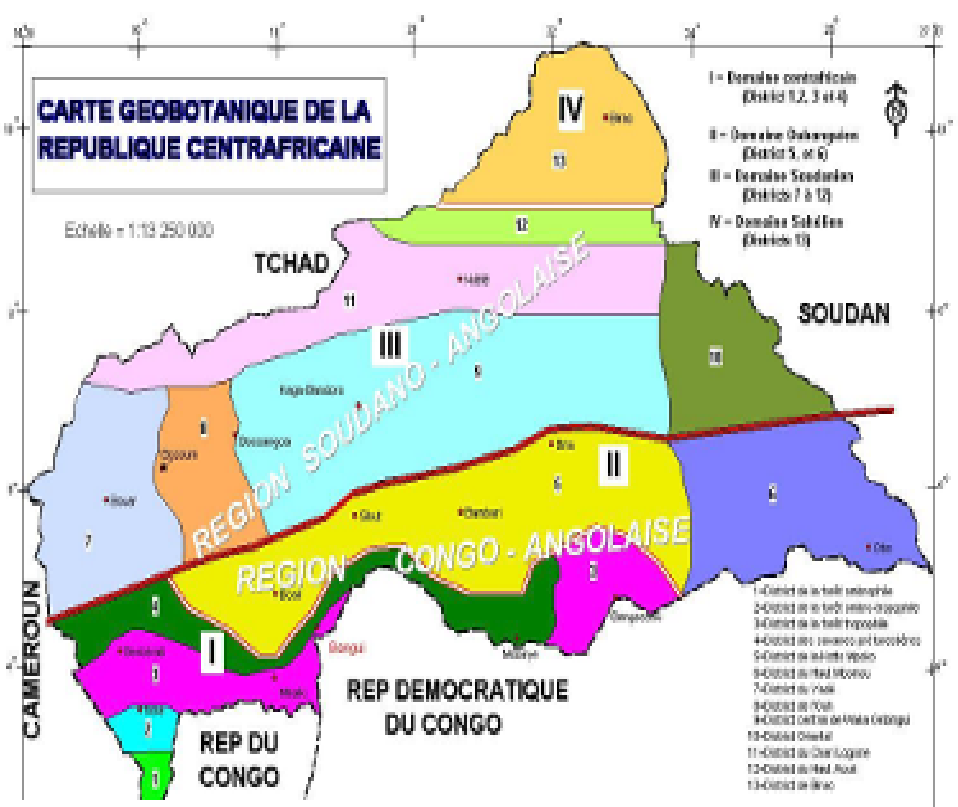
RL Approach:

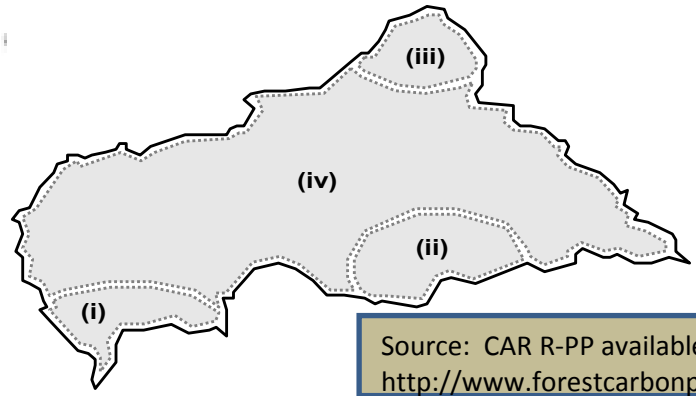
1.Model a simple scenario based on a few input data for each zone

2.verify it with national map of the probabilities of deforestation produced by GEOMOD

3.Develop national reference level using CongoBIOM sub-regional modeling.

4.Compare bottom-up national reference level to a top-down national reference level.





Source: CAR R-PP available at http://www.forestcarbonpartnership.org/fcp/

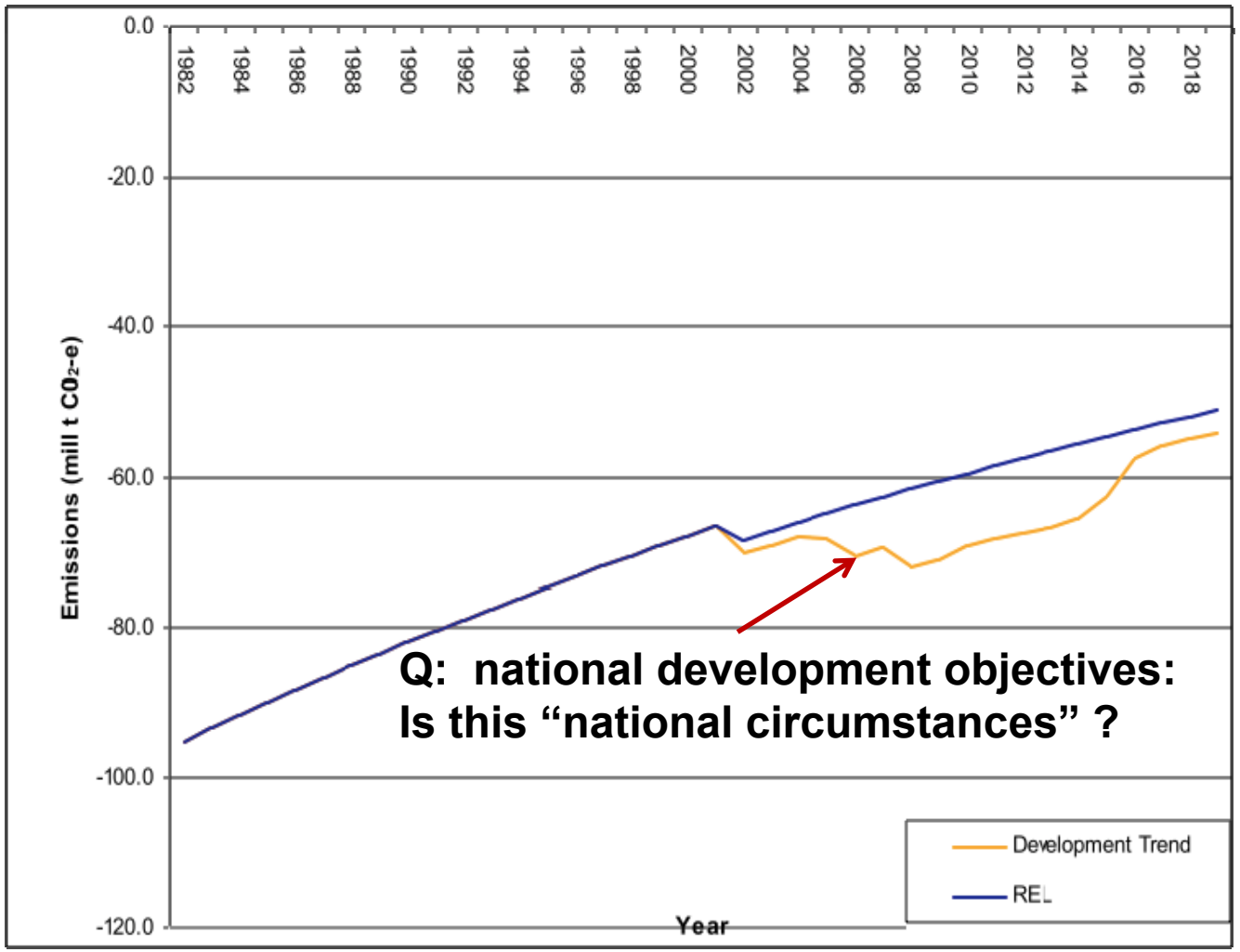
Example: Lao PDR's National REL Draft Estimated Using Historical Rates of Change and Inventory Data (1982 – 2002), Factoring in National Development Objectives Projected to 2020

Data: land cover assessments 1982-2002 & NFI 1992-1999.

Average deforestation rate computed 0.8%/yr, & degradation 1.12%/yr

Results: annual emissions 95.3 m tCO_2e (in 1982), 60.6 million tCO_2e (by 2010), and 51.1 million tCO_2e (by 2020)

Combining it with development objectives, estimated annual emission for the 2010-20 period is 65 m tCO_2e



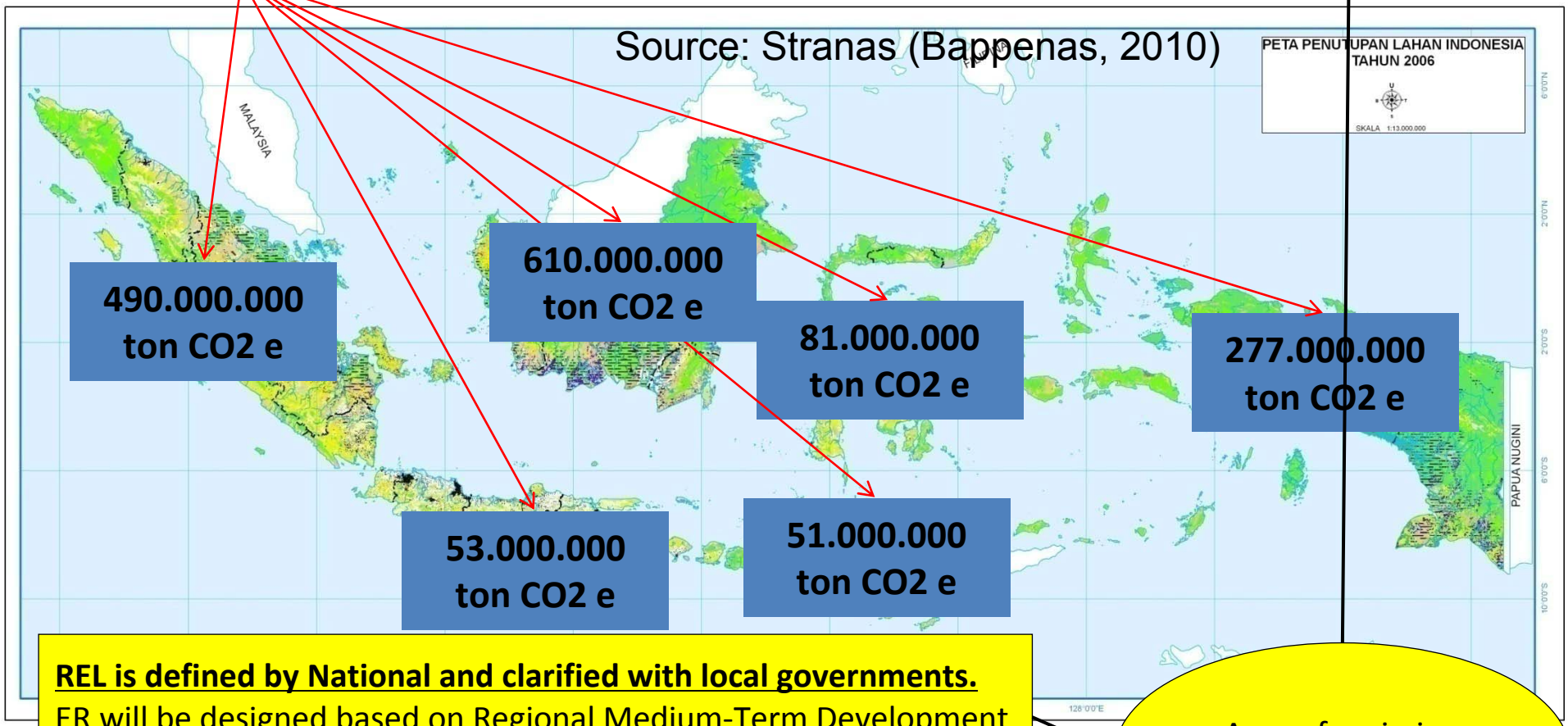
Source: LAO PDR R-PP available at http://www.forestcarbonpartnership.org/fcp/

Example: Indonesia: REGIONAL CONSULTATION FOR DEFINING REL

Target: 1.560.000.000 ton $CO_{2\,e}$

NATIONAL STRATEGY FOR REDD+

Agreed REL/RL



<u>REL is defined by National and clarified with local governments.</u>
ER will be designed based on Regional Medium-Term Development Plan (*RPJM Daerah*) and Province Spatial Plan (*RTRW Provinsi*)

Area of emission sources
Area of carbon sink

Source: Slide from Rizaldi Boer, Indonesian analyst

Example: What Might Specific National Circumstances Mean for Indonesia ? [Dr. Rizaldi Boer slide & analysis, Indonesian analyst]

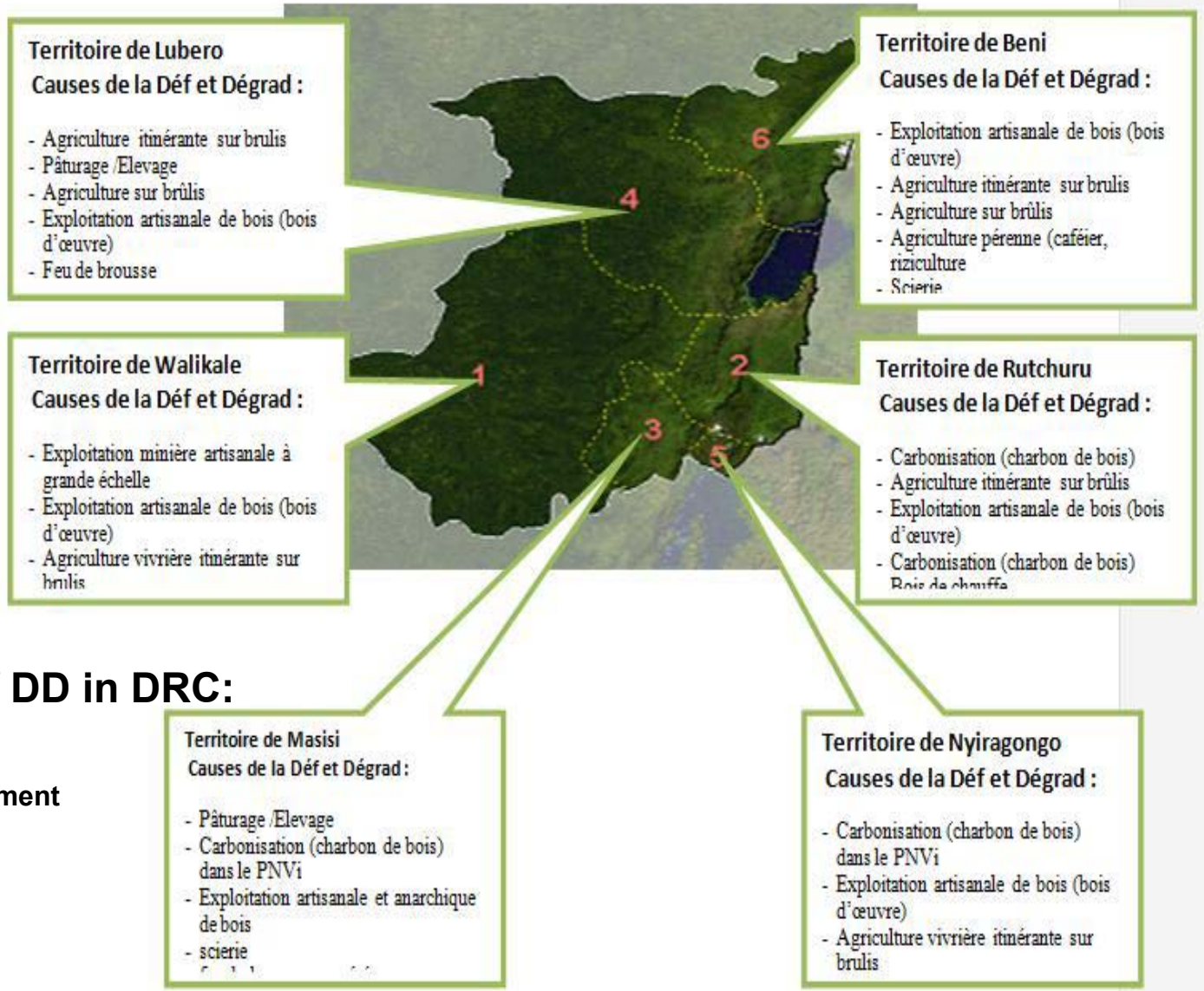
- **Ministry of Forestry has allocated 22.7 million ha of convertible production forest (HPK). This forest is likely to be released for non-forest activities and subject to planned deforestation.**
- **National circumstances:**
  - Expansion of districts and provinces
  - More than 500 proposals from district to release forest area

- **Without carbon incentive (REDD), it is very likely all forested land in HPK will be converted in the future, irrespective of historical condition.**
- **For this forest area, simple forward-looking baseline should be acceptable : under BAU, all convertible production forest will be released for non-forest activities. [emphasis added]**

Example: DRC: Qualitative Study on Causes of deforestation in 6 Subregions, As Input into RL and MRV Design

Direct causes of DD:

1. Slash and burn agriculture
2. Small scale charcoal making, artisanal mining
3. Artisanal timber extraction
4. Industrial logging expansion
5. Infrastructures and commercial agriculture expansion
6. Boat (*pirogue)making, ranching, house construction*
7. Honey extraction, traditional fishing, volcanic eruption, desertification.

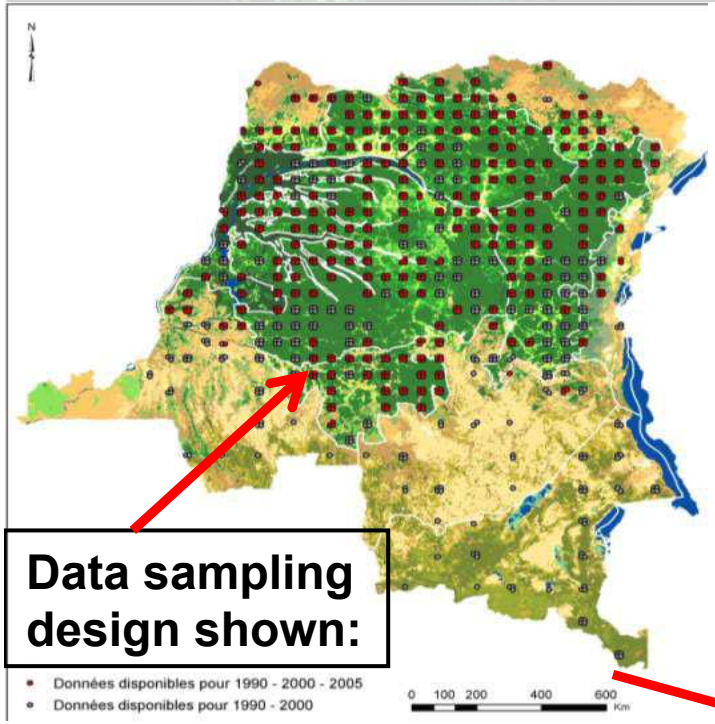


Underlying causes of DD in DRC:

1. Population Growth
2. Poverty
3. Migration, war and unemployment
4. Administration weakness, weak governance, urbanization, business bankruptcy
5. Weak law enforcement

Source: Adapted from Ministry of Environment, DRC, presentation at FCPF Participant Committee meeting 9 in Oslo

DRC 2: Finalizing quantitative study on drivers of Deforestation and Degradation in DRC



Data sampling design shown:

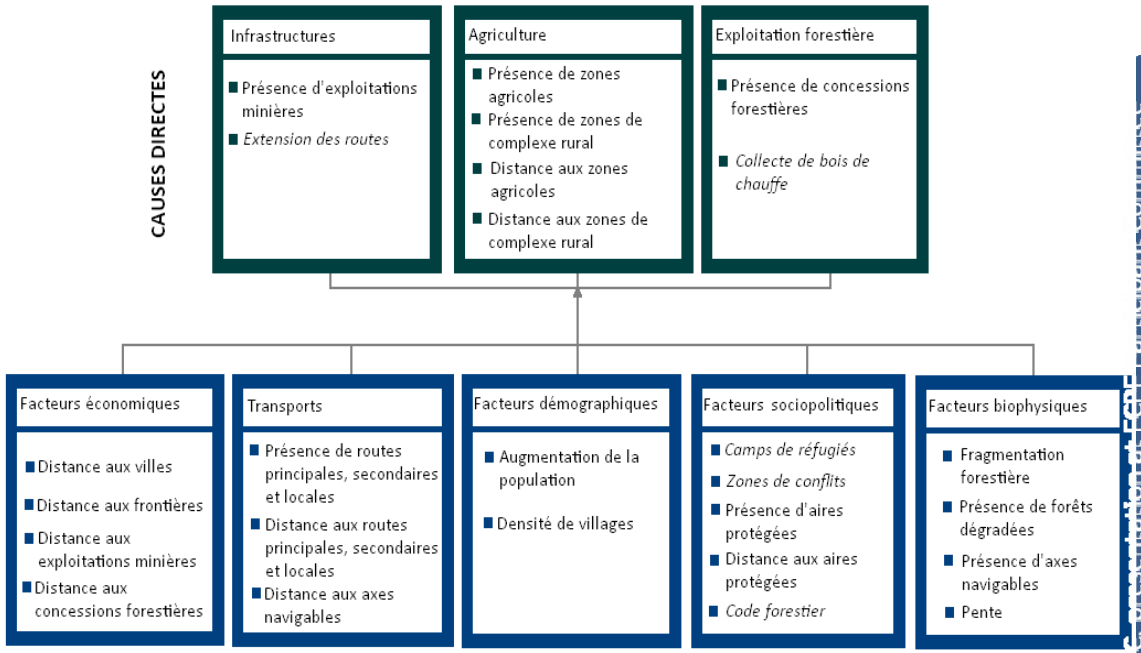
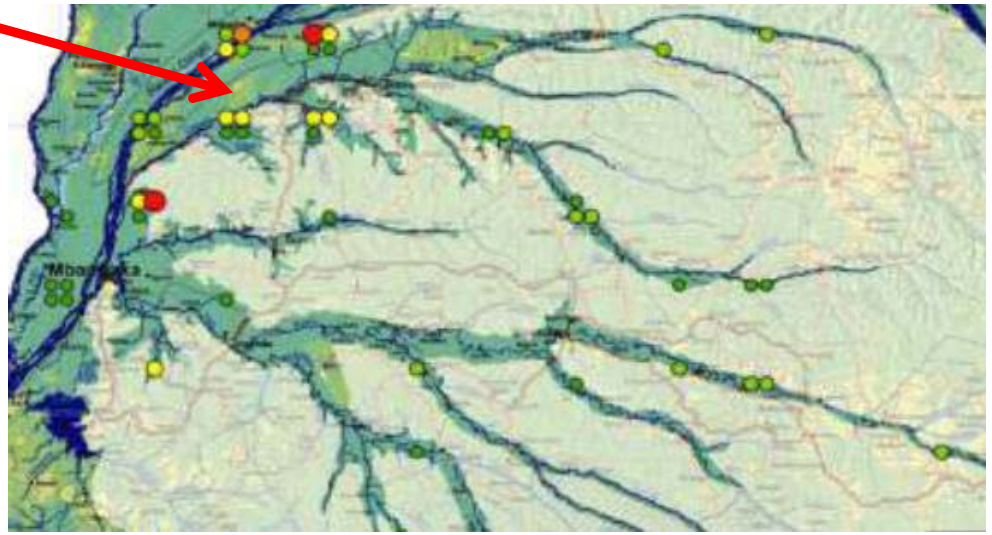


Tableau 11 - Occurrence des variables dans les modèles multivariés pour 2000 - 2005

	Occurrence
Forêts dégradées	5
Fragmentation	3
Complexe rural	3
Distance aux zones agricoles	3
Distance aux axes navigables	3
Distance aux aires protégées	3
Augmentation de la population	2
Routes	2
Distance aux zones de complexe rural	2
Routes secondaires	1
Densité de villages	1
Aires protégées	1
Distance aux villes	1
Distance aux frontières	1
Distance aux frontières du Soudan	1
Distance aux concessions forestières	1
Distance aux routes principales	1

FORCES MOTRICES



Source: Adapted from Ministry of Environment, DRC, presentation at FCPF Participants Committee meeting 9 in Oslo

FCPF – Winrock Reference Level Workshop Nov. 9-10th, 2011: (4 countries + experts) Summary of Policy Issues 1

1. Many countries are reconsidering existing "forest" definitions developed for CDM, for REDD needs -- not always considering technical requirements.
   - Ghana lowering canopy threshold to 15% (from 30%), which may exceed remote sensing ability to find land use change in dry low-forest areas.

2. Countries seem especially interested in exploring policy concerns re setting the compensation level, and allocating the RL to provinces (very political).
   - But few countries have explored compen. level yet.

3. Q: Do country reference levels need to integrate all 5 REDD+ activities, or can country pick and choose, and have separate RLs for each ?

FCPF – Winrock RL Workshop Nov. 9-10th, 2011: Policy Issues 2

4. Q: Do non-anthropogenic emissions (e.g., El Nino fires) need be included in RLs, or just anthropogenic emissions ?

5. Q: When can a RL be adjusted?

   Eg. When major defor. drivers change? … or every 5 or 10 years ?

FCPF – Winrock RL Workshop: Technical Issues: 1

1. Countries are using stratification of defor. risk, to:
   a) locate REDD strategy programs to low risk areas
   b) guide data sampling density to areas of change.
   Deforestation risk maps are now common.

2. Debate over whether geospatial resolution for RLs is needed to:
   - Plan and manage REDD programs
   - Help allocate a national RL down to subnational levels
   - Manage trade-offs across sectors (expand biofuels or REDD?).

3. Q: Should RLs need to reflect external land use change drivers (e.g., ag commodity prices, demand for biofuels)? If so, how? (use global econ. models?)

FCPF Workshop Technical Issues: 2

4. Regional cooperation widely discussed, but seems to be happening only in Congo Basin + South-South transfer.

5. Expert support for using straight-line average to represent historical RL, since few data points available in most countries

6. Nested approach is widely being used, via stratification of country into roughly similar legal jurisdictions (e.g., provinces) or major ecosystem boundaries (eg, Guatemala).
   - One issue: ecosystems do not make policy decisions …

7. Most countries finding analysis of histor. defor. is difficult, & have minimal data points to show a trend, and have little time or capacity for other work (eg, projections).

RF Workshop Technical Issues: 3

8. **Most FCPF R-PPs mention country will follow IPCC Good Practice Guidance…**

… But offer little if any other information, & do not demonstrate they have capacity to do so.

Hence capacity building on how to use IPCC GPG for RL will be needed.

Summary of Early FCPF Country Actions re RLs, While Awaiting UNFCCC Policy and Methods Clarity

- Countries are identifying no-regrets activities that put key tools in place and build capacity, while awaiting policy clarity.
- Hence, most countries will phase in their RL work, beginning with simple historic data analysis, due to low capacity.
- Nesting approach is not really a policy decision, but is only practical way forward on RLs given minimal data & capacity.
- FCPF is exploring preparing a decision support tool for country early decisions, to help countries:
  - Identify no regrets actions, given country priorities , its REDD strategy activities, & the likelihood of REDD+ funding over time.
  - Assess the amount & distribution of data available (eg, forest inventory & remote sensing) and needed.
  - Explore national circumstances, and determine which activities to pursue and if to do projections of forest change on a scenario basis.