Reference Emission Levels

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Key UNFCCC Decisions on RELs/RLs

- One of the activities to undertake during the REDD+ Readiness phase is to develop national forest reference emission levels or forest reference levels (RELs/RL)

- Copenhagen Decision (4/CP.15, paragraph 7):
  - ***Recognizes*** that developing country Parties in establishing RELs/RLs should do so **transparently** taking into account **historic data, and adjusting for national circumstances**, in accordance with relevant decisions of the Conference of the Parties

- Cancun Decision (1/CP.16, paragraph 71):

  - ***Requests*** developing countries to develop … a **national** forest reference emission level and/or forest reference level or, if appropriate, as an interim measure, **subnational** RELs/RLs

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Key UNFCCC Decisions on RELs/RLs

- Durban Decision (12/CP.17, paragraphs 7-15)

- "… forest reference emission levels and/or forest reference levels are **benchmarks for assessing each country's performance** in implementing the REDD+ activities"

- "… shall be established taking into account decision 4/CP.15, paragraph 7, Copenhagen] and **maintaining consistency with anthropogenic forest related greenhouse gas emissions** by sources and removals by sinks as contained in each country's **greenhouse gas inventories"**

- "Invites Parties to **submit information and rationale** on the development of RELs/RLs, including **details of national circumstances** and if adjusted include details on how the national circumstances were considered"

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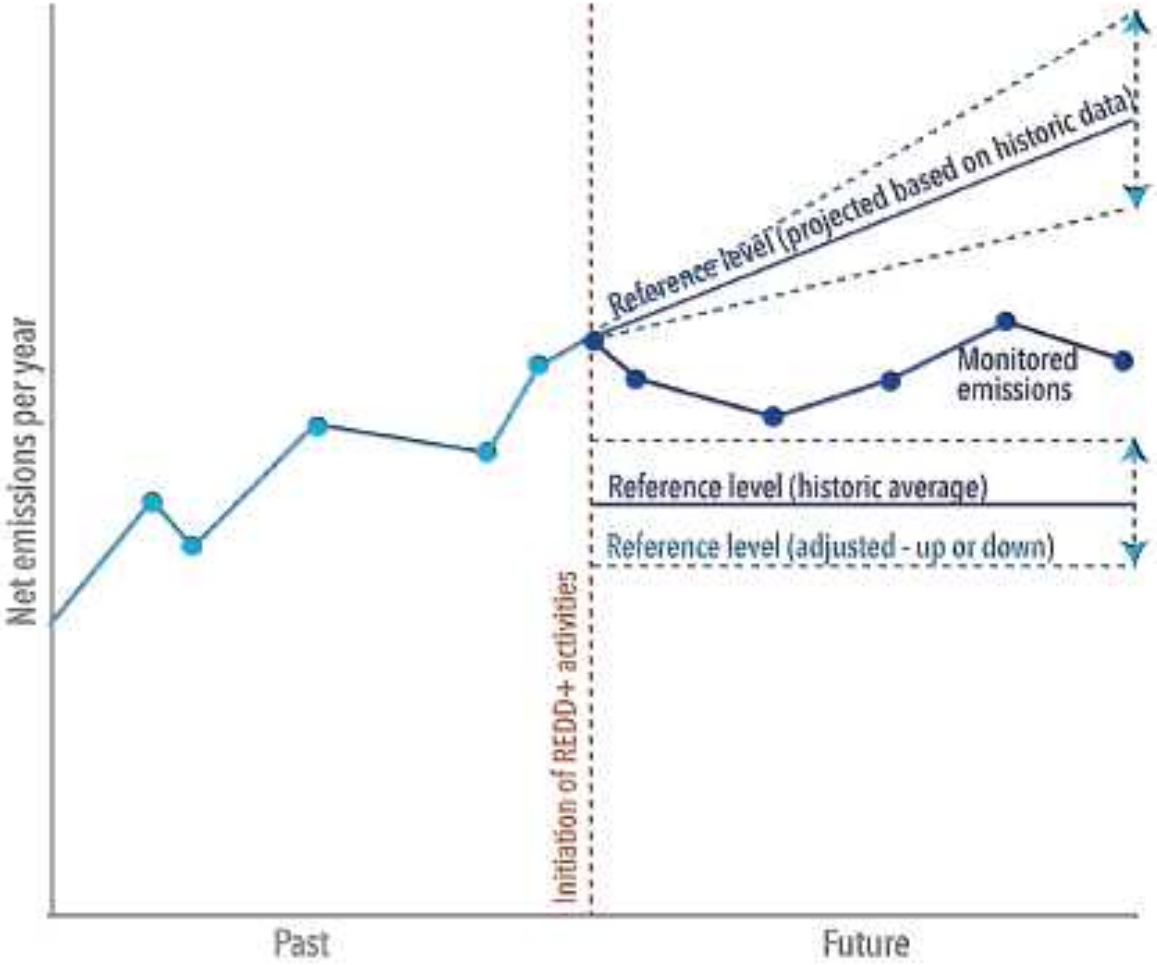
Conceptualizing Reference Emission Levels



Source: Climate Focus 2013

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Steps in developing RELs/RL

- RELs/RL methodology is currently under debates, discussions and negotiations; however, the main steps should include:

  1. Estimation of historic emissions/removals (AD & EF) from deforestation, degradation, and C stock enhancement for base year & subsequent years; according to IPCC guidelines [**Retrospective RELs**]

  2. Development of future trajectories of missions/removals over different time periods[**Prospective Reference Emissions**]

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Retrospective RELs

- Retrospective RELs are based on:

  1. analysis of historical data (AD) on forest land use change (over a period of at least 10 years) based on interpretation of satellite imagery. Results of land use changes can be presented in form of a transition matrix.

  2. estimation of historical emission factors (EF) based on available historical inventory data (need to explore its suitability for carbon stock estimation)

  3. historical AD when combined with (multiplied by) historical emission factors (EF) provides an estimate of historical emissions/removals.

- Approach must be consistent with future monitoring and MRV methodology.

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Prospective Reference Levels

- Prospective RELs are typically based on extrapolations of historical trends from Retrospective RELs

- Decision 4/CP.15 prescribes that countries should take account of historical data in the construction of RELs/RLs, and can adjust for national circumstances

- Basically 3 distinct procedures can be used to project or predict future RELs:
  1. Extrapolation of historically observed forest cover data
  2. Econometric modeling, taking into account formal and informal forestry sectors.
  3. Dynamic land use modeling accounting for drivers of land use change and using historical spatial data for forest cover

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Adjusting for National Circumstances

- National circumstances are factors which affect countries' ability to deal with mitigating and adapting to climate change, e.g.:
  - Country demographics (e.g. population pressure)
  - Geography
  - Economy (e.g. GDP per person)
  - Social history
- Example:
  - Two countries (A & B) have the same historical forest REL over 10-year period
  - Country B has a higher population and lower GDP per capita
  - Country B's REL could be adjusted upwards to recognize the greater difficulty in implementing REDD+ and achieving emissions reductions

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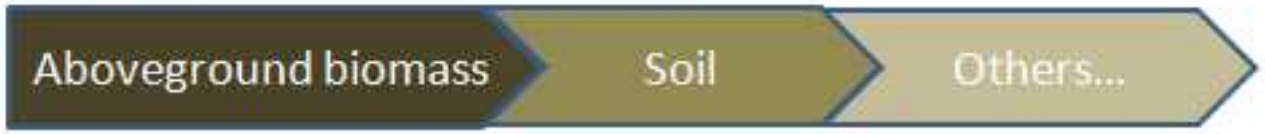
Stepwise Approach

- Recall Durban decision (12/P17, paragraphs 7-15) encourages a stepwise approach, the need for additional pools and the incorporation of better data:

Progressive inclusion of C pools, if appropriate



Progressive inclusion of vegetation forms

Progressive inclusion of geographical areas

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Priorities for RELs/RLs in REDD+ Phases 1 & 2

1. **Analyze national historical land use change data** to estimate activity data with at least three time intervals

2. Collect and analyze **field data to produce conservative emission factors** (while prioritizing significant carbon pools) for the forest types where significant deforestation and forest degradation have occurred

3. Analyze the **drivers of deforestation and forest degradation** through quantitative and qualitative studies

4. Formulate a pilot subnational reference level for **demonstration activity/ies**

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Thank You

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