



Status of National GHG Inventory - Guyana

Country Presentation
Ecuador-2011

- To date all work done on GHG Inventories were being conducted under the National Communications (1st& 2nd) to the UNFCCC.
- The Methodologies used were from the IPCC 1996 and 2007 guidelines.
- Various Sectors (Energy, Agriculture, Forestry, Waste etc) provided data based on trend analysis.
- In cases where data was not available expert knowledge, FAO Statistics and IPCC default values were used.

- Additional data is being collected in terms of work being done on the Low Carbon Development Strategy and REDD+
- Guyana's LCDS and REDD+ work are under-pinned by the Readiness Preparation Proposal (R-PP), which is the chosen multilateral route for preparing for REDD+.
- The LCDS provides the framework into which REDD+, Readiness preparation, and other initiatives will fit. They will all form a part of the implementing of the Strategy with the Readiness preparation activities being one aspect.

- The LCDS requires for a performance based mechanism to measure and monitor deforestation and forest degradation, which requires for a Monitoring Reporting & Verification System (MRVS) to be developed and implemented.
- The MRVS will in essence be the performance measurement system of the LCDS.


- With the development of the MRVS Roadmap, implementation of works begun in 2010 in two areas:
 - Forest Area Change Assessment (Bid 1)
 - Forest Carbon Stock Assessment & Monitoring (Bid 2)
- These activities determines the historical and current patterns of emissions coming forest , their drivers and the carbon stock present in the various pools.


Forest Area Change –Bid 1

- The main deliverables of Bid 1 takes on a local capacity building approach and focus on :
 - historic forest area assessment and change mapping
 - independent accuracy assessment of area change estimates, and
 - annual reporting on REDD+ interim indicators as set out in the MoU between the Government of Guyana and Norway.


The work on Bid 1 commenced in August 2010 and extends to March 2011.


- The change analysis focused on detection of forest cover change over three periods as follows;
 - 1990 to 2000
 - 2001 to 2005
 - 2006 to 2009 September
- It is from these time periods that the Benchmark forest map is created. The benchmark map provides a snapshot of forest area as at September 30, 2009.

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- The 'Year 1' maps cover the first year after the benchmark map. For this period all forest to non-forest changes from 2009 to 2010 September are mapped spatially and reported.
 - Change from forest to non-forest excluding degradation between 1990 and 2009 is estimated at 74 900 hectares. This equates to a total deforestation rate of 0.41%.

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- This estimate includes all forest to non-forest change i.e. detected mining, road infrastructure, agricultural conversion and fire events that result in deforestation. It does not include forest degradation caused by selective harvesting, fire or shifting agriculture.
 - *Note: Changes in forest area due to forest degradation are not required to be reported in the interim period.*

- Over the benchmark reporting period (1990-2009) this represents a forest loss of around 3 800 ha/yr⁻¹ which when annualised is equivalent to 0.02%. As at the end of the benchmark period (September 30, 2009) the area of forest is estimated at 18.39 million ha.

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- Interpretation of the change areas for the benchmark period identifies mining as the main driver of forest change (60% of the change), particularly between 2000 and 2005.
 - Other noticeable trends show that agricultural development remains stable with an area of 200 to 500 hectares developed annually.

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- Forestry-related activity has decreased, which is mostly accounted for by forest road construction and log landings. Harvesting in managed forest areas is small-scale and selective which means the forest cover remains intact and above the forest definition.

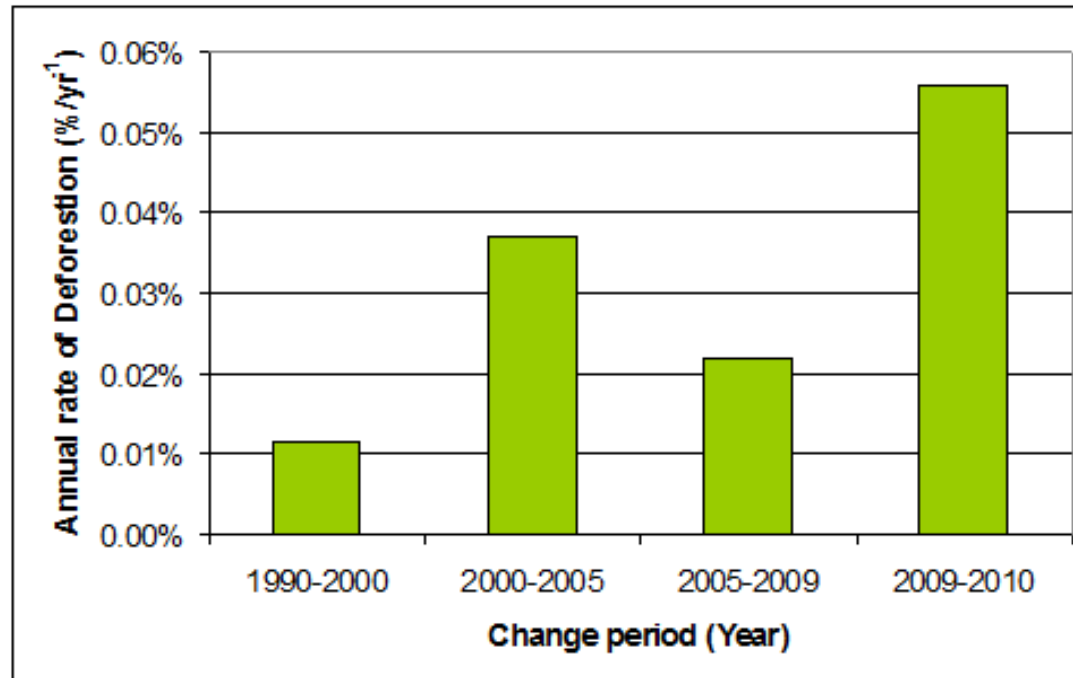
Changes in Guyana's Forested Area 1990-2010

Area Deforested 1990 to 2010

Period	Forest Area ('000 ha)	Change ('000 ha)	Change(%)
Initial forest area 1990	18 473.39		
Benchmark (Sept 2009)	18 398.48	74.92	0.41%
Year 1 (Sept 2010)	18 388.19	10.28	0.06%

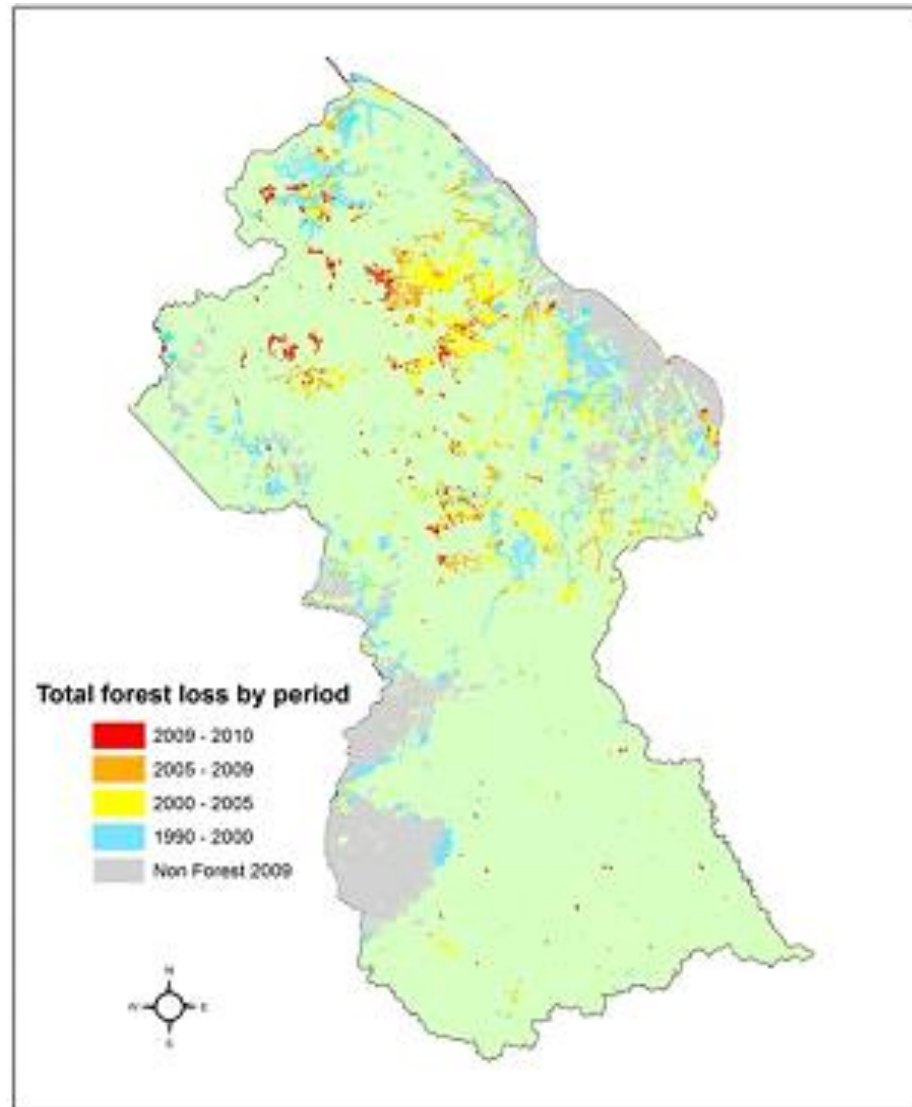
Based on the initial 1990 forest area the forest cover change for 1990-2009 period is estimated at 0.41% (i.e.<1%).

Annual Rate of Deforestation by Period from 1990 to 2010

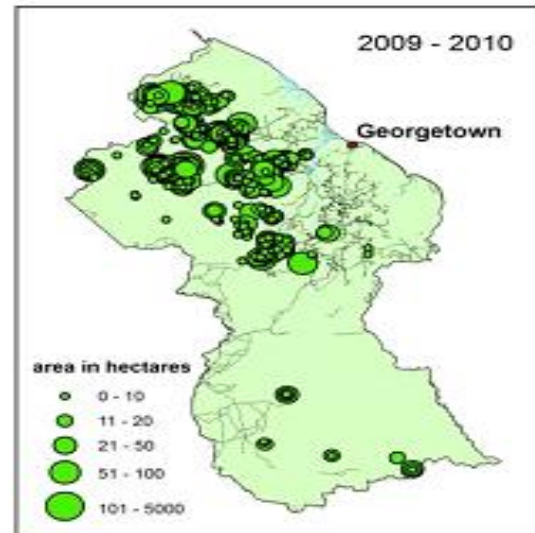
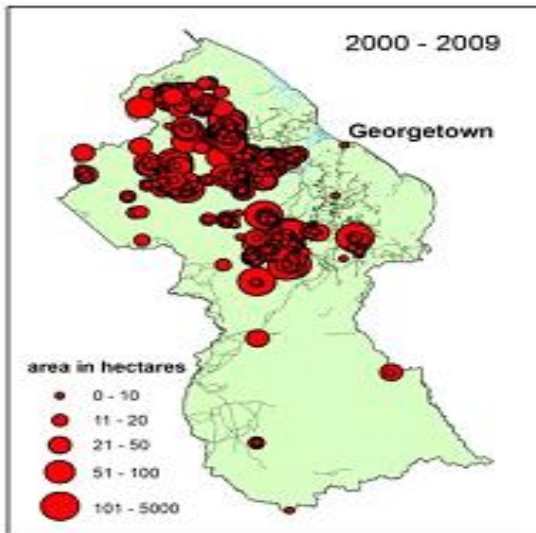
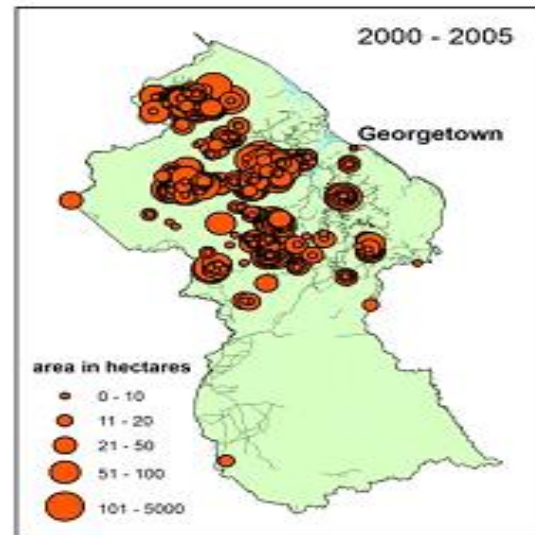
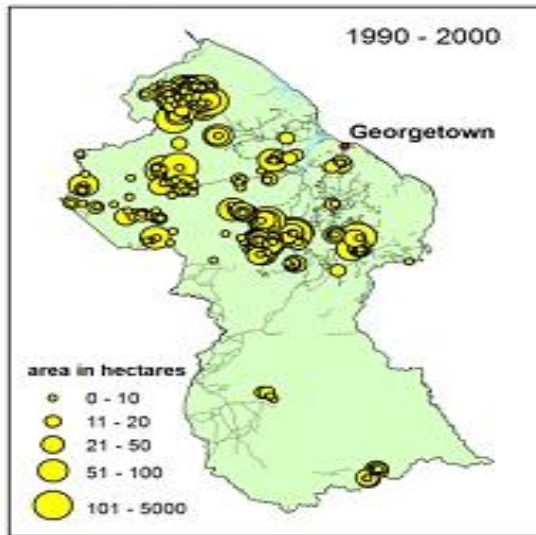


The figure above shows the annual deforestation trend by the separate periods analysed. The trend suggests that deforestation rates have increased since 1990 and recent trends continue then it may well continue to rise.

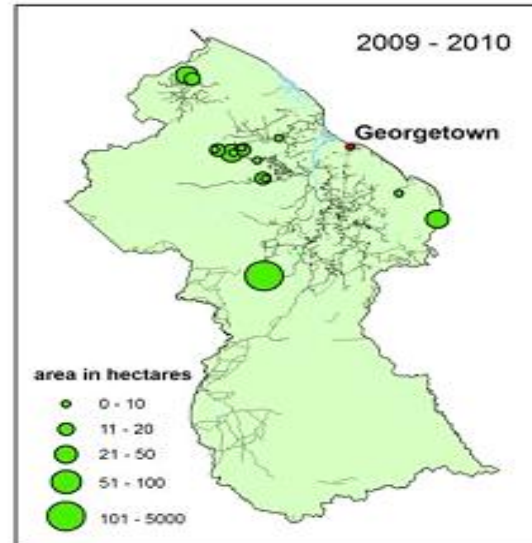
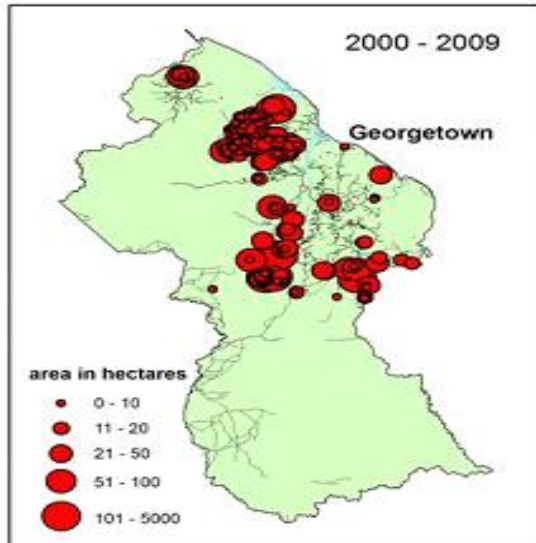
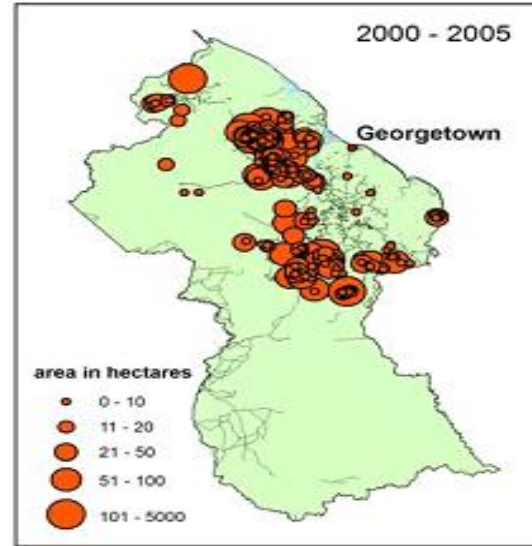
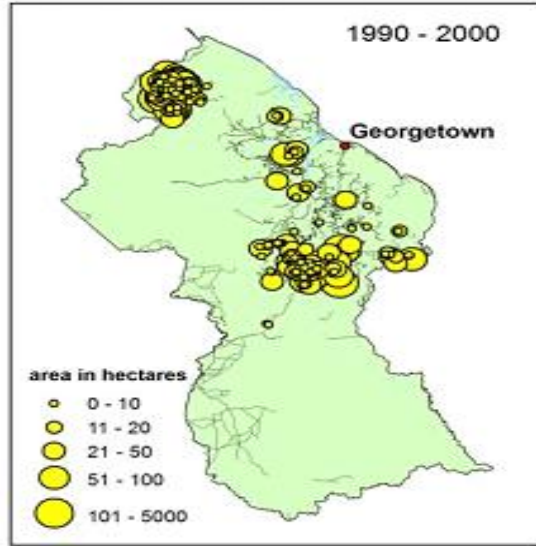
Forest Change 1990 to 2010



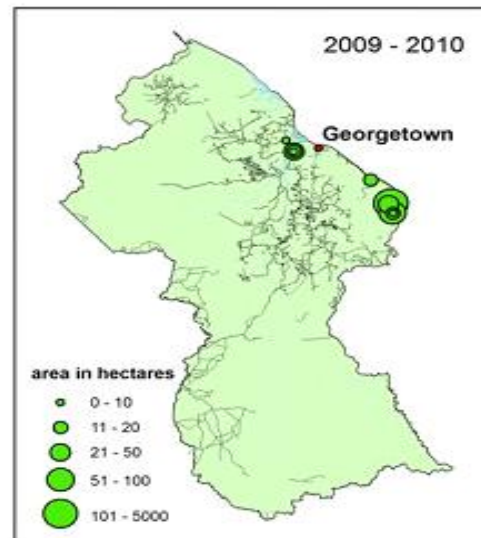
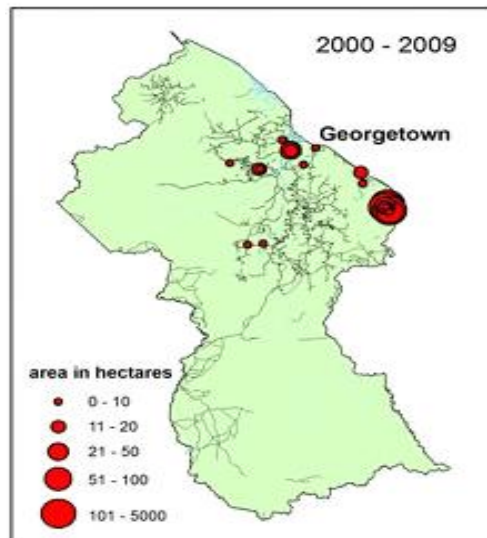
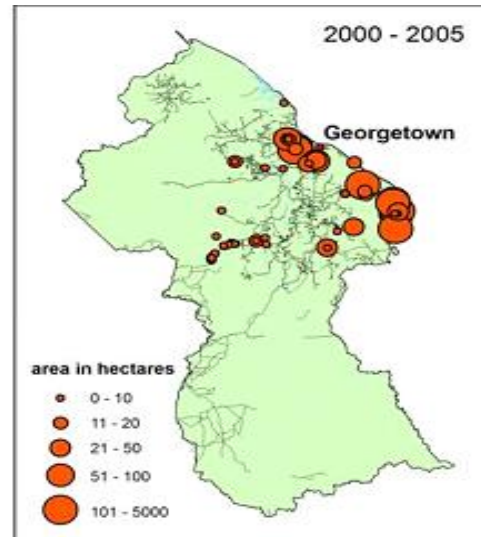
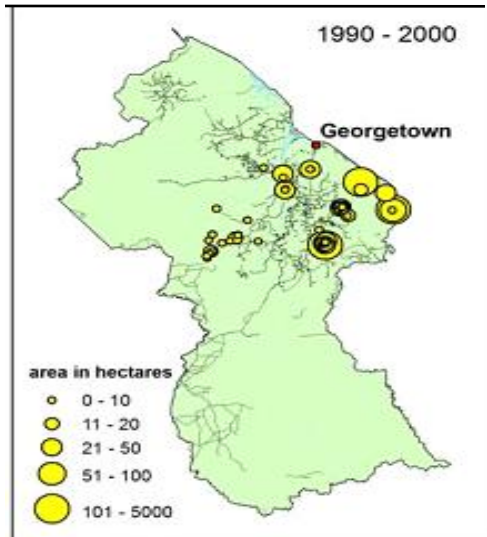
Mining Spatial & Temporal Distribution



Forestry Spatial & Temporal Distribution



Agriculture Spatial & Temporal Distribution





Carbon Stock Assessment – Bid 2

- The Collaboration between WI and the GFC seeks to build capacity to undertake work on the design and implementation a long-term, robust, and scientifically sound national forest carbon measurement and monitoring system (FCMS) for activities related to reducing emissions from deforestation and degradation (REDD) in Guyana.
- The work of Bid 2 commenced in August 2010 and extends to December 2011.

Key Deliverables

- Implementation plan for a systematic national forest carbon measurement system, including map/stratification, sampling design and measurement variables and protocols.
- Capacity building in conducting forest carbon stocks and change assessments. This is expected to also include training for field work and data collection.

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- Assessment report of key processes causing change in forest carbon based on historical forest area change assessment and ancillary data and suggested stratification of key activities to be targeted for detailed measurements of carbon stock change and emission factors
 - Assessment Report on Drivers/Processes analyzing the carbon impact, emission factors and key category analyses based on fieldwork, existing data available and integrating new conversion and expansion factors for Guyana.

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- Report describing the a long-term measurement and monitoring plan for forest carbon stocks based on the results documented in deliverables to be used by Guyana to continue the measurement and monitoring process. The concept and technical understanding should be delivered in dedicated capacity building sessions in Guyana.

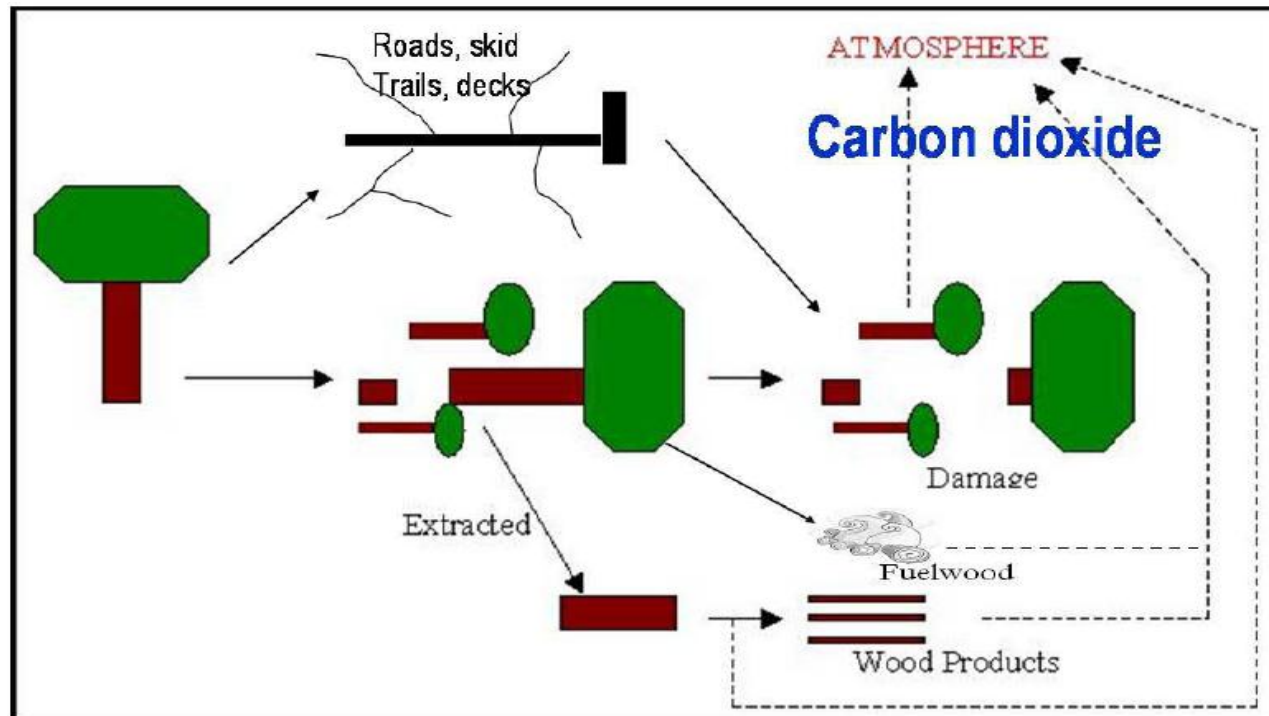
WI – Major Outputs

- Field Missions by Winrock International and GFC were done in November 2010 and March 2011 respectively.
- Destructive Sampling (2010)
 - To determine the appropriateness of the Chave et al allometric equation that can be used to estimate tree biomass.



- Logging Impacts

- To determine the carbon stock of the forest before and after selective logging. (based on gain-loss approach –IPCC, 2007)





- Forest Carbon Stock

- To assess the carbon stock of Guyana's forest in the various pools

- AGB – Chave et al, 2005
- BGB – Mokany et al, 2006
- Dead Wood – Standing and Lying
- Litter
- Soil – Bulk Density & Carbon

- Re-growth Plots



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Methodology

- Based on accepted literature for determining forest carbon stocks
- For each activity there are standard operating procedures developed by WI
- These procedure are robust and internationally recognised
- These have been field tested by WI in other countries.

Data Collection



- Destructive harvest
- Biomass
- Logging plots
- Roads, skid trails and logging decks
- Growth plots

The overall purpose for these specific data collection is:

- to determine the total emissions from deforestation and forest degradation
- to quantify the amount of biomass stored in the forest of Guyana
- to evaluate the impacts caused by SFM as relates to carbon emissions

Data Analysis

Tools used are created by Winrock International and are as follows:

- Carbon Stock Calculation Tool
- Destructive Harvest Tool
- Selective Logging Tool

These tools are created using MS Excel and they require that all field data be entered in the appropriate field designated for them.

The tool has the formulas to execute the desired results embedded in them.

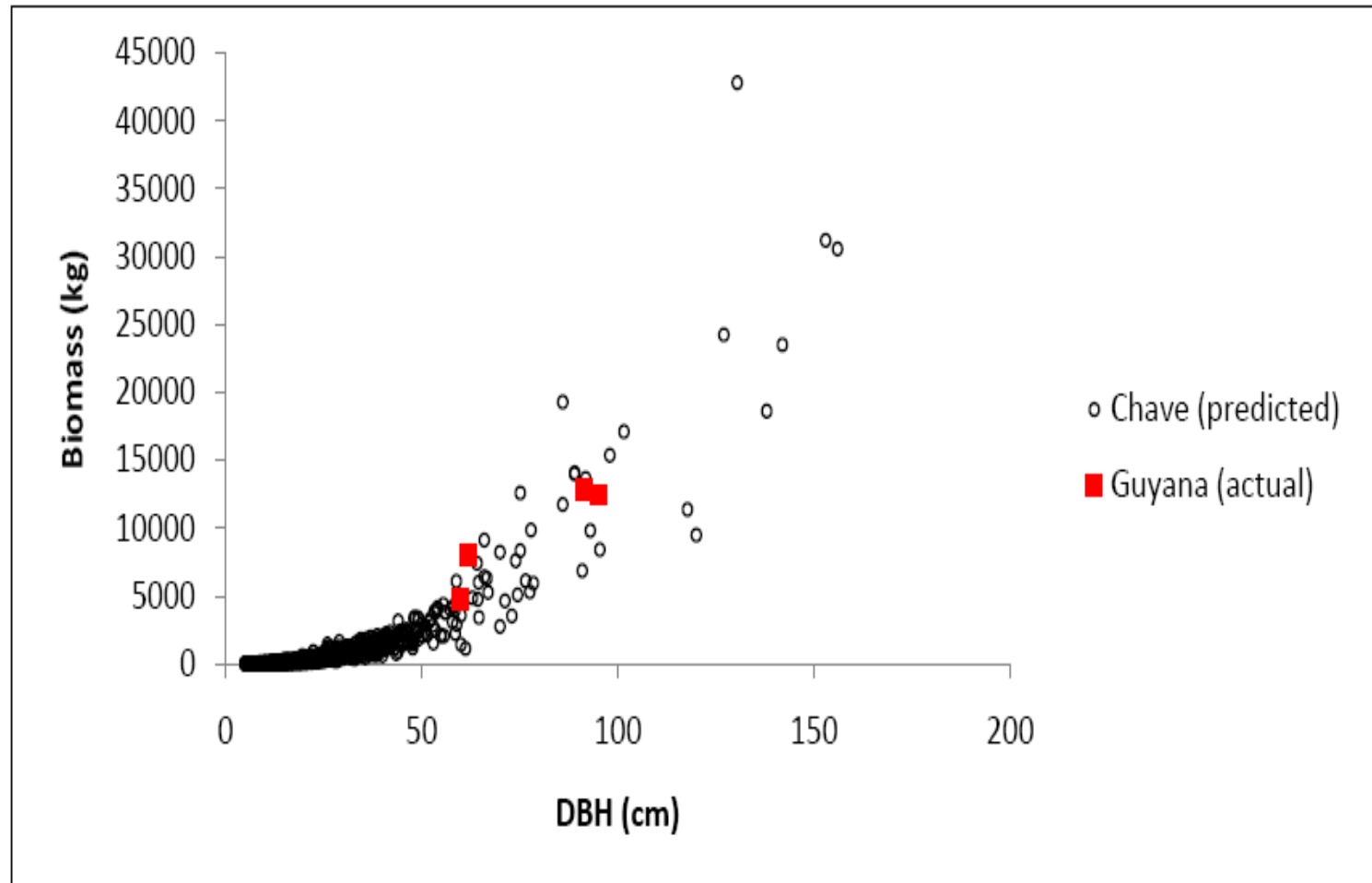
Destructive Sampling

In November 2010, a joint field team of Winrock International and GFC staff destructively sampled 4 different tree species to develop a relationship between tree diameter at breast height (DBH) and total tree biomass.



Destructive Sampling

Two of the four trees fell within the 95% confidence limits of biomass calculated with the Chave equation for trees of the same diameter. The other two trees are only slightly outside of the 95% confidence limits.



Destructively sampled trees in Guyana plotted against biomass predictions based on Chave (2005) equation



Pending

Other data to be analysed are:

- Lying deadwood
- Standing deadwood
- Soil
- Logging plots (including skid trails, road and logging decks)



Thank You!

Questions???