Yale-UNAM Project
Geospatial Analysis and Modeling of Non-Renewable Biomass: WISDOM and beyond
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Tier I: Final Report

Pan-tropical analysis of woodfuel supply, demand and sustainability

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Executive summary

This report examines the impacts of wood extraction for energy purposes on land cover and land use change. We identify regions likely to suffer from overharvesting of woodfuel to supply woodfuel demand that orignates from both local communities and distant urban centers. The spatially explicit datasets that were developed for this analysis also provide a means to evaluate other woodfuel-related impacts, including spatial patterns of exposure to household air pollution (HAP) and other dimensions of energy poverty. We can also identify areas with surplus supplies of woodfuel, which could potentially be exploited to provide relief in deficit regions.

Globally, woodfuels and charcoal are the main fuels for cooking and heating for nearly 3 billion people. In rural households of developing countries, woodfuel is the dominant source of energy. In urban households, while LPG and electricity are increasingly common, the use of wood and charcoal persists. Indeed, in some regions, charcoal demand is increasing as urban populations surge. The persistence of woodfuel use in developing regions has several negative implications:

- Inefficient cooking devices are commonly used. This results in HAP emissions, which have dire health impacts when people are exposed to them. They are also a source of greenhouse gases (GHGs).
- Harvesting wood in excess of the natural growth rate of woody biomass can lead to forest degradation and even deforestation. When this occurs, it can cause a loss of soil quality, a decrease in biodiversity, and the emissions of GHGs.

However, there are also several positive implications of woodfuel dependence:

- Woodfuels provide energy security. They are locally available and avoid the need for expensive imported fuel.
- Woodfuels are affordable for poor rural and urban consumers.
- When the resource is managed well, woodfuels are renewable.

This project is primarily concerned with the risk of forest degradation and deforestation arising from woodfuel consumption. To understand this risk, we need to identify where woodfuel harvesting occurs and assess whether harvesting exceeds the natural ability of trees to regenerate. If the rate of harvesting is below the natural ability of trees to regenerate, then woodfuel exploitation is sustainable. However, if harvesting exceeds the rate of regeneration, then it is unsustainable and tree cover will likely decline over time. For a given geographic region (e.g. a state, province, or country), we can define the degree of unsustainable harvesting by calculating the difference between the amount of woody biomass produced annually or *the annual increment* within that region and the quantity of woodfuel harvested. If the amount harvested exceeds the annual increment, then the region is utilizing *nonrenewable biomass* (NRB). The ratio of the region's NRB to the total harvest of woodfuel is the fraction of nonrenewable biomass (fNRB).

Utility for GACC and affilates

The fNRB parameter is important for understanding GHG emissions that arise from woodfuel exploitation and the emission reductions that may be achieved by introducing fuel efficient cookstoves or promoting fuel switching. However, the methodologies currently utilized to assess fNRB are somewhat uncertain and have not been applied consistently. Prior to this assessment, no consistent, data-driven estimates of fNRB were available for broad geographic regions. Thus, this represents the first systematic, spatially-explicit database of woodfuel demand and supply potential. This dataset will enable analysts and project developers to consistently evaluate the potential impact of household energy interventions across a broad range of scales, from individual communities to entire nations and regions.

This will assist with the identification of priority intervention areas by:

- Identifying woodfuel supply "hotspots" – i.e. areas suffering from acute supply deficits
- Identifying areas with the greatest potential to achieve emission reductions by disseminating efficient woodstoves or promoting fuel switching
- Identifying communities suffering from combined socioeconomic vulnerability and energy poverty

Methodological approach

The analysis followed a sequence of steps initially developed as the Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM) methodology pioneered by Drigo and Masera (2006). The steps include the development of: 1) a Supply module, 2) Demand and Integration modules; 3) Physical and Legal accessibility; 4) Deficits and Woodshed analyses; and 5) NRB calculations and results. These phases are summarized below.

Woodfuel Supply

We generated a pan-tropical map of dendro-energy biomass (DEB) supply, defined as the mean annual increment (MAI) of standing stocks of biomass minus twigs, leaves and stumps. MAI was estimated as a function of standing biomass stocks across an array of ecosystems and land cover types. Competing uses of value-added wood products, such as industrial roundwood, were subtracted from the MAI estimates. In addition, many countries have silvicultural plantations that satisfy some fraction of wood energy demand in the industrial and residential sectors. Industrial plantations tend to have higher productivity than natural woodlands. We accounted for this by assuming high and low yield scenarios (discussed in more detail in the section on "Biomass Productivity" starting on p. 26; also see Figure 11). DEB stocks and MAI varied significantly across the globe. For example, in Sahelian countries like Mauritania and Niger, we find DEB stocks are less than 0.5 tons per hectare, while in countries hosting large tracts of moist tropical forest like Congo, Belize, Laos, or Gabon, stocks range from 150-200 tons per hectare (see p. 16 for a discussion of methods, p. 42 for a discussion of results and Appendix 4 for a summary of country-level biomass productivity).

Woodfuel Demand and Integration

To map the spatial distribution of energy-related wood demand throughout the tropics, we integrated population maps with global energy statistics from FAO and other UN agencies. These data were crosschecked against studies of local woodfuel consumption across the globe, gathered from an extensive review of published literature (see Appendix 6). As with woodfuel supplies, demand varied widely between countries and subnational administrative units. For example, we found that annual per capita wood demand for energy in rural regions ranged from less than 0.2 tons of wood in Bangladesh, Namibia and the Philippines, to over 5 tons per capita in Bhutan. Urban demand was lower than in rural regions and also varied considerably, ranging from low values of 0.03-0.04 tons per capita in Malaysia and Venezuela to high values exceeding one ton per capita in Kenya and Uganda (see p. 31 for a description of methods and p. 42 for a discussion of results).

We analyse the spatial relation between demand and supply potential to estimate where woodfuel harvesting is likely to take place. We assume that demand in rural areas is largely subsistence-based and dependent on harvesting of local resources, while demand in urban areas (and some densely populated rural areas) is satisfied by market-based provision. To satisfy their subsistence needs, we assume that rural woodfuel users gather wood from the surrounding landscape, including agricultural and grazing areas where wood resources are accessible but sparsely distributed.

Physical and Legal Accessibility

At a national level, the supply of woody biomass is not completely accessible due to legal and physical factors that limit exploitation. We account for physical accessibility by utilizing topographic and infrastructure features of the landscape (see the discussion on p. 29). Accordingly, large regions of remote tropical forest with high stocks and productivity (like the Amazon basin) were assumed to be inaccessible for woodfuel harvesting (see Figure 21). We also assume that protected areas are off-limits to certain types of exploitation (see p. 28 and Appendix 5 for a full explanation of both physical and legal accessibility). After identifying accessible areas based on these assessments, we defined the accessible MAI and subtracted competing uses such as industrial roundwood. The remaining MAI represents the potentially available woodfuel supply (AWS), which forms the basis of the supply/demand assessment and helps identify deficit regions.

Woodfuel deficit areas and Woodshed Analyses

The difference between woodfuel demand and AWS for each spatial unit defines whether a region experienced a surplus or deficit. We found that local deficit areas are neither widespread nor randomly distributed, but situated in particular – although occasionally extended – areas. Given its local nature, deficit areas are spatially correlated with woodfuel demand. We find that areas suffering localized deficits are concentrated in particular regions including parts of China, India and East Africa. “Hot spots” also appear in Pakistan, Southeast Asia, northeast Brazil, southern Guatemala, and several West African countries including Nigeria, Burkina Faso, Togo, The Gambia, and Senegal (see Figure 28 - Figure 30).

Densely populated rural areas, as well as urban centers, seldom meet their woodfuel needs from the nearby surrounding landscape and create areas with high deficits or large localized imbalances.

We assume this shortfall is fulfilled by marketed woodfuels, coming from more distant areas with sufficient biomass densities per areal unit to make woodfuels marketing economically feasible. These areas define the "woodshed" for those centers of demand (see Figure 31 - Figure 34).

Estimates of the fraction of Non Renewable Biomass (fNRB)

Both localized supply deficits and woodshed analyses are combined to estimate non-renewable woodfuel harvested (see the methodological discussion on p. 39). This is expressed in absolute terms (NRB) and as a fraction of total harvest (fNRB). We derive two estimates of fNRB: "minimum" and "expected". A best-case scenario leading to "minimum-fNRB" (mfNRB) was calculated under the assumption that wood is harvested in such a way that the renewable potential of each spatial unit is maximized (Figure 36 and Figure 37 show the results of our mfNRB estimations). In reality, areas used as sources of woodfuel are rarely managed in this way. Numerous interrelated factors contribute to sub-optimal management including insecure land tenure, uncertainty about sustainable yields, commercial interests, ambiguous regulations or corrupt regulatory agents, and poverty.

To model sub-optimal forest resource management, we make assumptions about the degree to which wood harvesting for energy purposes deviates from the optimal situation described above. Lacking site-specific data, we use FAO global statistics on forest areas under sustainable management within each country as a proxy for the probability that woodlands are managed sustainably. We assume that higher proportions of forest area under management increase the likelihood that woodfuel harvesting is carried out in a way that maximizes the sustainable woodfuel supply. Similarly, we assume that in countries with little forest management, harvesting does not follow this pattern. Instead, it is concentrated in more accessible areas, regardless of whether unexploited renewable increments exist elsewhere. As a result, biomass stocks in one place may be depleted even if slightly less accessible places remain unexploited. We call this second estimation the "expected-fNRB" (efNRB) and assume that it reflects a more realistic situation. Figure 38 and Figure 39 show the results of these expected NRB estimations. Aggregate national estimates of both mfNRB and efNRB can be seen in Table 6 and the results for each individual subnational administrative unit are given in Appendix 9.

There is a significant likelihood that FAO data on national forest management may not correlate well with sustainable harvesting practices at a local level. Nevertheless, such simplifications are necessary for global-level analyses. We hope that our national and local case studies as well as feedback from reviewers with expertise in particular countries can help us to refine these assumptions.

Woodfuel deficit "hot spots"

We find that even under optimal management scenarios, deficit areas occur (i.e. mfNRB are positive). From a forest management perspective, this means that wood resources are simply not sufficient to meet demand under current conditions. The most severe cases we find at the national level include Eritrea, Kenya, Haiti, Pakistan and Rwanda, each of which has a mfNRB value greater than 50%. At a subnational level, there are 51 distinct units in 17 countries where mfNRB exceeds 50%. While choosing a level of 50% is arbitrary, these areas might be considered "hotspots"

because, even under the most optimistic assumptions, the majority of accessible wood harvested for energy in these areas is unsustainable.

Interventions in woodfuel deficit "hotspots" should be oriented towards reducing woodfuel consumption with measures such as fuel-efficient cookstoves, fuel switching programs, and augmenting woody biomass supplies. In addition, for climate-related donors and investors, the mNRB could be considered as the most conservative value when estimating carbon offset benefits from an intervention project aimed at reducing woodfuel use. The mNRB estimates roughly coincide with local imbalances spatially, primarily because they are shown per administrative unit, which hides areal differences between local deficit areas (where consumption is taking place) and their overharvested surroundings (where most of the wood is coming from). However, these estimates should be regarded cautiously by smaller cookstove projects focusing on select-few communities within a specific administrative unit or units. Spatial variations in NRB values within each analysis unit may be significant.

Accounting for Land Use and Land Cover Change in fNRB estimates

Land Use and Land Cover Change (LULCC) is a complex process driven by many factors. Some factors, like agricultural expansion and demand for timber, are largely independent of woodfuel demand. However, even in these cases, the underlying relationships can be difficult to separate completely. While in some regions woody biomass resulting from deforestation is burned on site, or piled and allowed to decompose, by-products from LULCC in other regions are commonly used as woodfuels. In fact, woodfuel markets may even facilitate LULCC for agriculture as sales of wood or charcoal generate revenues that pay for part or all of the cost of land clearance. Thus, while some very large-scale LULCC occurs in regions that are largely inaccessible to woodfuel users like the Amazon and Congo basins, Indonesia, and Malaysia (as in Figure 21), other LULCC occurs in populated rural regions and very likely contributes to woodfuel supply.

Thus, it is important to account for the contribution of LULCC processes (both deforestation and afforestation) in woodfuel supply analyses. We integrated LULCC into our NRB assessments using FAO data on rates of forest change, FORMA data on the spatial distribution of LULCC, and estimates of accessibility that are described in detail in the main text (see the discussion in Appendix 7 starting on p. 114). Minimum and expected NRB estimates (i.e. mNRB and eNRB) were recalculated assuming the contribution of deforestation and afforestation occurring within the harvesting areas delineated through woodshed analysis.. In these areas, we assume that woody biomass generated by deforestation, being readily available, is used first, before new direct woodfuel harvesting takes place. (see Figure 35). The remaining demand, if any, was then used to estimate new mNRB and eNRB values.

Figure 36 - Figure 39 show the results of including by-products from LULCC processes on NRB estimations for various scenarios (minimum vs. expected and different plantation productivities). We estimate that in 11 countries, wood generated as a by-product of LULCC represents at least half of the country's wood harvested for energy (Belize, Botswana, Brunei Darussalam, Cameroon, Ecuador, Equatorial Guinea, Honduras, Nicaragua, Trinidad and Tobago, the Solomon Islands, and Timor-Leste). This is critical to carbon accounting and cookstove programs more generally, because

in countries where a significant portion of woodfuel is sourced from deforestation driven by other processes, it is unlikely that demand-side interventions like fuel-efficient cookstoves or fuel switching will have much impact on reducing deforestation. This assessment represents the first attempt to identify and quantify the woodfuel supplies that are linked to, and distinct from, deforestation driven by other processes.

Overview of regional results

In the following sections, we present regional results using the "expected" non-renewable biomass fractions (efNRB) under both LULCC scenarios described above. The main text and appendices also present results for mfNRB estimates.

Tropical Asia and China

We find that the majority of the woodfuel demand in tropical Asia and China is harvested renewably. Under non-optimal management, the proportion of woodfuels harvested sustainably is roughly 70% while the remaining 30% is non-renewable. Almost 3% of woodfuel demand is met through deforestation driven by other processes while 27% is met by non-renewable extraction that contributes to forest degradation. The results vary considerably between individual Asian countries. When by-products of LULCC are included in the assessment of NRB, efNRB ranges from a high value of 100% in the Solomon Islands and Timor-Leste where DEB supplied via deforestation can completely satisfy the nation's woodfuel demand, to values less than 20% in Vietnam, Myanmar, and Thailand.

If we do not consider by-products of deforestation, then the extreme cases of efNRB decline considerably and estimates of efNRB in other countries remain unchanged. Pakistan stands out with efNRB approaching 85% regardless of assumptions about LULCC. Nepal and Bangladesh show similar patterns, each with efNRB exceeding 50%. India and China, the region's largest woodfuel consumers, have efNRB values of 24 and 22% respectively and are also relatively unaffected by LULCC.

Latin America and the Caribbean

In Latin America and the Caribbean, the majority of woodfuel demand is also harvested renewably. Under non-optimal management, roughly 69% of the woodfuel harvest is sustainable, while the remaining 31% is harvested non-renewably. We estimate that 16% of the woodfuel demand is met via by-products from LULCC, which leaves roughly 15% met by non-renewable extraction unrelated to LULCC. If we consider individual countries and account for by-products of LULCC, we find efNRB ranges from nearly 100% in Belize and Ecuador, where by-products from LULCC exceed woodfuel demand, to below 10% in Guyana, Cuba and Uruguay. If we do not consider by-products of LULCC, then, as in Asia, efNRB declines considerably in the most extreme cases. There are also marked declines in other cases, for example Honduras, Nicaragua, Venezuela and Bolivia. However, the largest consumer in the region, Brazil, shows little change because most LULCC occurs far from centers of woodfuel consumption. The next largest consumers, Mexico and Guatemala, are also relatively unaffected by assumptions about LULCC by-products. In Haiti, efNRB is 67%, which makes the island LAC's only NRB "hotspot".

Sub-Saharan Africa

As in other regions, the majority of woodfuel demand in SSA is harvested renewably. Under non-optimal management, the regional situation shows that 58% of woodfuel is harvested sustainably and 42% is harvested non-sustainably. The fraction made accessible through LULCC processes is 15%, leaving 27% of demand satisfied by unsustainable harvesting. At the country level, the efNRB values span a wide range. With by-products from LULCC included, Equatorial Guinea and Botswana have rates of efNRB of 75-90%. At the low end, efNRB in Swaziland and Gabon is below 3%. However, when we remove the contribution from by-products of LULCC, efNRB in Equatorial Guinea and Botswana drop considerably, leaving Mauritania, Eritrea, Rwanda, Kenya, Ethiopia, Uganda, Burundi, Lesotho, Somalia and Nigeria with efNRB above 50%.

Future research

We have identified two primary lines of inquiry for future research on the pan-tropical database: an uncertainty analysis and validation of estimates. As we discuss in the main text (p. 25) and in Appendix 3, many of the parameters used to construct the model are not presented with statistical errors. These parameters are often picked from one or two references, making it impossible to calculate confidence intervals, which could then be propagated along the entire analysis. One way to cope with this is to conduct a sensitivity analysis to test how various input parameters influence the final estimates in order to identify the most influential factors. This is done by varying one parameter randomly while others are held constant and examining how the final results are affected. Once the most influential parameters are identified, these data can be treated more carefully. For example, we could conduct a Monte Carlo analysis or utilize "Bootstrapping" techniques. These methods can be applied to uncertain input parameters in order to produce outputs with upper and lower bounds on uncertainty that can be propagated throughout the full spatial assessment.

There are no obvious ways to validate a global assessment of this nature. Multiple drivers of forest degradation and LULCC coincide in space and time. We are carrying out a series of local-level analyses that will permit a comparison of our global assessment with a few select locations, but these will not be generalizable. Nevertheless, there are some analytic approaches that can throw light on the consistency of our results. If we assume that NRB estimates in 2009 are not substantially different from previous years, then we may select a small sample of administrative units showing acute deficits and generous surpluses and use them to compare changes in vegetation cover within forested areas (for example, using Vegetation Continuous Field (VCF) from NASA's MODIS instrument) over the past 10 years. If our assessment is accurate, then areas with high NRB estimates should consistently show more pronounced decreases in VCF. It is important to stress that such a comparison will validate the consistency of NRB estimates between administrative units, not the actual value of NRB estimates.

Introduction

The present report summarizes the progress and results of a Tier I Pan-tropical analysis carried out in the framework of the project "Geospatial Analysis and Modeling of Non-Renewable Biomass: WISDOM and Beyond." It describes a new pan-tropical assessment of woodfuel supply and demand using the Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM) methodology pioneered by Drigo and Masera (2006).

The report is structured in the following manner. We describe the scope of the Tier I assessment and describe the WISDOM methodology, which involves a sequence of steps including: 1) development of a Supply module, 2) development of Demand and Integration modules; 3) assessment of physical and legal accessibility; 4) identification of local deficit zones and "Woodshed" analyses; and 5) estimations of minimum and expected values of non-renewable biomass. The main text provides overviews of each step in the methodology, with technical details provided in the Appendices.

We then provide an overview of the results of our analysis. The results are presented in several ways. First we examine the results of each input module (Supply, Demand, and Integration) and this is followed by a review of our estimations of non-renewable biomass (NRB), which we present in absolute and relative terms. We provide a series of global/pan-tropical maps sowing inputs as well as outputs of the assessment (pages 44 - 67). The final NRB estimations are also presented in tabular formats with country-level data appearing in the main text and sub-national data appearing in Appendix 9.

We follow the global results with an overview, highlighting notable findings for each main region that was analyzed. This section also contains sub-national briefings for India, China, and Brazil. Finally, we discuss some of the ramifications of our results and describe the next steps we intend to take to further refine our analysis.

This report describes one major component of a broader effort to better understand the sustainability and supply/demand dynamics of woodfuel exploitation. In addition to the global assessment, we are also carrying out a series of case studies that will be smaller in geographic scope, but permit the inclusion of more detailed data. Three cases, which we refer to as a Tier II approach, follow the WISDOM methodology at national or sub-national levels. These assessments will be carried out in Honduras, Kenya, and the Indian state of Karnataka. Three additional cases will be carried out at a "project-level", which we refer to as our Tier III assessments. At the project-level, we are able to consider the actions of individuals or small groups of woodfuel users and more accurately simulate both the impacts that harvesting has on the landscape, as well as the ways in which people might change their behavior as the landscape changes.

As our Tier II and Tier III case studies progress at national and local levels, additional knowledge will become available concerning woodfuel supply/demand mechanisms and adaptation strategies, which may justify revising some of the assumptions made in Tier I. Similarly, we expect to get feedback from expert reviewers who may suggest changes in assumptions or sources of data. Thus, the results here presented in this report should be considered preliminary and treated accordingly.

Tier 1 Assessment: A Pan-tropical WISDOM and fNRB Analysis

In the Tier 1 analysis, we developed a spatially explicit global dataset of woodfuel demand, accessible supply potential and estimates of non-renewable biomass (NRB) at subnational administrative levels for tropical countries including China. The analysis is based primarily on available global datasets and international statistics.

In this report, we describe the methodology of integrating globally available cartographic and statistical data related to demand and supply of woody biomass for energy use, and present the results as thematic maps and national/sub-national level statistics.

The Tier I spatial and statistical dataset provides a globally consistent baseline for identifying priority areas of intervention under a variety of perspectives such as NRB values, "high risk areas" of forest degradation, and vulnerable populations suffering from critical shortages of subsistence energy.

Methodology

Definition of Tier I study area: Pan-tropical countries

The study includes 90 countries[1] divided into 1482 sub-national administrative units (Figure 1).

- **Latin America**: including Mexico, Central America, the islands of the Greater Antilles, and all of South America.
- **Sub-Saharan Africa**: including all African countries except those facing the Mediterranean Sea and Western Sahara.
- **Tropical Asia**: including the Indian sub-continent, Southeast Asia, Papua New Guinea and the Solomon Islands, and all of China.

Methodology overview

The flowcharts shown in Figures 2 to 6 present an overview of analytical phases: 1) Supply module, 2) Demand and integration modules; 3) physical and legal accessibility; 4) Woodshed analysis; and 5) NRB calculations. These phases are described in more detail in subsequent sections.

[1] Given the scope and scale of analysis, several smaller countries are excluded from the selection. These include: the counties making up the Lesser Antilles; Capo Verde, Sao Tome and Principe; Comoros; Mayotte; Maldives; Vanuatu; Fiji and several other small island states.

Figure 1: Countries included in the analysis showing administrative units

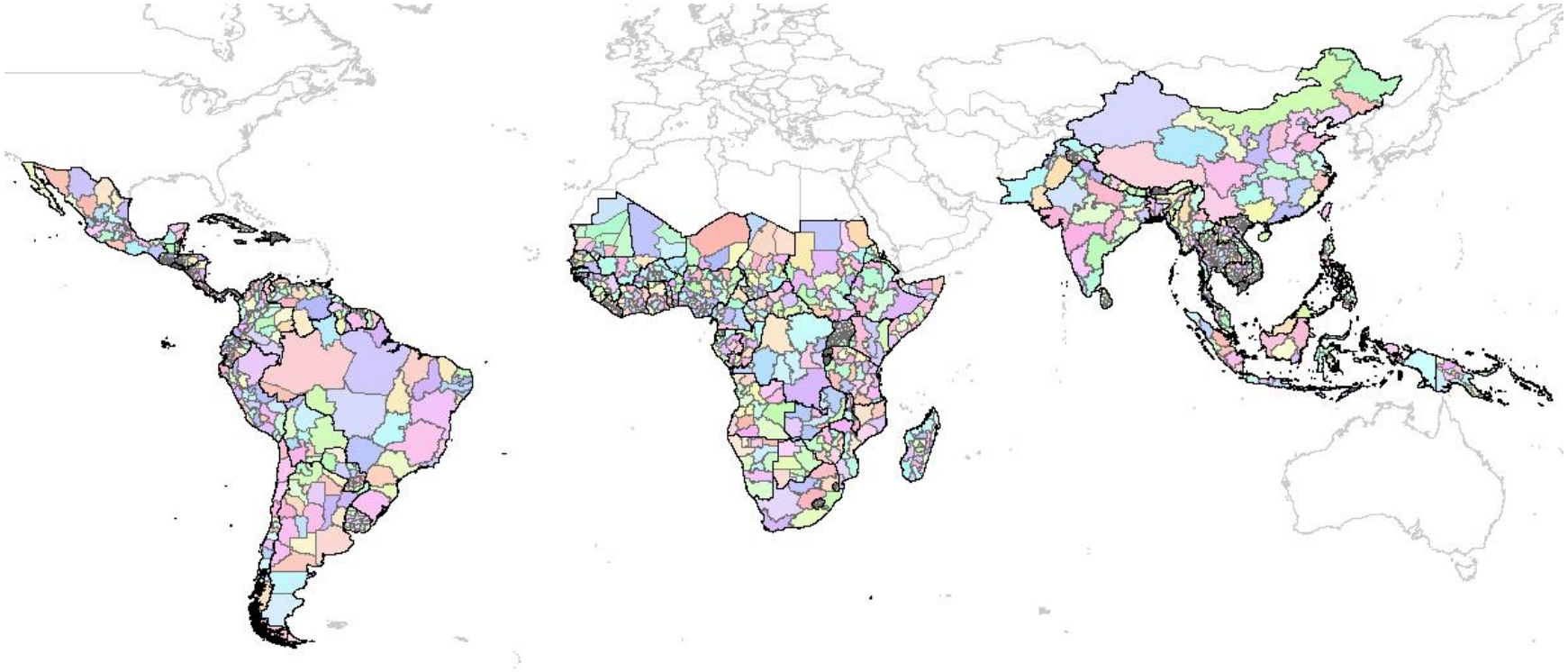


Figure 2: Flowchart of the pan-tropical Supply Module

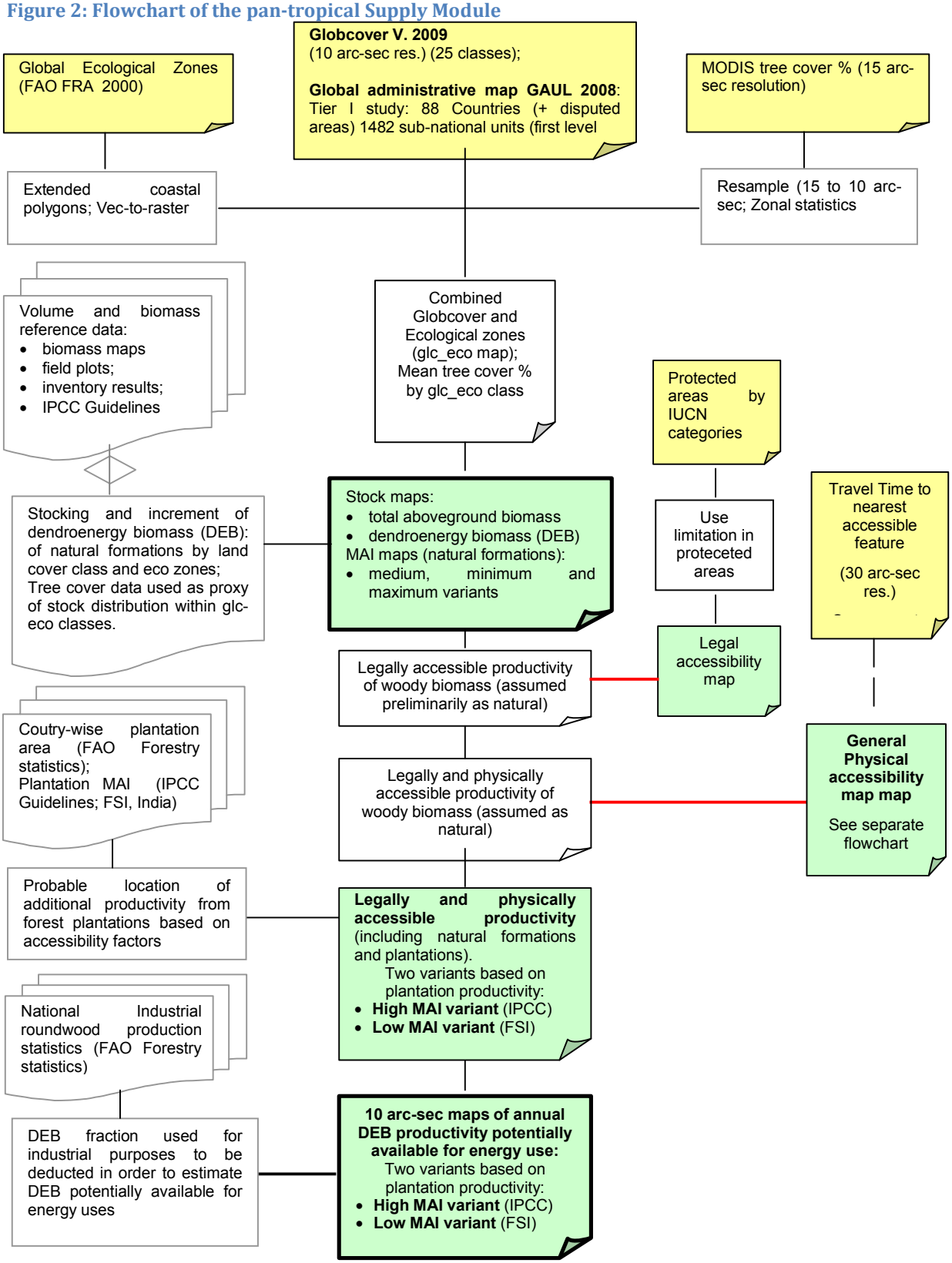


Figure 3: Flowchart of the Pan-tropical Demand and Integration Modules

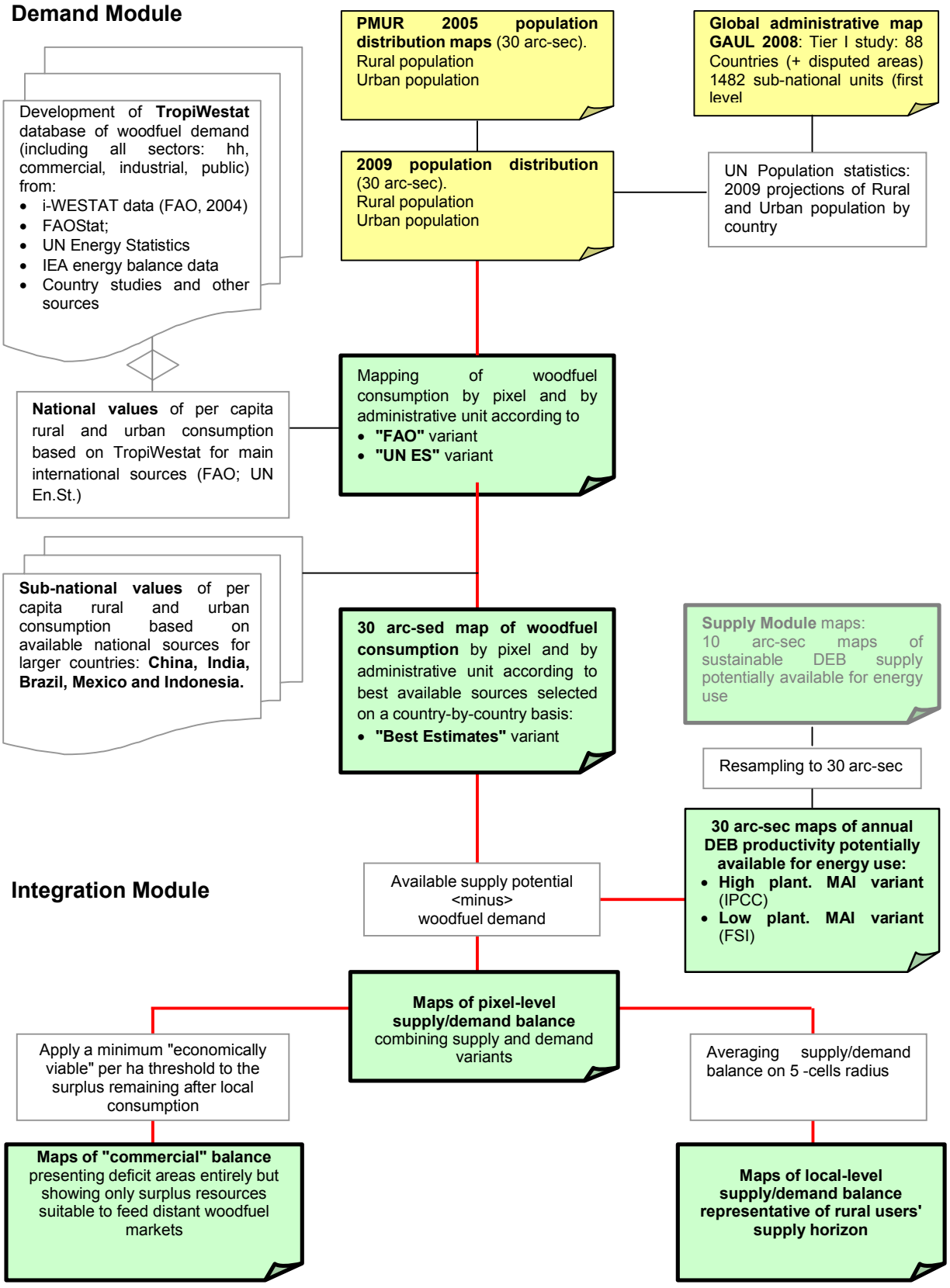


Figure 4: Flowchart of physical accessibility analysis. Two maps are produced: the General Physical Accessibility map, qualifying each map cell according to the nearest accessible feature, and the Friction map, to be used for the analysis of accessibility of selected locations.

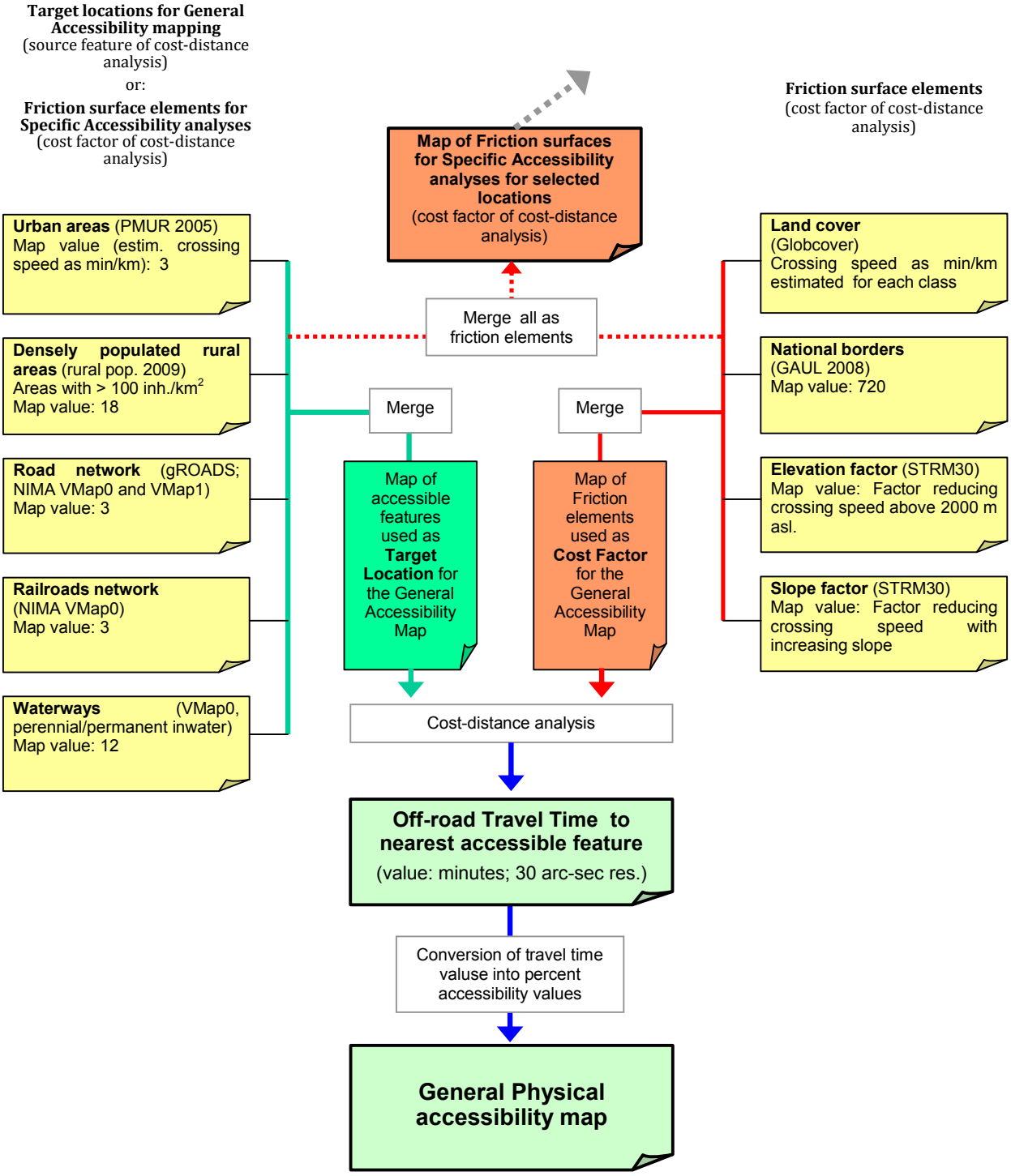


Figure 5: Flowchart of Woodshed Analysis

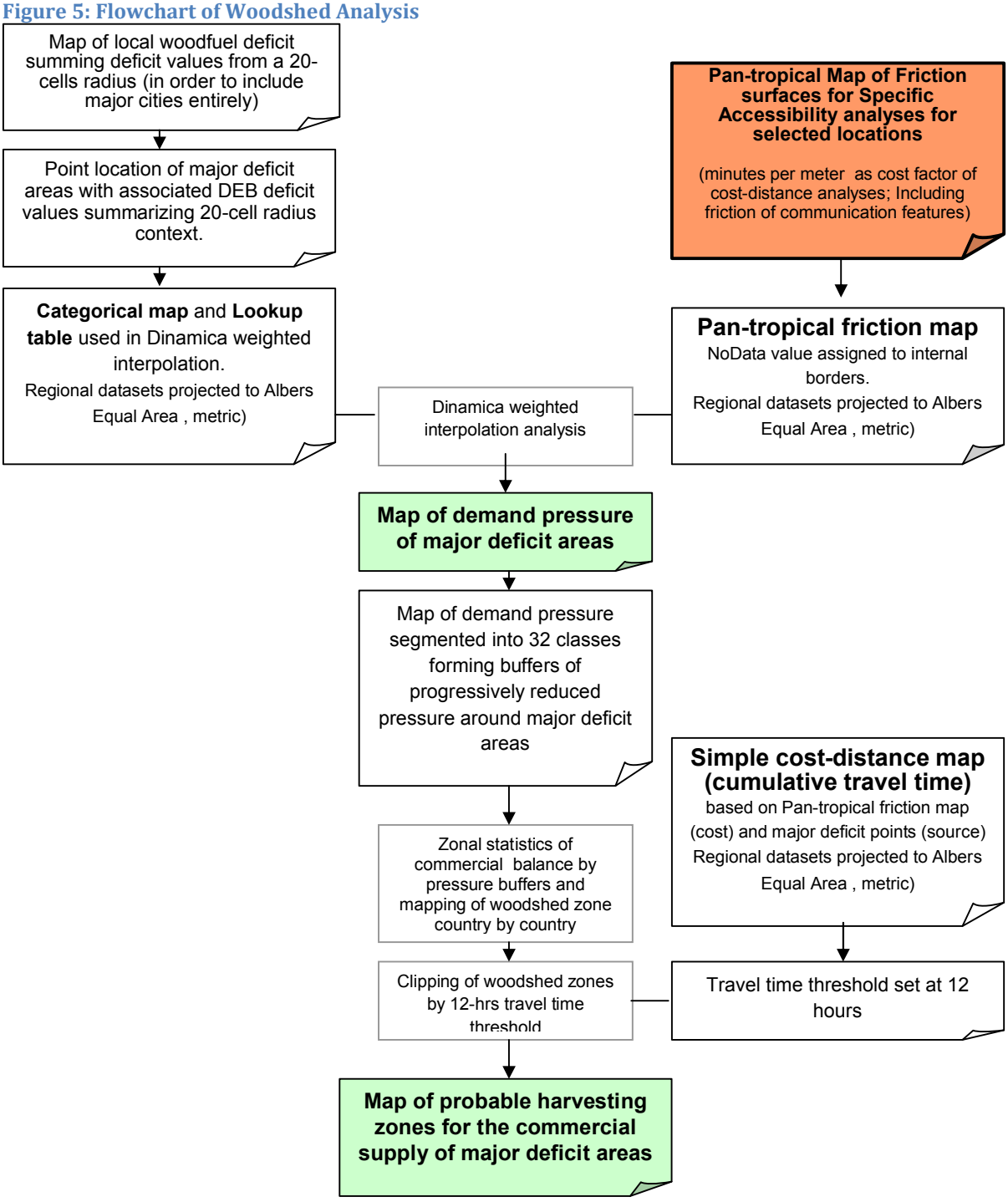
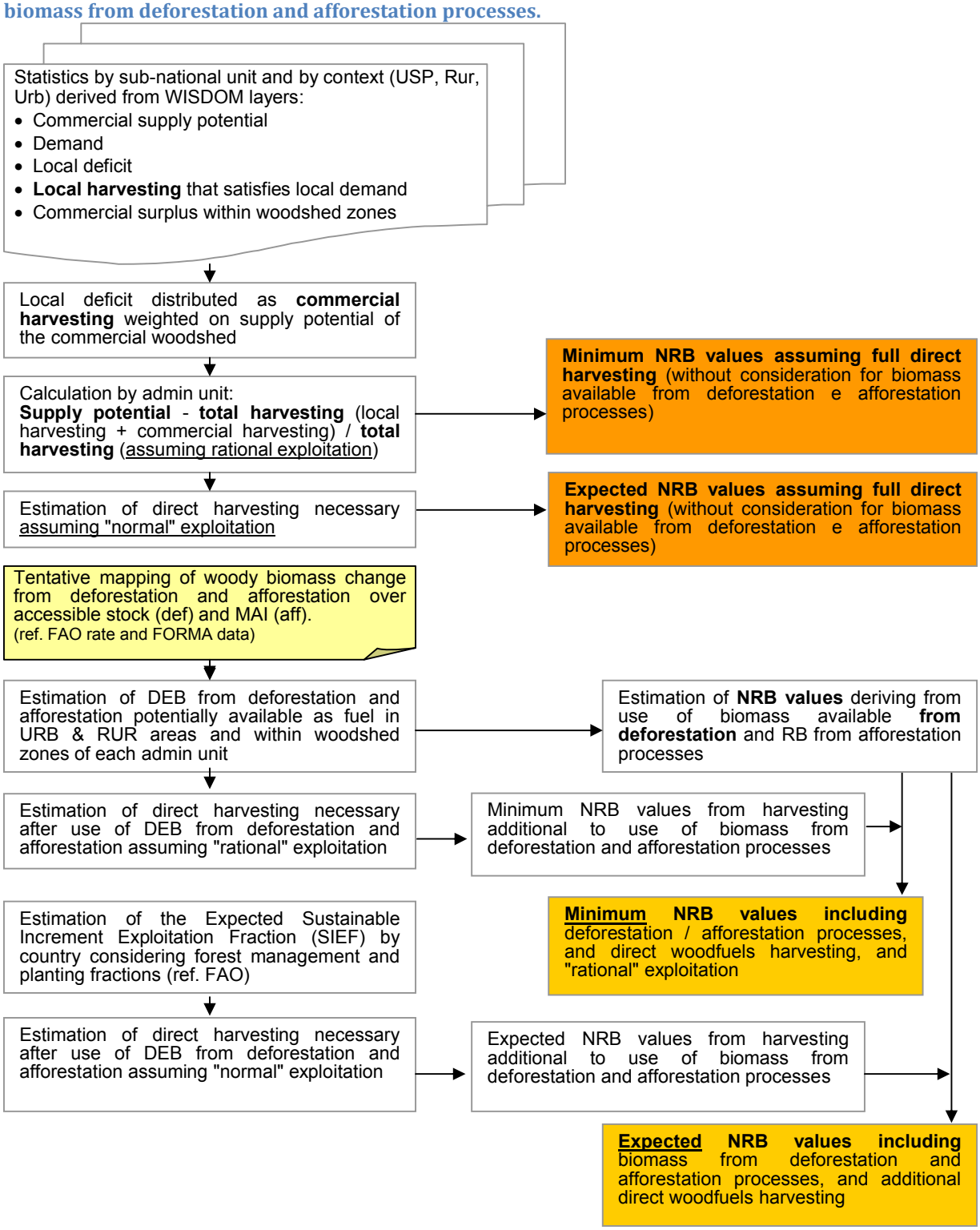


Figure 6: Flowchart of NRB estimation procedure. Two estimates are produced: (i) assuming woodfuel production entirely through direct harvesting and (ii) including the expected contribution of woody biomass from deforestation and afforestation processes.



Supply Module

Pan-tropical WISDOM Base Supply Module

The growth rate and total accumulation (i.e. stock) of woody biomass suitable for use as fuelwood and charcoal is related to the type of vegetation and climatic or ecological zone present. The biomass stock and growth parameters were assigned to categories derived from two global datasets: 1) land cover classes from the GlobCover map (ESA 2011) and shown in Table 1) ecological data derived from the Global Ecological Zone Map (FAO 2011), which describes 20 broad ecological zones, shown in Table 2. Combining GlobCover classes and ecological zones results in 355 unique land classifications. It is unrealistic to estimate biomass parameters for each of the 355 unique classifications. However, several GlobCover classes are variations of crown cover densities or combinations of other individual land cover classes. To reduce the number of land cover classes, we defined a smaller number of pure classes, called "master-classes," which we linked to available data on biomass stock and growth (details are provided in Appendix 1). This allowed us to define the forest categories that are associated with extant forest inventories more precisely. The parameters of stock and growth associated with the master-classes were then calculated for all other land cover classes on the basis of crown cover densities and class combinations[2].

The collection of biomass stock and growth data was done by master-class, rather than by GlobCover class, in each ecological zone of each region of the Tier I study area. Table 3 shows the distribution of Globcover classes and master-classes by region and ecological zones.

[2] For example, the stock value of the Globcover class "Mosaic cropland (50-70%) / vegetation (grassland/ shrubland/ forest) (20-50%)" for a given ecological zone within a given region is based on the stock value of the corresponding masterclass C, "Rainfed cropland", for 60% (midpoint 50-70), plus, for the remaining 40%, the stock averaging masterclasses G,Grassland, S, Shrublands, and that of the class "undefined forest", in turn averaging masterclasses B1 and B2.

Table 1: GlobCover 2009 Legend and master-classes

Code	GlobCover Class Legend	Master-class
11	Post-flooding or irrigated croplands (or aquatic)	
14	Rainfed croplands	C
20	Mosaic cropland (50-70%) / vegetation (grassland/shrubland/forest) (20-50%)	
30	Mosaic vegetation (grassland/shrubland/forest) (50-70%) / cropland (20-50%)	
40	Closed to open (>15%) broadleaved evergreen or semi-deciduous forest (>5m)	B1
41	Closed (>40%) broadleaved evergreen and/or semi-deciduous forest	B1
42	Open (15-40%) broadleaved evergreen and/or semi-deciduous forest with emergents	B1
50	Closed (>40%) broadleaved deciduous forest (>5m)	B2
60	Open (15-40%) broadleaved deciduous forest/woodland (>5m)	B2
70	Closed (>40%) needle-eaved evergreen forest (>5m)	N1
90	Open (15-40%) needle-eaved deciduous or evergreen forest (>5m)	N2
100	Closed to open (>15%) mixed broadleaved and needleleaved forest (>5m)	B-N
110	Mosaic forest or shrubland (50-70%) / grassland (20-50%)	
120	Mosaic grassland (50-70%) / forest or shrubland (20-50%)	
130	Closed to open (>15%) (broadleaved or needleleaved, evergreen or deciduous) shrubland (<5m)	S
140	Closed to open (>15%) herbaceous vegetation (grassland, savannas or lichens/mosses)	G
150	Sparse (<15%) vegetation	
160	Closed to open (>15%) broadleaved forest regularly flooded (semi-permanently or temporarily)-Fresh or brackish water	
170	Closed (>40%) broadleaved forest or shrubland permanently flooded-Saline or brackish water	B5
180	Closed to open (>15%) grassland or woody vegetation on regularly flooded or waterlogged soil-Fresh, brackish or saline water	
190	Artificial surfaces and associated areas (Urban areas >50%)	U
200	Bare areas	
210	Water bodies	
220	Permanent snow and ice	
230	No data (burnt areas, clouds,…)	

Table 2: Global Ecological Zones

GEZ code	GEZ_CLASS	GEZ_TERM
11	TAr	Tropical rainforest
12	TAwa	Tropical moist deciduous forest
13	TAwb	Tropical dry forest
14	TBSh	Tropical shrubland
15	TBWh	Tropical desert
16	TM	Tropical mountain system
21	SCf	Subtropical humid forest
22	SCs	Subtropical dry forest
23	SBSh	Subtropical steppe
24	SBWh	Subtropical desert
25	SM	Subtropical mountain system

GEZ code	GEZ_CLASS	GEZ_TERM
31	TeDo	Temperate oceanic forest
32	TeDc	Temperate continental forest
33	TeBSk	Temperate steppe
34	TeBWk	Temperate desert
35	TeM	Temperate mountain system
41	Ba	Boreal coniferous forest
42	Bb	Boreal tundra woodland
43	BM	Boreal mountain system
50	P	Polar

Table 3: Area of Globcover classes and master-classes by region and by Global Ecological Zones. Class areas in '000 hectares. (see Table 2 for GEZ coding)

		Global Ecological Zones																
Reg (Masterclass)	**Glc 09**	**11**	**12**	**13**	**14**	**15**	**16**	**21**	**22**	**23**	**24**	**25**	**31&32**	**33**	**34**	**35**	**41&43**	**Total**
Africa	11	0	1		1,718	16	0											1,735
(C)	14	928	6,121	18,622	14,643	869	3,292	244	371			42						45,132
	20	4,588	30,507	38,985	24,503	817	19,437	33	132			14						119,014
	30	92,007	32,810	57,593	69,614	2,113	23,485	2,145	869			13,669						294,307
(B1)	40	40,624	8,924	2,184	400	2	4,638	84	12			50						56,916
(B1)	41	130,838	375				5,730											136,943
(B1)	42	0	1				1											2
(B2)	50	18,534	69,133	30,537	2,320	121	5,763	1,220	976			747						129,351
(B2)	60	37,547	146,593	55,012	5,920	1,979	9,657	1,991	2,559			2,126						263,384
(N1)	70	5	16	0	1		2											24
(N2)	90	162	909	2,191	154	0	252	79	24			28						3,798
(B-N)	100	3	19	6	38	0	2	0	0									68
	110	4,219	22,630	34,881	66,196	5,448	13,492	419	508			1,763						149,555
	120	3,774	18,844	1,871	10,617	1,297	4,936	81	51			76						41,547
(S)	130	24,831	102,865	72,603	13,978	285	17,043	841	447			1,177						234,070
(G)	140	2,641	15,785	41,478	202,352	51,396	8,705	1,135	1,820			10,455						335,767
	150	13	100	762	38,296	20,360	1,543	66	171			31						61,342
	160	33,925	1,436	572	225	0	180											36,339
(B5)	170	994	859	40	17	0	2											1,912
	180	86	2,464	4,847	1,349	43	7											8,796
	190	310	184	415	348	21	126	57	84			398						1,944
	200	77	225	522	142,569	308,179	8,718	13	7			5						460,315
	210	8,846	10,242	4,720	2,770	483	815	107	46			146						28,176
	220					0	0		0									0
Africa Tot		**404,953**	**471,043**	**367,839**	**598,029**	**393,431**	**127,824**	**8,515**	**8,077**			**30,725**						**2,410,436**

Table 3 cont.

		Global Ecological Zones																
Reg (Masterclass)	**Glc 09**	**11**	**12**	**13**	**14**	**15**	**16**	**21**	**22**	**23**	**24**	**25**	**31&32**	**33**	**34**	**35**	**41&43**	**Total**
America																		
(C)	14	11,375	43,162	15,872	160	71	4,180	27,550	427	942	1,181	225	773	332		155		106,406
	20	31,396	75,803	25,860	266	36	13,225	23,470	1,360	1,230	370	399	627	343		88		174,473
	30	24,379	86,840	31,482	708	57	9,735	33,448	2,371	7,048	3,742	2,291	495	657		81		203,331
(B1)	40	81,113	89,466	18,383	591	1	23,560	13,459	2,446	128	2	724	9,599	1,093		1,516		242,083
(B1)	41	487,664	27,737				38,331											553,732
(B1)	42	1,253	3,888				927											6,068
(B2)	50	2,582	34,967	35,039	14	5	6,188	2,882	489	1,014	96	1,746	536	436		144		86,135
(B2)	60	89	1,965	2,182	0	0	290	1	3	1		1	312	6		47		4,896
(N1)	70	149	3,070	3,458			7,143		2	3,726	3,746	8,921						30,213
(N2)	90		0															0
(B-N)	100	51	593	199			1,211	0	24	161	123	853	278	2		24		3,518
	110	2,253	7,743	6,528	554	782	10,611	1,128	166	13,962	6,159	4,253	61	9,574		131		63,905
	120	929	4,278	1,641	428	647	7,599	238	121	11,813	3,841	3,426	76	5,900		145		41,082
(S)	130	11,746	59,859	38,646	1,398	1,143	34,269	12,817	2,020	30,166	39,871	6,360	5,374	11,105		1,870		256,642
(G)	140	4,608	29,806	6,990	708	1	11,987	2	2	6,983	3,582	2,796	1,851	49		256		69,622
	150	132	227	369	1,158	715	13,381	147	130	7,534		3,418	302	13,856		468		41,838
	160	22,711	4,971	28	17	1	252			0	0							27,981
(B5)	170	408	859	190	27		8	5		0	26							1,523
	180	8,868	11,754	30	3	1	1,487	1,794	2	3		0	120	24		22		24,109
	190	267	261	108	18	70	182	121	26	100	19	3		9				1,183
	200	459	242	658	4,056	9,844	27,078	160	285	7,818	33	7,728	142	5,236		228		63,965
	210	11,388	6,921	2,535	163	168	1,226	2,148	89	707	386	60	3,241	866		243		30,143
	220	3	0	0	0	0	826	0	2	12	1	152	1,585	24		2,190		4,798
America Tot		**703,826**	**494,410**	**190,197**	**10,268**	**13,543**	**213,697**	**119,370**	**9,966**	**93,348**	**63,179**	**43,356**	**25,373**	**49,511**		**7,607**		**2,037,649**

Table 3 cont.

		Global Ecological Zones																
Reg (Masterclass)	**Glc 09**	**11**	**12**	**13**	**14**	**15**	**16**	**21**	**22**	**23**	**24**	**25**	**31&32**	**33**	**34**	**35**	**41&43**	**Total**
Asia	11	9,889	27,328	51,118	49,302	17,401	319	16,741		1,735	0	4,920	10,976	1,160	8,627	7,487		207,002
(C)	14	47,306	24,202	38,235	29,791	253	3,854	41,749		1,758		23,119	24,549	8,406	236	44,847	13	288,316
	20	72,595	16,641	24,389	25,507	2,288	6,204	9,701		1,536	0	10,945	5,603	7,638	996	16,528	35	200,607
	30	13,077	7,750	4,688	5,260	5,564	2,068	19,074		1,732	42	14,599	5,178	12,190	2,900	29,642	270	124,033
(B1)	40	62,893	22,371	6,584	614	0	33,638	18,335		11		4,826	46	0	2	19		149,340
(B1)	41	79,492																79,492
(B2)	50	463	2,847	3,237	455	0	911	736		21		854	6,044	24	0	160	27	15,779
(B2)	60	432	3,715	1,166	7		1,419	5				816						7,560
(N1)	70	1,625	824	186	17	0	6,065	28,135		109		24,464	302	36	37	7,293		69,091
(N2)	90												11,198	1,880	5	764	12,340	26,187
(B-N)	100	2,073	1,498	572	138	0	730	15,708		52		5,611	2,741	540	74	4,324	546	34,607
	110	401	46	14	4		81	445		17		2,570	8,772	617	32	2,863	1,419	17,280
	120	28	15	6	98	6,851	205	1,260		307	14	2,934	3,118	251	726	4,020	550	20,382
(S)	130	25,186	27,802	8,836	867	4	15,865	20,902		72		8,641	104	1	1	731		109,013
(G)	140	608	834	925	1,713	2,711	76	1,117		945	471	33,963	1,976	6,083	3,011	60,293	363	115,088
	150	1	1	11	30	682	0	3		295	6	589	8,343	17,130	1,837	4,200	86	33,216
	160	12,749	246	230	1		37	18										13,281
(B5)	170	3,015	750	83	3	45		2				0	0		0	0		3,900
	180		2	2	5	711		18				0	4	3	2	19		766
	190	630	623	693	902	176	55	2,172		63		144	2,674	332	259	747	30	9,503
	200	40	162	187	645	22,450	7	81		14,891	5,310	23,232	1,034	6,595	132,691	97,165	3	304,493
	210	6,170	2,098	2,137	852	403	211	3,323		58		1,567	1,689	1,013	476	3,131	27	23,156
	220	0	1	1	2	2	44	4		1		10,872	23	6	21	7,290		18,267
Asia Tot		**338,672**	**139,755**	**143,300**	**116,213**	**59,541**	**71,790**	**179,529**		**23,603**	**5,844**	**174,666**	**94,373**	**63,905**	**151,935**	**291,523**	**15,710**	**1,870,358**
Tier I Tot		**1,447,451**	**1,105,208**	**701,336**	**724,509**	**466,514**	**413,311**	**307,414**	**18,043**	**116,950**	**69,023**	**248,747**	**119,746**	**113,416**	**151,935**	**299,130**	**15,710**	**6,318,443**

Collection and harmonization of biomass reference data for each eco-region

The amount of available empirical data on global biomass stocks is limited and unevenly distributed. Although volume data from forest inventories is slightly more prevalent, statistically representative global samples do not exist. In consideration of this major constraint and of the global scope of the assessment, which precludes direct collection of new data, a hybrid approach was utilized to assign stock and growth values to each eco-region. This approach offers some flexibility in utilizing information from a variety of sources.

Three broad categories of source information are considered:

1. Geo-referenced plot data from forest inventories and field surveys
2. Forest inventory results with adequate location details (i.e. maps of inventory strata) and description of forest/vegetation type
3. Empirically-derived maps of biomass distribution based on field measurements

Appendix 1 lists all sources of data utilized for the assessment.

Geo-referenced field plot data

This dataset includes a mix of global biomass datasets as well as a number of geo-referenced field observations of biomass stock and/or productivity linked to specific forest/vegetation types or Globcover and ecological zone classes. However, the data presented in these sources do not necessarily represent biomass available for energy use. Thus, adjustments are needed to estimate the quantity of dendroenergy biomass (DEB which represents the fraction of aboveground biomass (AGB) suitable and commonly used for firewood or charcoal. DEB is comprised of AGB minus twigs, leaves and stump. The values of AGB are converted to/from DEB by reduction/expansion factors.[3]

In order to reduce the potential bias from the tendency of surveyed resources to over-represent dense and productive stands while neglecting lower density stands (Phillips, Malhi et al. 2002), a "normalization" factor was applied to the (limited) number of field points reporting both stand values (trees/ha) and stock values (300 points in tropical America and Asia, none in Africa). The normalization factor is based on the relation between the original stand density and the normal density[4].

[3] From AGB to DEB (exclusion of twigs, leaves and stumps): 0.80 for AGB stock < 46.3 od t and 0.85 for DE stock >= 46.3 odt (S. Brown, personal communication, and Ketterings, Coe et al. 2001).

[4] Stands with >1500 trees/ha are considered as "closed" (cc>40%; midpoint 70%) while stands with < 300 trees are classified as "open" (cc 15-40%; midpoint 27.5%), unless > 80 years of age. All intermediate values are considered "close to open" (cc >15%; midpoint 57.5%). In practice, when used to estimate the stock of a GlobCover class "closed to open" (midpoint 57.5%), the original stock values of the "closed" field plots are decreased (57.5/70) and that of the "open" field plots are increased (57.5/27.5).

Table 4: Distribution of available field observations by region, broad vegetation category (Globcover Master_classes) and GEZ. (see Table 2 for coding)

	Global Ecological Zones														
Master-class	**11**	**12**	**13**	**14**	**15**	**16**	**21**	**22**	**23**	**24**	**25**	**31**	**32&33**	**35**	**Tot**
Africa															
B1	2521	51	33			11	1	1	1	2					2621
B2	51	428	397	18	1	24	1								920
N1		26	30												56
N2															
B-N		9	8			1									18
B5		24	8	2											34
S	13	51	236	27		3	2			6					338
Tot Africa	**2585**	**589**	**712**	**47**	**1**	**39**	**4**	**1**	**1**	**8**					**3987**
Latin America															
B1															
B2											14	1	5		20
N1							10			1	47		20	4	82
N2															
B-N															
B5															
S															
Tot America							**10**			**1**	**61**	**1**	**25**	**4**	**102**
Tropical Asia and China															
B1							1				2				3
B2			10				24			1	678	168	106	284	1271
N1							64	11	6	84	1231	279	220	729	2624
N2							2				74	3	51	220	350
B-N															
B5															
S															
Tot Asia			**10**				**91**	**11**	**6**	**85**	**1985**	**450**	**377**	**1233**	**4248**

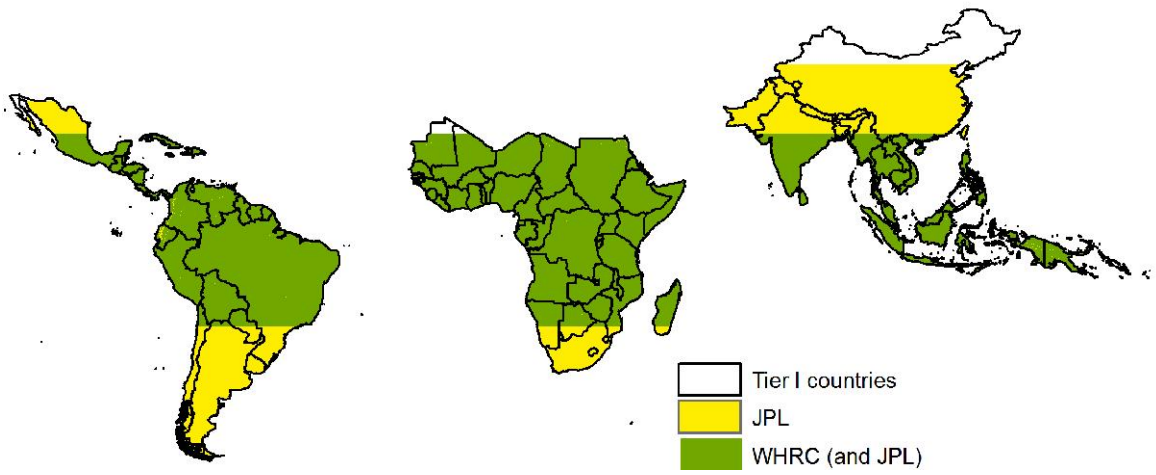
Maps of biomass distribution

Recent pan-tropical mapping efforts of AGB with relatively high spatial resolution have proven indispensable in developing the databases used in this assessment. Two studies, covering nearly all of the study area, include a carbon-density map at 500m resolution from the Woods Hole Research Center (WHRC; Baccini, Goetz et al. 2012) and a map of tropical forest carbon stocks at 1000m resolution from NASA's Jet Propulsion Lab (JPL; Saatchi, Harris et al. 2011). Figure 7 shows areas covered by each dataset. We compare these two widely cited sources of data to understand their suitability for our particular application.

When the WHRC and JPL biomass distributions are compared, we find the two biomass maps show an overall substantial agreement in wet tropical zones but significant disagreement in drier zones. This may be explained by the fact that both studies focused their field work primarily in humid tropical areas. Drier zones are generally characterized by large intra-annual variations in leaf area index (LAI) and greenness, which make remotely sensed AGB estimations more sensitive to seasonality and subject to greater uncertainty.

Indeed, comparing the two datasets with local field surveys of semi-arid and arid regions such as forest inventories of Mozambique[5], Sudan[6], and Chad[7], we find both JPL and WHRC significantly overestimate biomass stocks. Similarly, the two datasets report relatively high biomass stocks in farmlands (Globcover classes 11, 14 and several mixed classes;e.g. NE Philippines, as visible from Google Earth). In other areas, however, it appears the GlobCover map misses the presence of trees on farmlands, for example trees on farms in Bangladesh (Altrell, Saket et al. 2007).

Figure 7: Tier I study area and coverage of JPL and WHRC biomass maps



[5] Direcção Nacional de Terras e Florestas, Ministério de Agricultura, Moçambique. 2008. National forest inventory. Project "Integrated Assessment of Mozambican Forests".

[6] Forests National Corporation (FNC) and FAO. 1998. National Forest Inventory for the Sudan.

[7] Forster Hubert et Babacar Matar. Juin 2002. Résultats d'Inventaire Forestier Général dans le Bassin de N'Djamena. Projet Energie Domestique (PED). AEDE et ECO-Consult- Agritchad.

In Asia, shrublands (GlobCover class 130) include areas of mixed land use with relatively high biomass (including areas under swidden agriculture or shifting cultivation), low secondary forests, and bamboo forests. For these land cover classes, the high values of biomass reported in WHRC and JPL datasets appear to coincide (e.g. see GlobCover class 130 in GEZ 11 in SW India; and in Khamti, NW Sagaing, Myanmar; class 130 in GEZ 12 in Mawlaic, Sagaing, Myanmar; and in Thanin Tahi, SE Myanmar).

In all cases, it is evident that more field data from mixed land use and lower biomass density areas is needed in order to validate and adjust the WHRC and JPL maps.

Dendroenergy biomass stock estimates

Both the inconsistencies between the JPL and WHRC datasets and the differential availabilities of field assessments justified taking a regional approach for Africa, Latin America and Asia. In areas characterized by lower biomass stocks such as dry forests, mixed land uses and farming areas, average DEB stocks for each master-class, ecological zone, and region were estimated by utilizing available inventory data from a range of sources (see Appendix 1). In areas of moist forest, the average of the WHRC and JPL values was used to represent the AGB stock of each master-class (subsequently converted to DEB by deducting leaves, twigs and stump biomass as described above).

In order to distribute DEB stocks within each regional GlobCover masterclass, we utilized the tree cover percent (TC%) from Hansen and colleagues' VCF dataset (Hansen, DeFries et al. 2003). From VCF data, the mean tree cover percent of each regional GlobCover masterclass was calculated. The average DEB stock was then allocated to the average tree cover percent and the final pixel-level DEB stock value was calculated as follows:

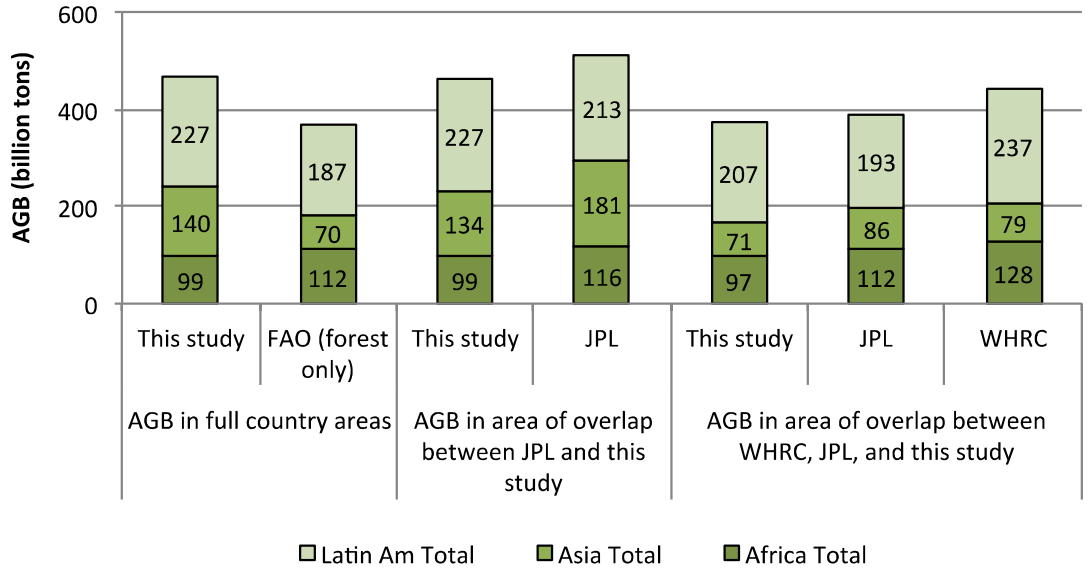
$$DEB_{i,j} = \overline{DEB}_j \left(\frac{TC\%_i}{\overline{TC\%}_j} \right) \quad (1)$$

Where $DEB_{i,j}$ is the stock of DEB of pixel i in GlobCover masterclass j, $\overline{DEB}_j$ is the average stock of DEB in GlobCover masterclass j, $TC\%_i$ is the percentage of tree cover in pixel i, and $\overline{TC\%}_j$ is the average percentage of tree cover in GlobCover masterclass j.

In order to compare the results of this approach with the maps of AGB produced by the WHRC and JPL maps, the regional DEB maps were converted back to total AGB. Figure 8 shows regional totals from the JPL and WHRC studies, as well as FAO estimates of AGB found in forests and plantations. Globally, the estimates based on GlobCover+DEB are relatively close: 10% lower than JPL and 16% lower than WHRC. However, these differences are not consistent across individual regions and countries. Indeed, in Latin America, our estimate exceeds JPL's by 7%. Moreover, there are some major discrepancies in both direction at the national level. For example, our estimate of AGB is over 60% larger than JPL's in Paraguay and nearly 50% larger in Mexico and The Gambia, but we also find less than half of the JPL estimates of AGB for Eritrea, Namibia, Niger, Rwanda, and Pakistan. Similarly, our estimates of AGB are less than half of the WHRC estimates in many sub-Saharan African countries. Many of the countries for which our AGB estimates are considerably lower than

those of JPL and/or WHRC are dominated by arid or semi-arid landscapes with relatively low canopy cover or, in the case of Rwanda, by trees on farms, which tend to be less well-characterized than heavily forested areas. Similar discrepancies appear between the JPL and WHRC datasets (see Mitchard, Saatchi et al. 2011 for a discussion of discrepancies in AGB estimations specifically in sub-Saharan Africa). In Appendix 2, we show a comparison of country-level AGB estimates from this study with the estimates of FAO, WHRC and JPL.

Figure 8: Regional AGB estimates from FAO, JPL, WHRC and this study, by region



Uncertainty in stock estimates

The discrepancies described above and illustrated in Figure 8 suggest that the AGB datasets need to be treated as uncertain estimates rather than fixed points. However, we still face the challenge of choosing a range of uncertainty. Of the data available, only the JPL dataset provides confidence intervals for their estimates. For our estimates of AGB and DEB, confidence intervals cannot be estimated with precision since the data originates from a combination of heterogeneous observations and case studies collected over a wide time range by a large number of investigators rather than a representative statistical sample.

However, looking specifically at the individual estimates used to build up our dataset, the standard errors of the mean values grouped by land cover and ecological zone provide an indication of the confidence intervals around mean AGB values, at least for the masterclasses for which field observations of volume or biomass were available. These range from 2-143% and are shown in Appendix 3.

The average pixel-level errors of the JPL AGB estimates by country and region, and weighted on biomass values, are also shown in Appendix 3. The averaged pixel-level error is ± 35%. The JPL biomass and carbon estimates at national and regional scale (square root of sum of per-pixel errors) are constrained to ± 1% (Saatchi, Harris et al. 2011). However, Saatchi et al. also indicate

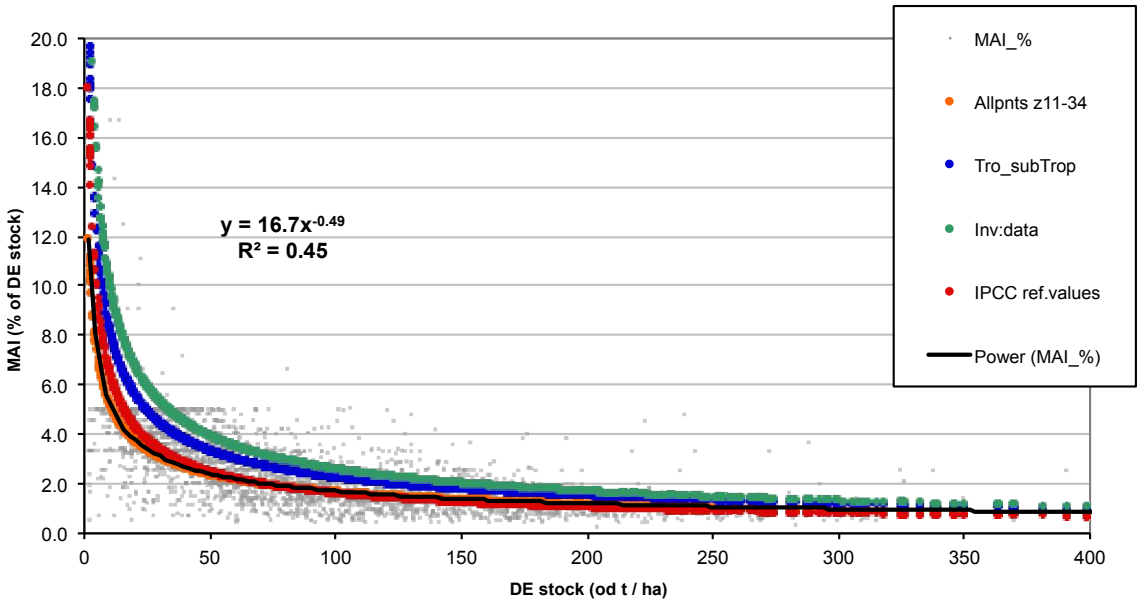
upper and lower limits for regional carbon estimates for Africa (± 6.5%), Latin America (± 12.5%), and Asia and Oceania (± 9.2%).[8]

Biomass Productivity

In this assessment, we model DEB productivity using "mean annual increment" (MAI) as the indicator of the regrowth capacity of a certain formation after harvesting. The MAI values were derived from field observations, which typically provide the age of the stand and standing biomass or volume. The ratio of biomass to age yields MAI. Appendix 4 shows country-level MAI estimates. For this analysis, we used a set of over 2,800 field observations in which MAI values expressed in oven-dry (od) t ha^{-1} yr^{-1} were compared to their corresponding stock values in od t ha^{-1}. We fit this relationship to an exponential curve to allow us to estimate growth rates as a percentage of standing stock. These curves are shown in Figure 9.

The data points, shown in grey, highlight the wide variability of MAI values. Additional curves were fit to subsets of data, including inventory data (inv:data), tropical and sub-tropical data (Tro_subTro), and IPCC values. From the curve-fits shown in Figure 9, we see the productivities derived from inventory data (inv:data) and from tropical point data (Tro_subTro) are higher than those derived from all points (Allpnts z 11-34) and from IPCC values, which include temperate and boreal regions as well. The MAI values used in this assessment were based on the curves fit to all data points, which may be somewhat conservative, because the assessment is limited to tropical regions.

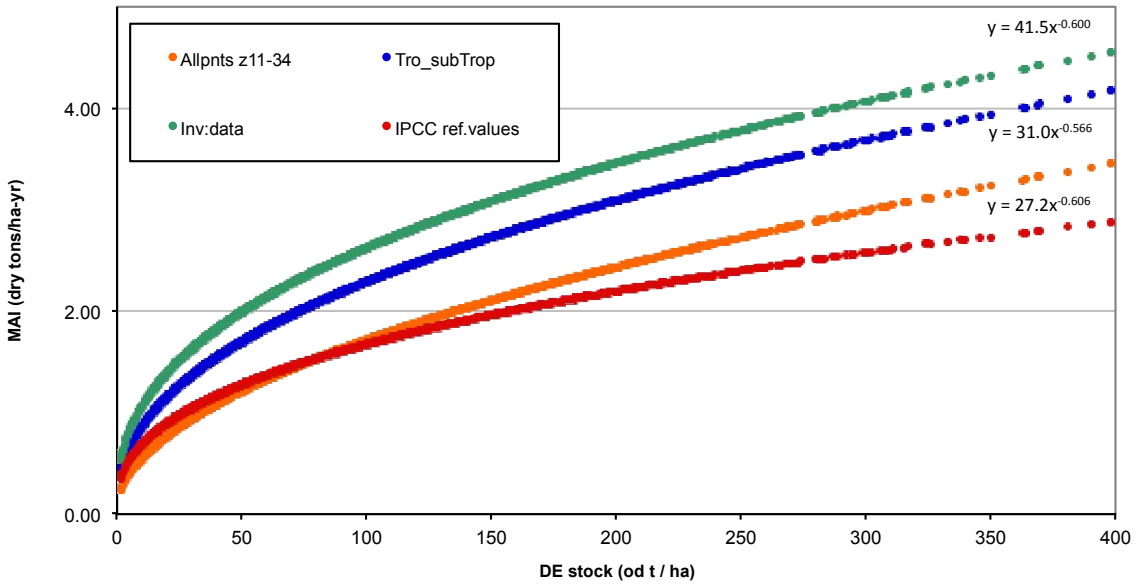
Figure 9: Stock and MAI values derived from all point data and its trendline (Allpnts z11-34). Trendlines derived from inventory data (inv:data), points from zones 11 to 25 (Tro_subTro) and IPCC values are also shown for comparison.



[8] Similar assessments for WHRC data are not available, but they are being developed.

Figure 10 shows the predicted MAI for observed levels of stock, based on the full data set (shown as the "Allpnts z11-34" curve) as well as the three subsets of data. Again, the relatively conservative nature of our choice to use the "Allpnts" curve fit for our medium-variant analysis is clear.

Figure 10: Predicted MAI based on DEB estimates derived from curve fits of MAI_% in Figure 9



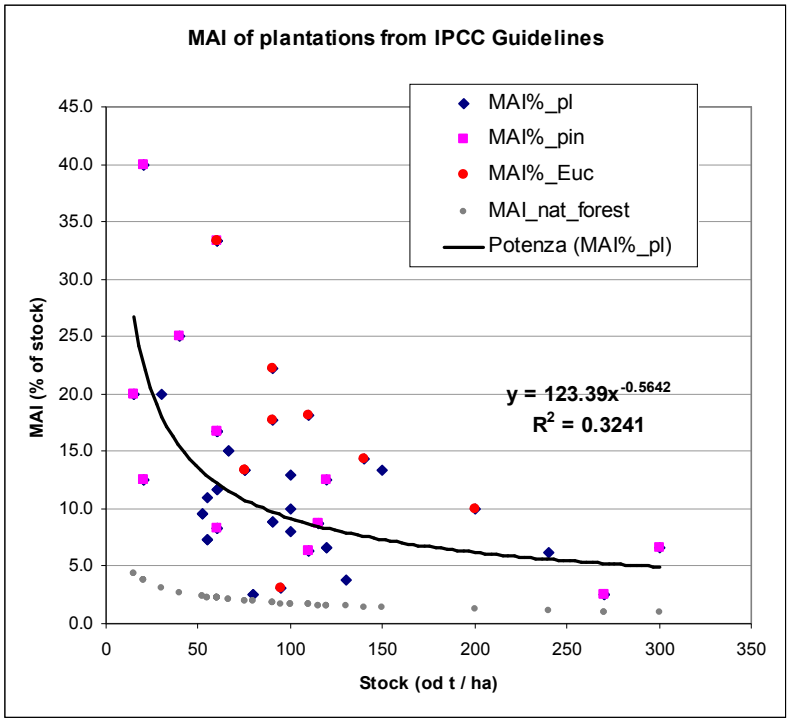
Another dimension that must be accounted for is the productivity of forest plantations, which tends to be higher than in natural woody vegetation. To account for this, we used IPCC default values for the productivity of plantations and the plantation area in each country based on FAO data (FAO 2010). Figure 11 shows MAI values as percentages of stock for several types of tropical and sub-tropical plantations according to the IPCC (2006). These estimates are 5-6 times greater than the MAI values indicated by the IPCC for natural forests (shown gray points in the graph).

A less optimistic evaluation of plantation forest performance is provided by Lal and Singh of the Indian Institute of Technology (IIT) while reviewing the carbon sequestration potential of Indian forests (Lal and Singh, 2000). When compared to the MAI of natural forests, the MAI of forest plantations is estimated to be "only" 2.3 times greater.

In consideration of the significant difference between IPCC and IIT plantation growth estimates, two plantation MAI variants were applied: a high (h) variant based on IPCC and a low (l) variant based on IIT.

Unfortunately forest plantations are not explicitly shown in GlobCover. Therefore, plantations were accounted for by considering the plantation area of each country (based on FAO 2010) and the difference between the productivity of plantations (according to IPCC and IIT variants) and that of natural formations already computed. Not knowing the location of the planted areas, their additional production potential is distributed among accessible areas of GlobCover classes with a forest component.

Figure 11: MAI as percentage of stock in tropical and subtropical plantations (based on IPCC 2006)



Accessibility of biomass resources

Accessibility in this assessment has two components. One component is legal accessibility, which is based on the legal rights of wood harvesters to extract wood from a particular area. The second component is physical accessibility, which is based on the ability of wood harvesters to reach a given location. This may be determined by the distance between human settlements and woodfuel resources, but is mediated by infrastructure characteristics such as the existence of footpaths, roads, and waterways as well as factors like topographical gradients and other obstacles. We explore details of each component below.

Legal Accessibility

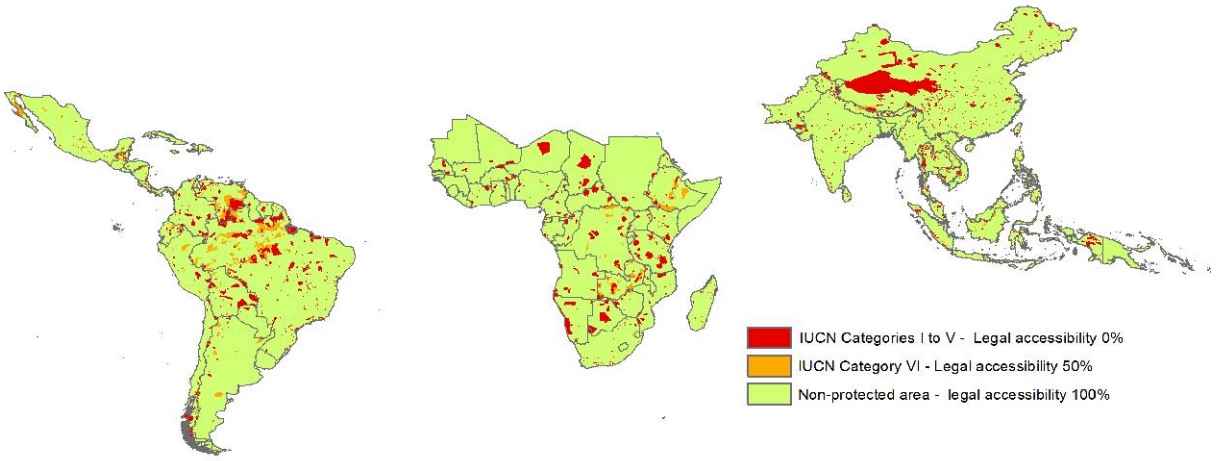
At a small spatial scale, there are many social and political factors that affect access to resources (Ribot and Peluso 2003). However, these factors are highly dependent on local circumstances and cannot be included in a pan-tropical assessment of this magnitude. Thus, for the Tier-1 analysis, we assume all woody biomass is legally accessible with the exception of resources found within protected areas, which face some restrictions.

In reality, National Parks and other conservation areas present various restrictions on the exploitation of forest resources. In order to account for these legal constraints, an accessibility factor was allocated to the protected areas on the basis of IUCN definitions of Protected Area Management Categories described below (based on Dudley 2008, see Appendix 5 for more details):

Category Ia	Strict Nature Reserve
Category Ib	Wilderness Area
Category II	National Park
Category III	National Monument
Category IV	Habitat or Species Management Area
Category V	Protected Landscape/Seascape
Category VI	Protected Area with Sustainable use of Natural Resources

Adopting a conservative approach, we assume that no woodfuel extraction is permitted in Categories I-V. In Category VI, restricted non-commercial extraction by local communities is permitted. We model the protection in Category VI by assuming 50% of sustainable supply potential is accessible. No IUCN categories are accessible to commercial exploitation. Figure 12 shows a 10 arc-sec raster map that defines the exploitable fraction of DEB based on these assumptions.

Figure 12: Legal accessibility based on IUCN Protection Categories



Physical accessibility

Development of a new map of physical accessibility

The estimation of the physical accessibility of biomass resources was based on a new **travel time map** covering Tier I countries. The map was produced by following and adapting the procedure described by Nelson for his 2000 global Travel Time map (Nelson, 2008). The main differences between Nelson and this study include a redefinition of the target locations (major cities in Nelson, and communication and settlement features in this study), the use of updated data sources on land cover and road networks, and the adaptation of friction factors.

This map is the result of an accessibility model that considers "target locations" and "cost", or friction surface, based on several global spatial datasets that represent roads, terrain, shipping lanes, land cover and any other geographic features that should be considered when estimating travel times to the target locations. Details of the travel time map development process, data sources and results are provided in Appendix 5.

In this study, the accessibility is used in two separate contexts of analysis:

1. The elaboration of the General Physical Accessibility Map, which estimates the accessibility of wood resources in relation to the nearest accessible feature. This is limited to off-road travel time, and its main purpose is to estimate what portions of the resource may be considered accessible vs. non-accessible.

2. The elaboration of Specific Physical Accessibility analyses, which are done in relation to specific consumption sites, such as urban woodfuel markets, with the purpose of delineating their probable supply zone (Woodshed analysis).

General Physical Accessibility Map

The scope of the General Physical Accessibility Map was to qualify woody biomass resources according to their location and to the ease or difficulty of reaching them. This implied the conversion of travel time values (expressed as minutes from the nearest accessible feature) to an accessibility factor that can be applied to DEB supply sources. This was done under the assumption that as the length of time needed to reach the nearest populated place or communication infrastructure increased, the percentage of accessible resources decreased. The relationship between travel time and percent accessibility varies from country to country, and is strongly influenced by the secondary roads and forest tracts that are not represented by the global road network map. Additionally, the level of demand, or market price of woodfuels, may be influential in justifying higher transport costs. In the absence of specific reference data, it was assumed that wood resources for energy use more than 24 hours away from the nearest accessible feature are totally inaccessible. The accessible fraction of DEB resources is assumed to decrease progressively with the increase of travel time, as described in Appendix 5, Table A5.6. According to this approach, 76.2% of total pan-tropical DEB resources are accessible and 23.8% are inaccessible.

Specific Physical Accessibility analyses

In addition to using the map of friction surfaces to estimate resource accessibility, i.e. its relative proximity to the nearest accessible feature, the map was also used while conducting woodshed analyses relative to the major deficit locations of each country.

Woody biomass potentially available after industrial roundwood production

Not all accessible MAI can be assumed available for woodfuel production. A competing use of major relevance is the industrial roundwood that feeds wood processing industries such as, inter alia, furniture making, panels, or pulp and paper. In order to deduct the woody biomass annually harvested for these end-uses, the amounts of industrial roundwood reported by FAO forest product statistics were deducted from the accessible resources. In the absence of data on the location of

industrial roundwood production sites, the deduction was spatially distributed on accessible tree formations (GlobCover classes with tree components).

Industrial wood residues available for energy uses

The industrial roundwood is not entirely external to energy uses. After transportation to sawmills and other wood processing units, the industrial roundwood gives origin to residues, estimated at 40-50% of roundwood volume, that are in part available and actually used as woodfuel. These by-products (slabwood, shavings, saw dust, etc.) are commonly used as fuel by the wood processing industries and the surpluses are often sold to other users. In this study, the residues potentially available as fuel are estimated by applying a 45% rate to the industrial roundwood to assess the entire residues production; an 85 % rate to estimate the residues that are suitable as fuel without additional processing (thus excluding 15% of sawdust); and finally applying a 50% rate to the suitable residues to both exclude competing uses (fencing and roofing) and to estimate the amount that may be actually available for energy uses. In the absence of information on the geographic distribution of wood processing industries, the national residues are distributed among sub-national units proportionally to the commercial supply, based on the assumption that wood processing is more likely located in the provinces with higher commercial wood growth.

Demand Module

The Demand Module map estimates DEB consumption at a 30 arc-second resolution (0.86 km^2 at 0 Lat; 0.74 km^2 at ±30 Lat). The analysis and mapping are based on the following data sets:

- **GLOBAL Gridded Population Maps and Data**: Gridded Population of the World, version 3 (GPWv3) and the Global Rural-Urban Mapping Project (GRUMP) are the latest developments in the rendering of human populations in a common geo-referenced framework, produced by the Center for International Earth Science Information Network (CIESIN) of the Earth Institute at Columbia University. The GPWv3 edition includes a gridded population projection to 2015 produced by CIESIN and CIAT in collaboration with the FAO. These maps are produced at a resolution of 30 arc-seconds.
- **Global Administrative Unit Layers (GAUL)**[9]: The GAUL 2009 Edition, reports 2008 sub-national subdivisions at the 1st level. The Global Administrative Unit Layers (GAUL) is an initiative implemented by FAO within the EC-FAO Food Security Programme funded by the European Commission (http://www.foodsecinfoaction.org/News/news_06_06.htm). The GAUL aims at compiling and disseminating the most reliable spatial information on administrative units for all the countries in the world, providing a contribution to the standardization of the spatial dataset representing administrative units.
- **Population data:** Source of demographic statistics: United Nations, Department of Economic and Social Affairs, Population Division (2012). World Urbanization Prospects: The 2011 Revision[10]. National level statistics of urban and rural population were used to project GRUMP data to 2009.

[9] http://www.fao.org/geonetwork/srv/en/metadata.show?id=12691

[10] http://esa.un.org/unpd/wup/CD-ROM/Urban-Rural-Population.htm

Main statistical sources of woodfuel consumption

A thorough review of international, regional and, to a lower extent, national sources was carried out. The resulting data was fed into the Access-based Multi-source database of woodfuels production, consumption and trade **Trop-i-Westat** (Tropical interactive Wood energy statistics), which uses the structure and functionalities of the database i-WESTAT (Drigo and Trossero, 2005).

Trop-i-Westat integrates input from the following:

- **International databases of forestry and energy statistics**. Such as:
    - FAO country data on wood fuel production, import and export (FAOSTAT)
    - FAO Global Forest Products Outlook Study
    - International Energy Agency (IEA) Renewable Energy statistics
    - EUROSTAT
    - Historical references (ENDA/IEPE, ESMAP, FUNBAR, LBL, OLADE, FAO/RWEDP, etc.)
    - UN Energy statistics[11]
- **Country reports and previous WISDOM studies.**

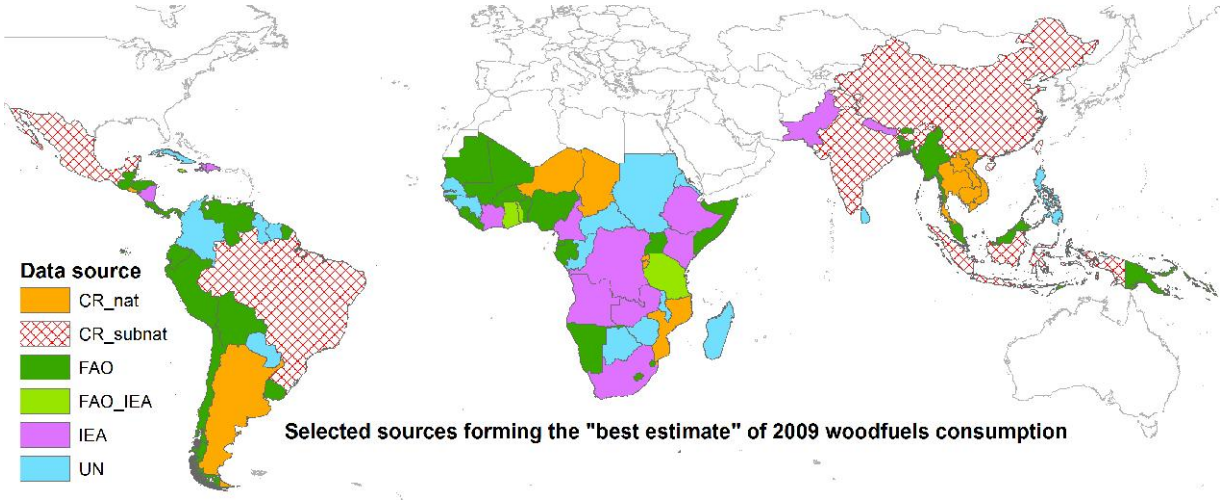
Wide discrepancies exist among sources on the quantity of fuelwood and charcoal used in the considered countries. Only two sources systematically cover all countries of the world. These are the FAO Forestry Statistics database (FAOStat) and the UN Energy Statistics. The IEA also makes data available based on national energy statistics, but its coverage is limited to 48 pan-tropical countries and the data are reported as aggregate Primary Solid Biofuels, which includes fuelwood, crop residues, and dung, preventing precise quantification of the woody component. While the FAO is based on a network of Country Correspondents, UN Energy Statistics are based on other sources of data, including IEA statistics, where available, as well as those of the FAO. In addition to these international sources, regional and national sources were consulted as well.

For larger countries such as China, India, Indonesia, Mexico and Brazil, the consumption values were estimated at the subnational level based on available national references. In addition, the various sources reported in Trop-i-Westat were compared country by country, considering the values proposed and the characteristics of the primary sources (census, surveys, derived estimates, etc.) in order to identify what may be considered as the most reliable reference for the country. This set of references, together with the countries analyzed at sub-national level, were used to create the "Best Estimate" map of woodfuel consumption, whose sources' composition is shown in Figure 13 (see the detailed description of the sources used country by country in Appendix 6).

Table 5 summarizes the demand for woodfuel and charcoal according to the FAO, UN Energy Stats and Best Estimate variants.

[11] http://data.un.org/Explorer.aspx?d=EDATA&f=cmID%3aCH%3btrID%3a1231

Figure 13: Sources used to create the "Best Estimate" version of 2009 woodfuels consumption.



Note on map legend:
CR_nat = Country report with national-level data; CR_subnat = Country report with sub-national-level data;

Table 5: Fuelwood (Fw) and Charcoal (Ch) consumption according to FAO, UN Energy Statistics and to "Best Estimate" variants (Mt od wood-equivalent)

Tier I regions	Best Est.			FAO			UN EnSt		
	Mt			Mt			Mt		
	Fw	Ch	Tot	Fw	Ch	Tot	Fw	Ch	Tot
Africa	340	98	**438**	259	86	**346**	550	79	**629**
Latin America	149	39	**187**	144	28	**172**	156	30	**186**
Asia	683	24	**707**	428	28	**456**	635	40	**675**
Total Tier I countries	1,172	160	**1,332**	831	143	**974**	1,341	149	**1,490**

Demand for construction material

Construction material (e.g. rural houses, fences, stables, etc.) represents a sector of demand for woody biomass that is not accounted for by industrial wood demand statistics. The demand for construction material is mainly rural, and is close to fuelwood demand in terms of provenience and production/marketing chains. In order to account at least indicatively for this sector of DEB consumption, the demand for construction material is added to the rural demand for woodfuels by assigning an estimated per capita consumption.

The consumption of construction material for new construction and maintenance ranges between 5 and 20 kg per capita per year, according to the few available references encountered during the WISDOM analyses of Rwanda, Mozambique and Sudan. In this study, a tentative mid-range value of 10.9 kg per capita per year was adopted, and applied to the rural population.

Integration Module

The Integration Module primarily consists of combining supply and demand layers to analyze the woodfuels balance on a geographic basis. The balance analysis is carried out at three main levels: (i) at the pixel level, combining the values of the corresponding pixels from the supply and demand maps and forming the basis of all other balance analyses, (ii) in a local context, emulating the informal self-supply horizon of rural and peri-urban households, and (iii) considering the "commercial" fraction of local surplus as a source of formal and commercial woodfuel production systems serving woodfuel markets of distant consumption sites such as cities.

Several balance maps were produced in each case, combining the main supply and demand variants assumed.

Pixel-level balance

In the pixel-level balance analysis, the supply/demand balance was calculated for each individual pixel by subtracting the demand from the supply potential. The calculation of the supply/demand balance by individual map cell represents a somewhat virtual balance, since individual cells are usually either a production or a consumption site. However, the balance has a very important accounting function and enters subsequent phases of analysis, such as the woodshed analysis.

Balance in a local context

The local balance is calculated by considering a local context representative of the horizon of woodfuel collection by rural people on foot or by simple local transport means. The distance of the woodfuel horizon may vary significantly with environmental and socio-economic conditions. The supply distance in biomass-rich areas is typically below 3 km, while in biomass-poor areas considerable distances are covered to fetch woodfuel (in WISDOM Sudan a horizon of 6 km was applied).

In need of defining a single distance value for all situations, the local supply horizon in rural areas was determined by applying a focalmean with a radius of 5 pixels (approximately 4.5 km).

The result of the local balance shows areas of either local surplus, where the resources available are greater than consumption, or local deficit, where the demand exceeds the local supply potential.

The local context tends to render the deficit areas more visible as compared to the pixel-level balance, while giving a more realistic perception of deficit and surplus zones. The local context is intended to represent the situation in rural areas where woodfuel systems are mostly informal.

"Commercial" balance and surplus

The analysis of the "commercial" balance is based on the consideration that the management and commercial exploitation of sparse resources may be uneconomical. In a local supply/demand context dominated by direct woodfuel collection, all wood resources may be considered suitable for local (rural) consumers. However, when the demand and supply areas are far apart and the supply system is market driven, then only the wood resources that are economically viable to exploit are likely to be utilized.

For woodfuel markets such as those of urban centers, the supply potential consists of the "commercial" fraction of surplus resources resulting from local balance. The "commercial" surplus is estimated by first accounting for the supply that is utilized for local demand, which includes all available DEB production potential. Second, the quantity of remaining DEB that is suitable for commercial utilization is estimated, which is limited to the legally accessible resources that justify transport and management costs. To assess the commercial surplus, several basic quantitative thresholds related to stock and productivity were defined:

- One threshold concerned the minimum stocking required for profitable charcoal production given average kiln size and collection distance. The DEB stock threshold was set at 15 t/ha air-dry (corresponding to 12.3 t/ha oven-dry), considering that below this threshold the cost of kiln preparation would be unprofitable (Mancini et al, 2007).
- The second threshold concerned the rotation period determined by the estimated annual surplus of the local supply/demand balance. Only the areas with surplus levels that guarantee rotation periods lower than 30 years were considered eligible. To reach such a condition, the available surplus MAI must exceed 0.41 od t/ha/year.

Consequently, only the accessible areas with a stock above 12.3 od t/ha and a surplus above 0.41 od t/ha/year were considered as potential commercial sources. In addition, all protected areas are excluded from commercial exploitation, including Category VI in which local communities are entitled to some (sustainable) exploitation for subsistence use.

At the local level of analysis (i.e. Tier II and Tier III) it is important to verify the economic viability of the various situations with local operators and managers, and to define the “economically viable” minimum surplus values that apply locally.

The commercial balance analysis remains theoretical, since it implies that the economically viable resources are rationally managed such that the potentially sustainable increment is exploited entirely and without depleting the forest capital. The commercial balance is therefore useful for defining the theoretical limits of sustainable forest management but is unlikely to represent existing processes. Current exploitation is often unregulated, leading to over-exploitation in some areas and under-exploitation in others.

Woodshed analysis

After completing the Integration Module, it is possible to define zones of potential sustainable DEB supply for major consumption sites that account for consumption of surrounding urban and rural areas, as well as the accessible and potentially available resources. These zones are termed “woodsheds” analogous to the familiar geographic concept of watersheds (Drigo e Salbitano, 2008).

The woodshed of a given consumption site may be defined as the minimum area around the site in which the cumulative woodfuel balance is non-negative. When a single consumption site is considered, the woodshed is determined by the physical accessibility of the available surplus resources. However, when several consumption sites are considered simultaneously, the woodshed is determined by the combined effect of physical accessibility of available resources and the aggregated demand exerted by all sites.

In order to combine these two components, the analysis was carried out through weighted interpolation using the Dinamica EGO processing environment, which considers the following factors:

- A categorical mapping of deficit peaks, defined in a lookup table. This consists of the local deficit within a 20-cell radius. This radius was chosen in order to represent the cumulative demand of even the largest urban and peri-urban areas in a single point. For this assessment, 719 points were defined in Africa, 182 in Latin America, and 776 in Asia .
- A weighting factor for interpolation of accessibility, consisting of the friction map of the travel time needed to cross the cells, in minutes per meter.

In order to allow accurate cost-distance computations, the analysis was done separately for each region by adopting regional Albers Equal Area projections.

The model, developed in Dinamica EGO, creates an interpolation map for each individual point using the friction map as a weighting factor. These maps (719 for Africa, 182 for Latin America and 776 for Asia) were added together to form a cumulative "pressure" map determined by the intensity and location of the major deficit areas.

The analysis was done separately for each country by assigning NoData values to the internal borders in the friction maps. Figure 14 shows Tanzania, as an example, with the main processing steps of the weighted interpolation analysis that serves as the basis for the woodshed analysis.

For analytical purposes, the continuous map resulting from the weighted interpolation analysis is segmented into buffers. The cities with higher demand “produce” wider woodshed buffers and the cities with lower demand “produce” narrower buffers, well-representing the territory under urban influence/pressure.

The woodshed (or woodsheds) of the deficit sites of each country are defined by using zonal statisics to calculate the supply/demand balance of each buffer. The area is progressively expanded until the commercial balance is positive, indicating that within such territory the supply potential meets demand.

It should be noted, however, that the woodshed analysis tells what the harvesting area should be in order to guarantee sustainable supply of the needed woody biomass, assuming a rational and sustainable resources management system. The woodshed analysis does not tell what the actual harvesting area is, but it provides a revealing vision of the territory under urban influence and a clear target for forest management. Most relevant for this study, this analysis defines the areas where the harvesting for local rural demand and that for commercial demand are likely to overlap.

Transport time threshold

The woodshed zone is determined by the availability of local surplus resources and commercial demand, which may include resources that are at great distances from market areas. In these cases, the transport cost may become too high and the actual harvesting areas are likely to be concentrated on wood resources that are closer to market areas. By using travel time as the cost

factor and conducting the cost-distance analysis on the same major deficit points used for the woodshed analysis, we can segment the resources according to transport time. Thus, we can apply threshold values as limits of actual supply zones in consideration of transport costs.

In this analysis we adopted a 12-hour travel time threshold (i.e. from harvesting place to roadside and from roadside to market), which implies approximately two days of transport, including loading/unloading. This was preliminarily selected as a mid-range value, considering that it may be rather short for charcoal but long for fuelwood.

Figure 15 shows the delineation of the woodshed of Tanzania's major woodfuel deficit areas, combined with the transport time threshold of 12 hours. The common area, shown in the bottom-right map, represents the area and wood resources that are expected to undergo the highest harvesting pressure.

Figure 14: Steps of the weighted interpolation analysis using Tanzania as an example

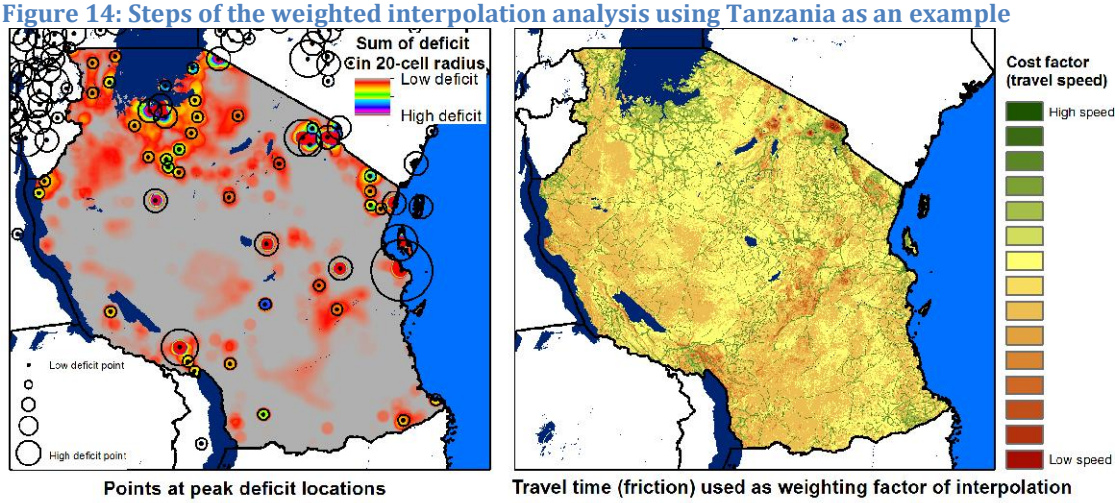
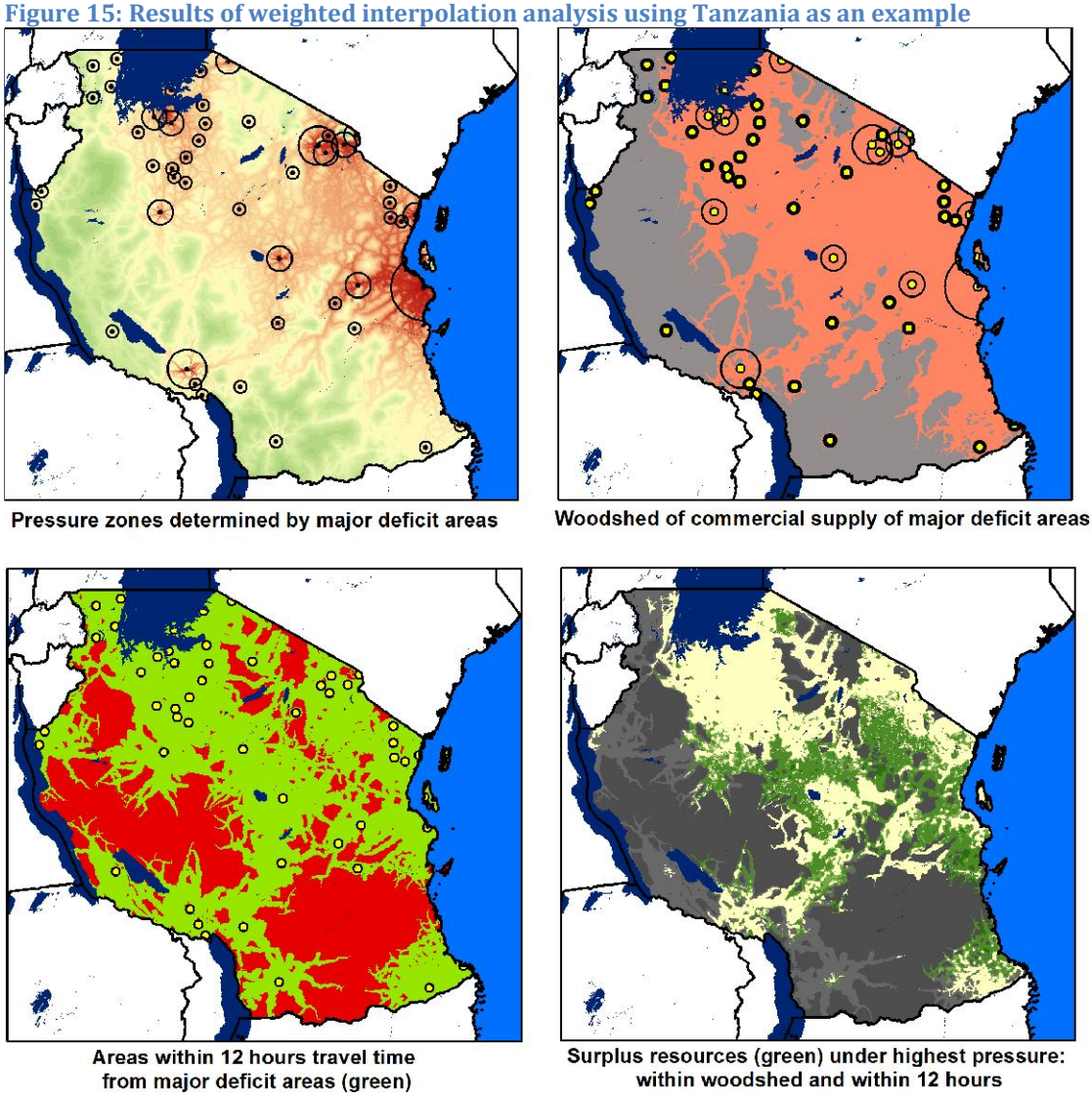


Figure 15: Results of weighted interpolation analysis using Tanzania as an example



Estimation of the expected range of sub-national and national NRB values

In this study, "Non-Renewable Biomass" is intended as the woody biomass harvesting for wood energy and other non-industrial uses[12] that is not sustainable within a given geographic area. The value can be absolute (NRB), such as tons of dry matter, or relative, i.e. the fraction of total harvesting that is non-renewable (fNRB). In this study the reporting unit is the sub-national unit of first level (1482 units covering the Tier I study area), which, by aggregation, provide national-level NRB values.

[12] Including other non-industrial wood products for local use in rural areas such as poles and construction materials, in this study estimated to account for 2.2% of total non-industrial wood harvesting, This non-energy use is aggregated to wood energy since it shares the same surces and production systems of fuelwood and charcoal.

Estimation of the expected range of sub-national and national NRB values is done through the step-wise analysis process described below. The results are presented as the probable range of minimum fNRB (mfNRB) and expected fNRB (efNRB) values at the sub-national unit level and aggregated at the country level.

As mentioned above, WISDOM distinguishes two geographic contexts for supply/demand balance analysis, which are critical for fNRB estimation:

- **The local supply/demand context**, which is typical of rural areas. The supply is based on fuelwood collected and/or charcoal produced directly by either end-users or small temporary producers. The system is largely informal and the geographic horizon is limited to a few kilometers from the consumption sites.
- **The commercial supply/demand context**, which includes the demand from major deficit areas, such as urban centers and high-density rural areas, and supply zones that may be at great distance from consumption sites. Fuelwood and charcoal are market commodities in this context, supplied via a chain of operators such as producers, transporters and retailers.

Delineation of probable harvesting areas

In addition to WISDOM information layers produced in the previous phases, fNRB estimation requires the definition of **harvesting areas**. In the absence of data on the true harvesting areas, we based our analysis on the ***probable*** **harvesting areas**. While the harvesting for rural consumption can be "assigned" to local resources, the harvesting for urban woodfuel markets or other major deficit areas must be "assigned" to DEB sources that may be at considerable distance from consumption sites constituting the probable commercial harvesting area. Note that the probable harvesting areas differs from the sustainable supply zone of woodshed analysis defined above (and usually being smaller). We define the probable harvesting induced by major deficit areas with reference to the results of woodshed analysis (i.e. nominal sustainable supply zone), travel time zones (as proxies for transport costs) and available wood resources that are suitable for commercial woodfuel production.

Estimation of the expected range of sub-national and national NRB values

NRB estimates assuming direct harvesting (excluding DEB from deforestation and afforestation processes)

Assuming that the entire supply of woodfuels is based on direct harvesting, the lower bound of NRB is defined by assuming that the probable harvesting areas are exploited as *rationally* as possible, using wood resources to their maximum renewable potential. The result for each sub-national unit is the "**minimum fraction of Non-Renewable Biomass**" (**mfNRB**), which indicates the lowest value of NRB for a given level of harvesting and potential supply. This means that forest management can do little to reduce the NRB fraction, and that remedial action must focus on reducing woodfuel consumption as wood resources are simply not enough. This phase includes two steps:

1. Estimation of the "**potential Renewable Biomass fraction**" (**pRBf**)
2. Estimation of the "**minimum fraction of Non-Renewable Biomass**" (**mfNRB**).

In the next phase of analysis we simulate the actual level of management by assuming management strategies ranging from more to less sustainable, inferred from forest management and plantation statistics produced by FAO. The result at this level is the "**expected fraction of Non-Renewable Biomass**" (**efNRB**), which indicates the range of NRB values for given levels of harvest, supply, and management systems. This phase of analyis includes three steps:

3. Estimation of the "**Sustainable Increment Exploitation Fraction"** (**SIEF**).
4. Estimation of the "**expected Renewable Biomass fraction**" (**eRBf**)
5. Estimation of the **"expected fraction of Non-Renewable Biomass" (efNRB)**.

The *expected* NRB is always greater than the *minimum* NRB (unless perfect management is assumed), and the difference between the two indicates the NRB component that good management practices could reduce.

NRB estimates including DEB from deforestation and afforestation processes

Changes in forest areas due to deforestation and afforestation processes are often significant sources of woody biomass used as fuel and construction material or as industrial roundwood.

A quantification of the DEB produced by deforestation and afforestation processes (based on FAO national change rates) and a tentative spatial distribution of such resources[13] were carried out in order to achieve a more comprehensive estimation of NRB values at the sub-national level.

The DEB from deforestation, assumed equal to the stock of the forest being cleared, is always considered as non-renewable, while the DEB from afforestation, equal to one MAI and thus much smaller, is considered as renewable (and thus reducing NRB).

Two components are considered: (i) woodfuels produced from deforested DEB, or from afforested DEB, estimated to be available within the probable harvesting area; and (ii) the additional DEB from direct harvesting needed to meet the remaining portion of the demand, which is estimated following the same steps described above. The total NRB value for a given sub-national unit is finally estimated by adding the two components. Appendix 7 provides a more detailed description of the NRB estimation methodology.

[13] The DEB biomass produced by deforestation and afforestation was spatially distributed on accessible forests. The dataset produced by the Programme Forest Monitoring for Action (FORMA) on observed forest clearings over the period 2006-2011 (Wheeler et al., 2011) was used as additional proxy for sub-national distribution in the 27 countries covered by such Programme.

Results

Supply Module results:

Maps of AGB and DEB stocks per hectare are shown in Figure 16 and Figure 17. A map of MAI per hectare is shown in Figure 18. Maps of per-pixel values of total MAI, legally accessible MAI and physically & legally accessible MAI are shown in Figure 19 through Figure 21. Figure 22 shows the same physically and legally accessible MAI per pixel, with plantation biomass included. Finally, Figure 23 shows the same map, but only with biomass that is potentially available for energy use after accounting for industrial uses of roundwood like timber and pulp production. A country-level summary of the preliminary results of AGB and DEB stocks and productivity is provided in Appendix 4.

Demand Module results:

The map of the 2009 population distribution is shown in Figure 24. As examples of single-source maps of woodfuel consumption, Figure 25 and Figure 26 show the results based on FAO Forestry Statistics and on UN Energy Statistics, respectively, while Figure 27 shows the "Best Estimate" variant based on subnational estimates for major consumers like China, India, Brazil and Mexico, as well as several national estimates (see Appendix 6).

Integration Module results:

The three estimates of demand were used to generate maps of local supply/demand balances. These are shown in Figure 28 to Figure 30. The supply/demand balance shown in these maps is calculated assuming each pixel is accessible to all other pixels within a five pixel "radius" (≈ 4.5 km).

Woodshed analysis and definition of main harvesting areas

To account for supply to urban and high-deficit rural areas, we assume commercial suppliers exploit a "woodshed," which is defined by woody biomass resources existing at accessible distances from the consumers (as explained above and in Appendix 7). Maps of probable harvesting areas resulting from the woodshed analyses are separated for each region. Africa is shown in Figure 31, Central America in Figure 32, South America in Figure 33, and Asia in Figure 34. In these maps, "high pressure zones" representing major commercial woodsheds are shown visually as portions of the balance maps. In these high pressure zones, consumption zones are shown in shades of red, and wood resources where commercial and informal harvesting is concentrated are shown in shades of green. Grey shades indicate areas where harvesting is mostly informal, serving local users. White areas indicate absent or negligible supply/demand areas. The relationship between the harvesting intensity and the sustainable production potential is the key parameter for the estimation of the unit's NRB fraction within each subnational unit.

Sub-national fNRB results:

The values of NRB harvesting by subnational units are shown in Figure 36 - Figure 39. Two scenarios are considered: one assuming the provision of woodfuels only through direct harvesting and one considering also the probable contribution of woody biomass from on-going processes of deforestation and afforestation. In addition, two productivity variants relative to MAI of plantations are shown: a "high" variant based on IPCC and a "low" variant based on IIT reference values.

The estimation of NRB relative to the use of woody biomass from deforestation, and the estimation of renewable biomass (RB) relative to to the contribution made by afforestation, are shown in Figure 35.

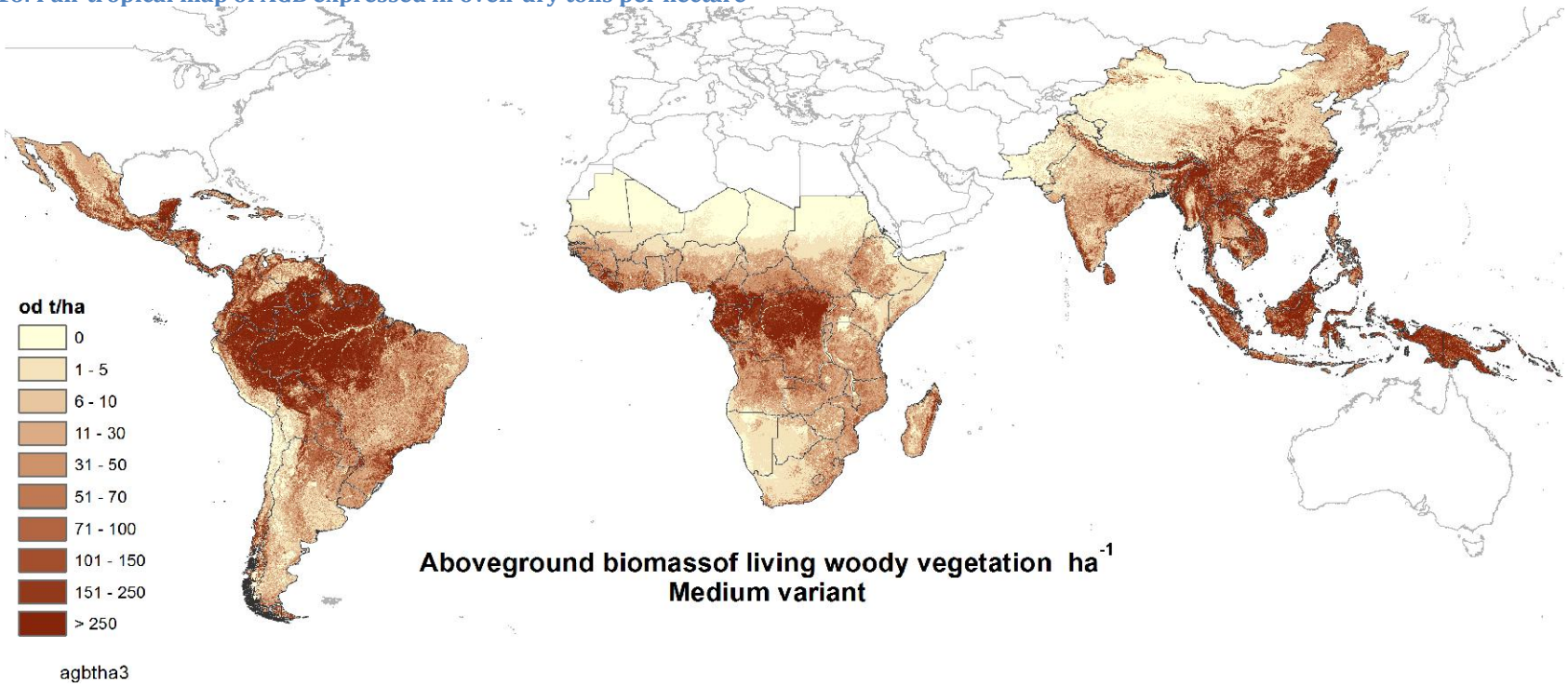
Figure 36 and Figure 37 present the *minimum* fNRB values, assuming rational use of available resources, with and without the contribution from forest change processes, for Low and High plantation productivity variants, respectively.

Figure 38 and Figure 39 present the *expected* fNRB values considering countries' management and plantation data as indicators of current harvesting systems, with and without the contribution from forest change processes, for Low and High plantation productivity variants, respectively..

Values are presented as comparable absolute values (od t of NRB per km^2), which provides a better perception of the probable environmental impact.

Country-level NRB parameters are presented in Table 6, while the same parameters are shown at the sub-national level in Appendix 9.

Figure 16: Pan-tropical map of AGB expressed in oven-dry tons per hectare



- agbtha3

Figure 17: Pan-tropical map of DEB expressed in oven-dry tons hectare

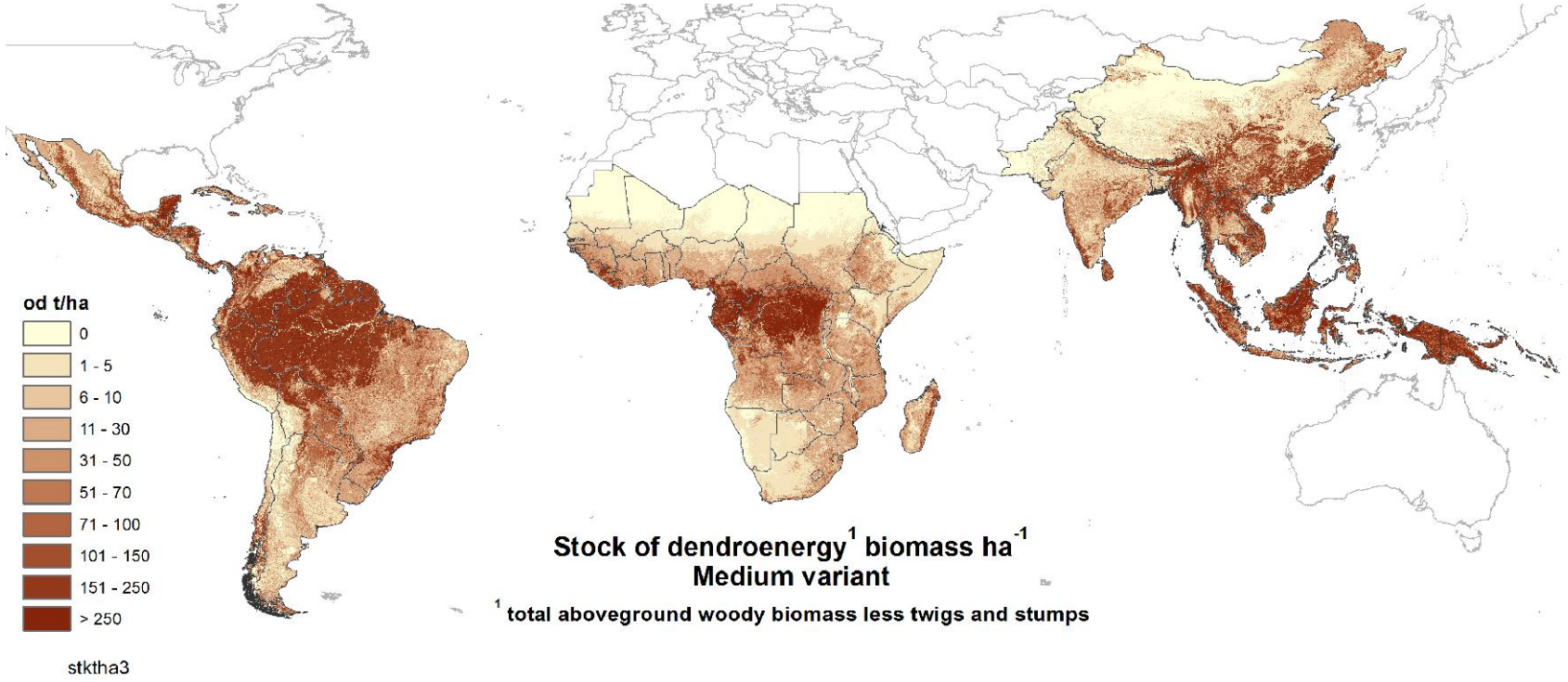


Figure 18: Pan-tropical map showing MAI of DEB per hectare per year

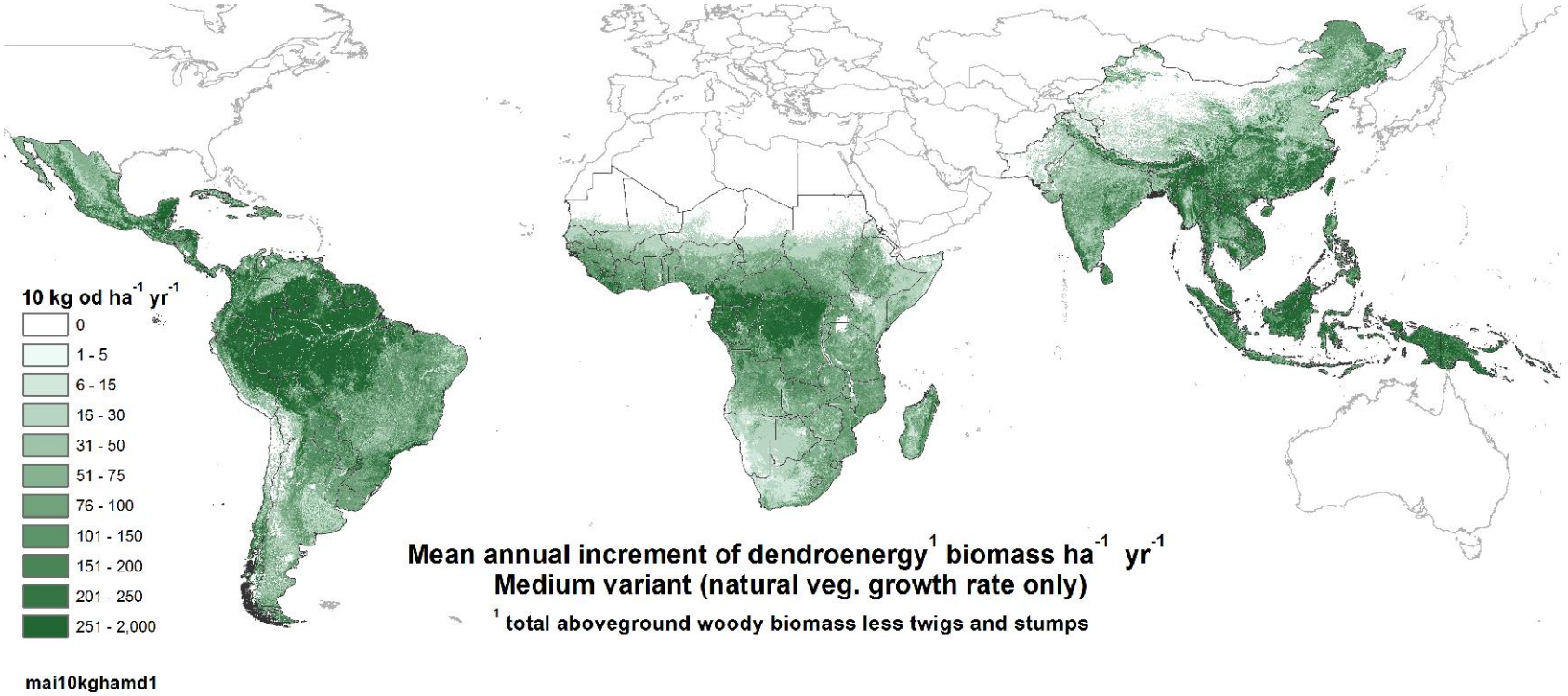


Figure 19: Pan-tropical map showing MAI of DEB per pixel per year

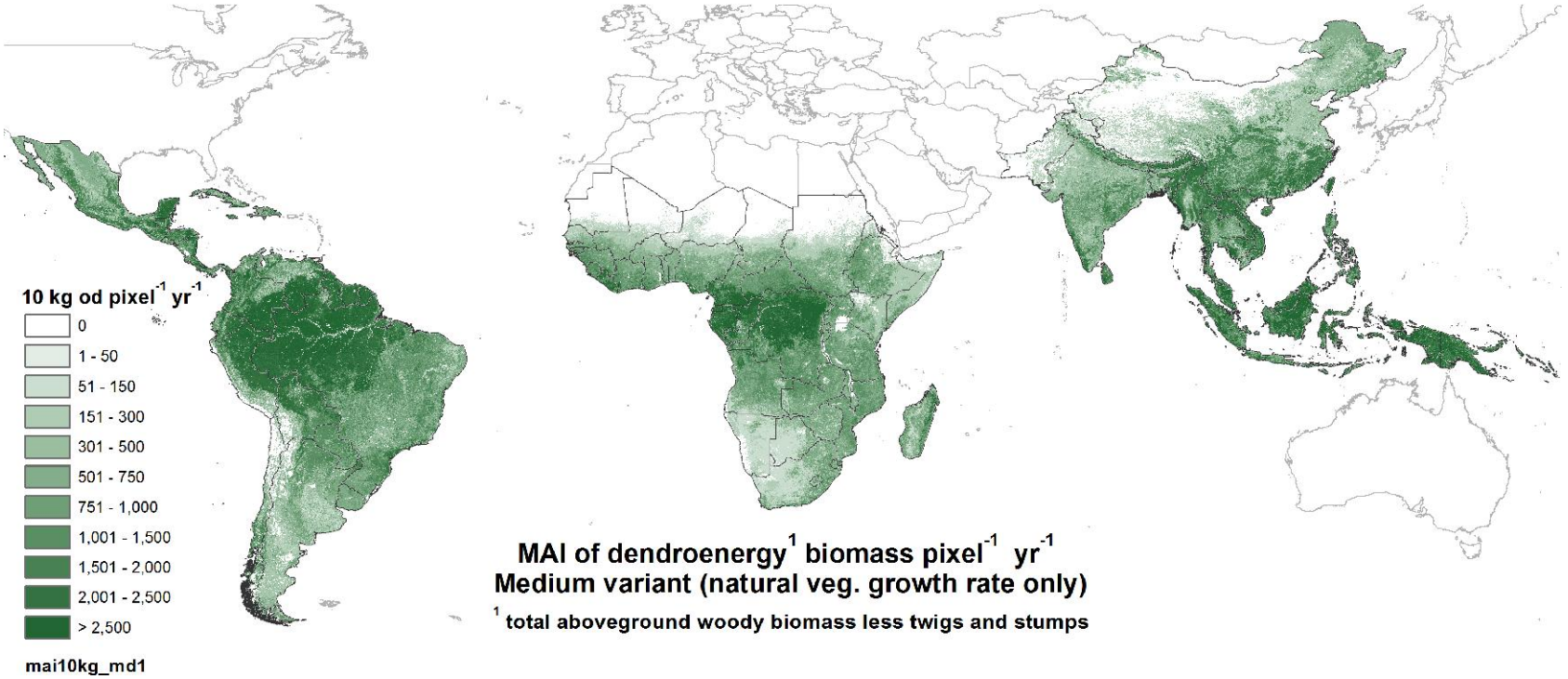


Figure 20: Pan-tropical map showing legally accessible MAI of DEB per pixel per year

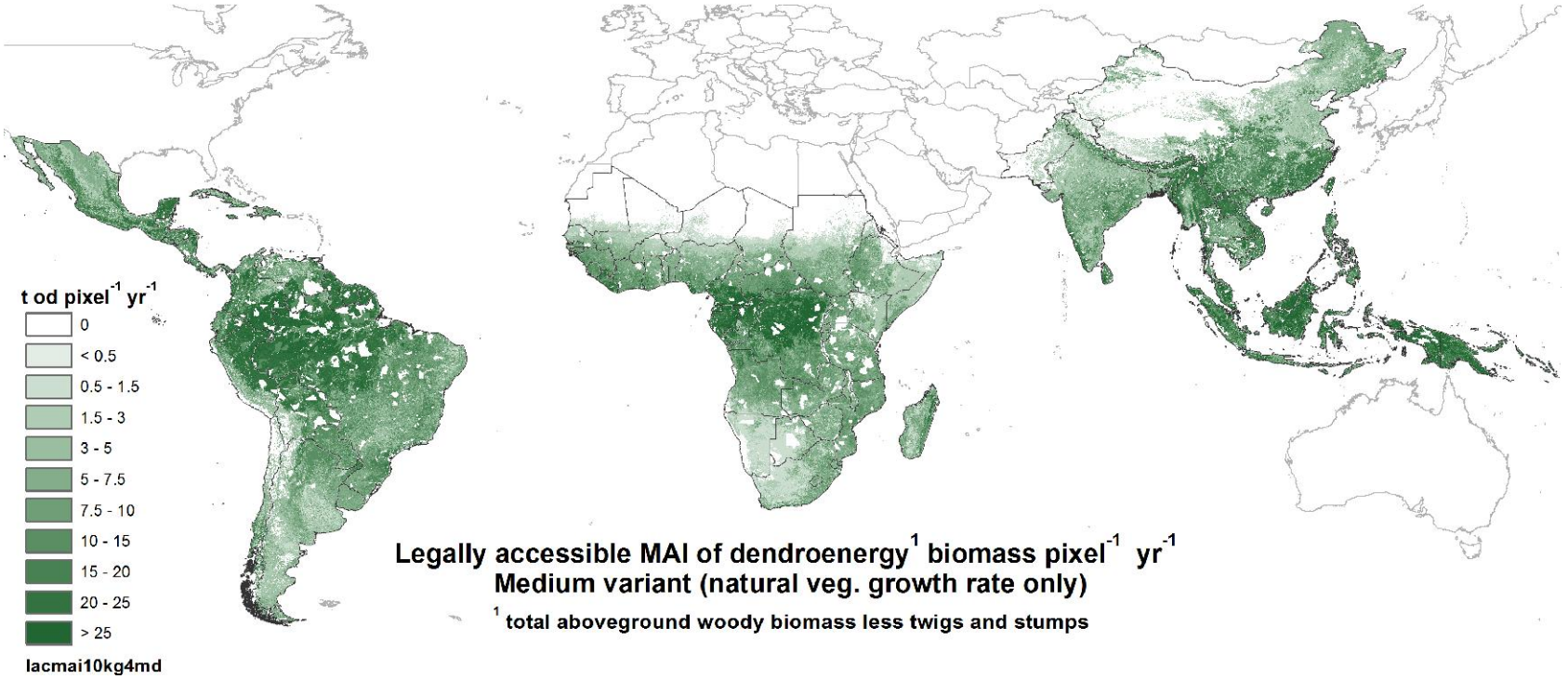


Figure 21: Pan-tropical map showing legally & physically accessible MAI of DEB per pixel per year

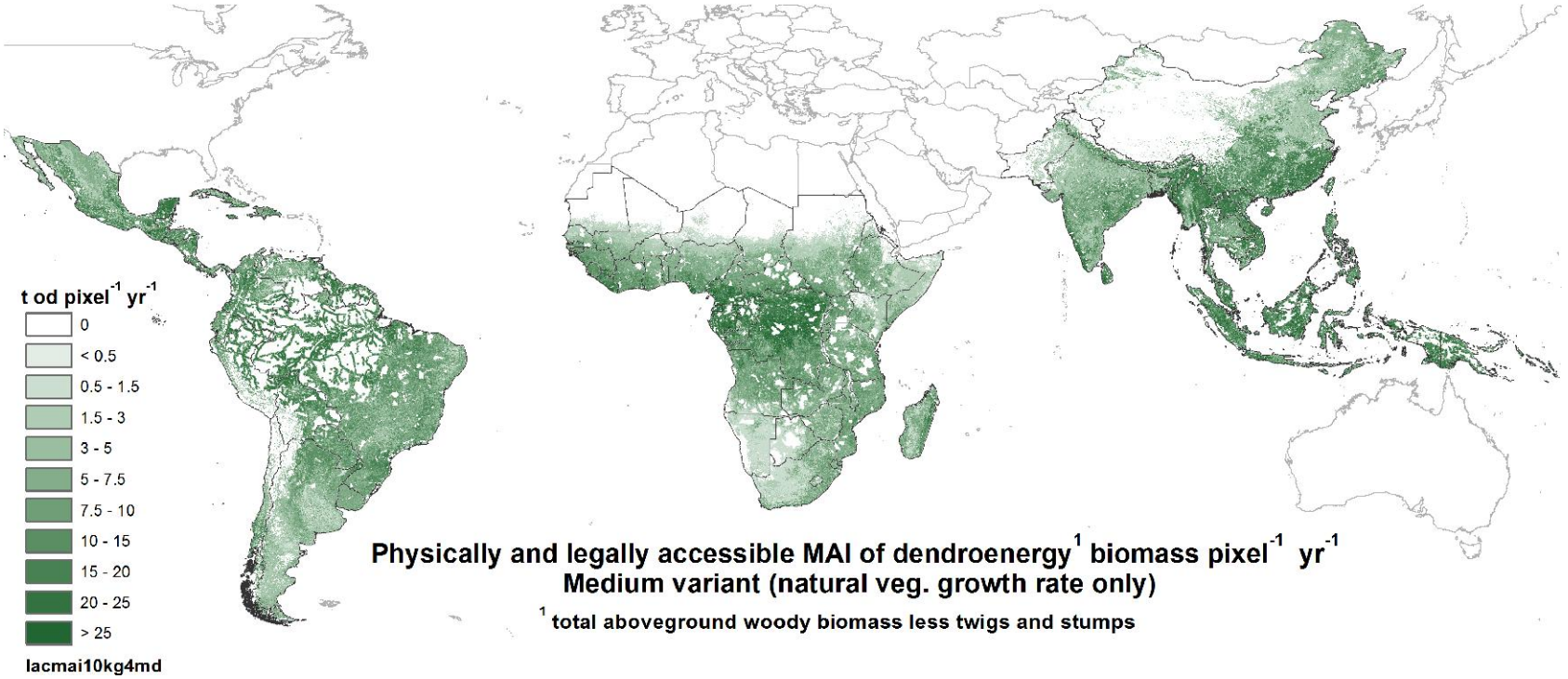


Figure 22: Pan-tropical map showing legally & physically accessible MAI of DEB per pixel per year including plantations

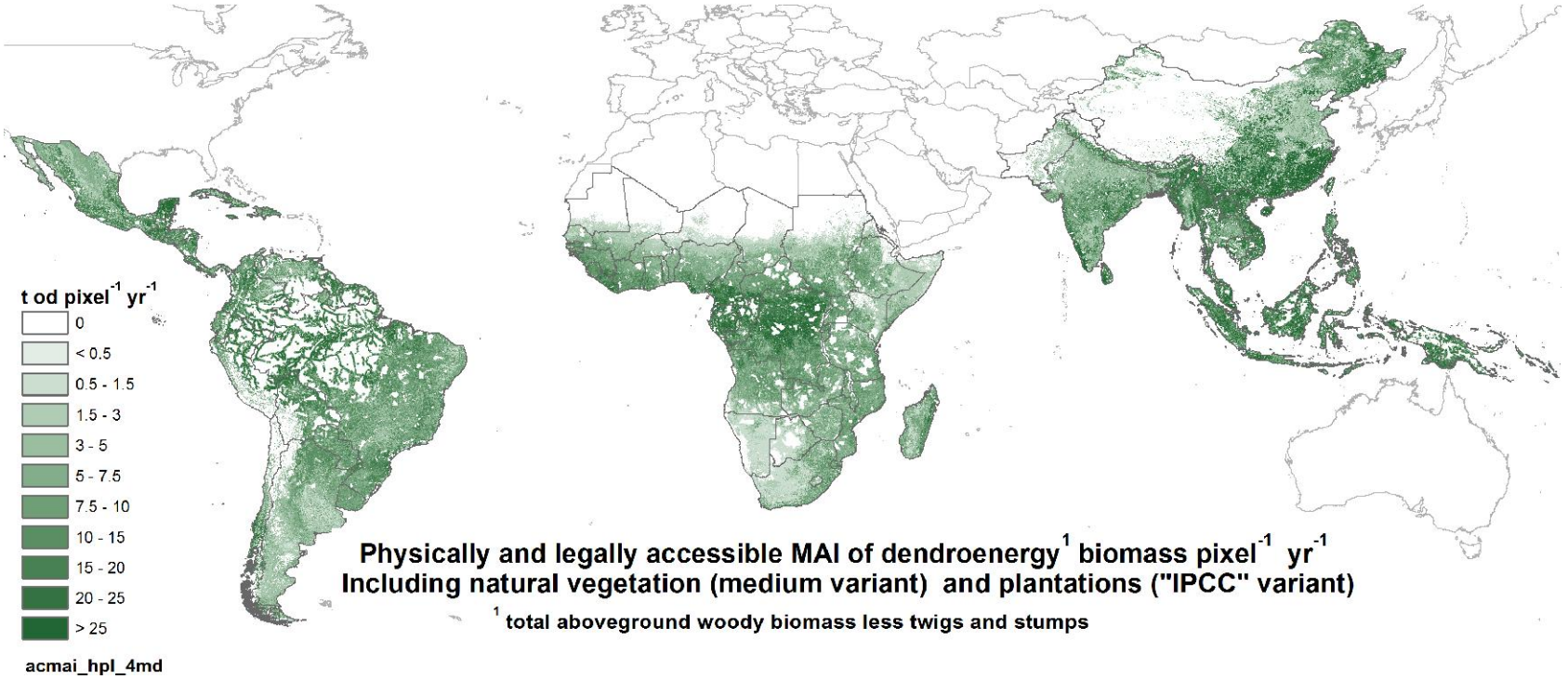


Figure 23: Pan-tropical map showing legally & physically accessible MAI of DEB per pixel per year (including plantations) that is potentially available for energy applications after accounting for supplies of industrial roundwood

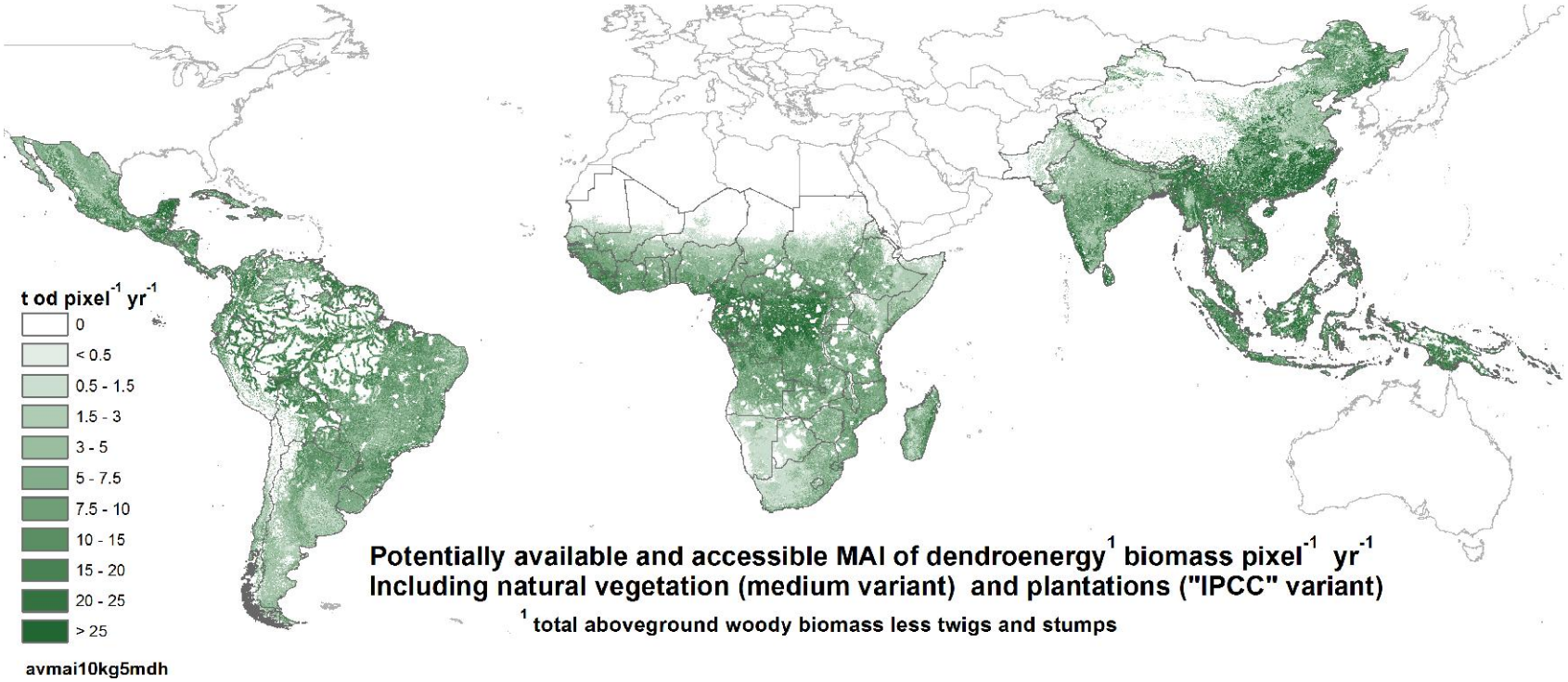


Figure 24: Pan-tropical map showing the distribution of human population in 2009 (resolution of 30 arc-seconds).

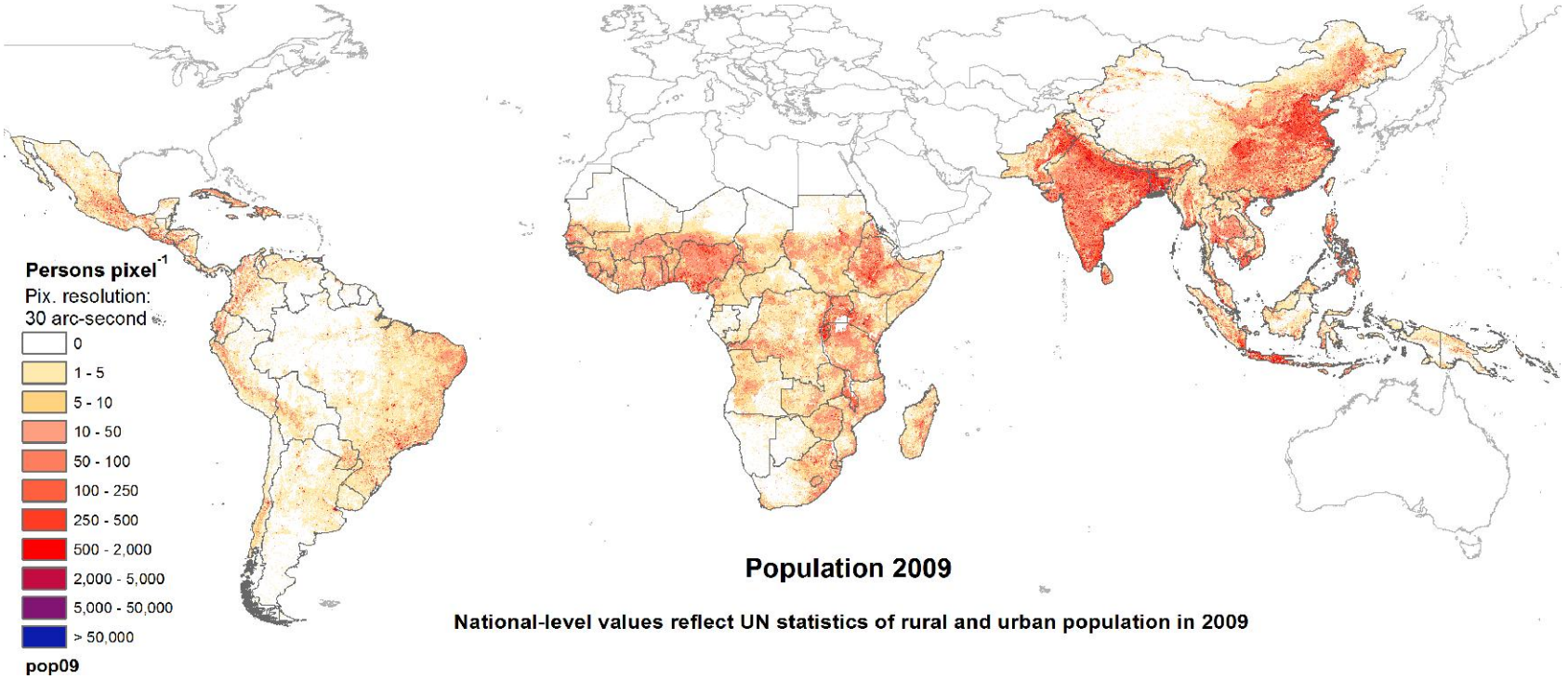


Figure 25: Distribution of woodfuels consumption in 2009 based on FAO Forestry Statistics.

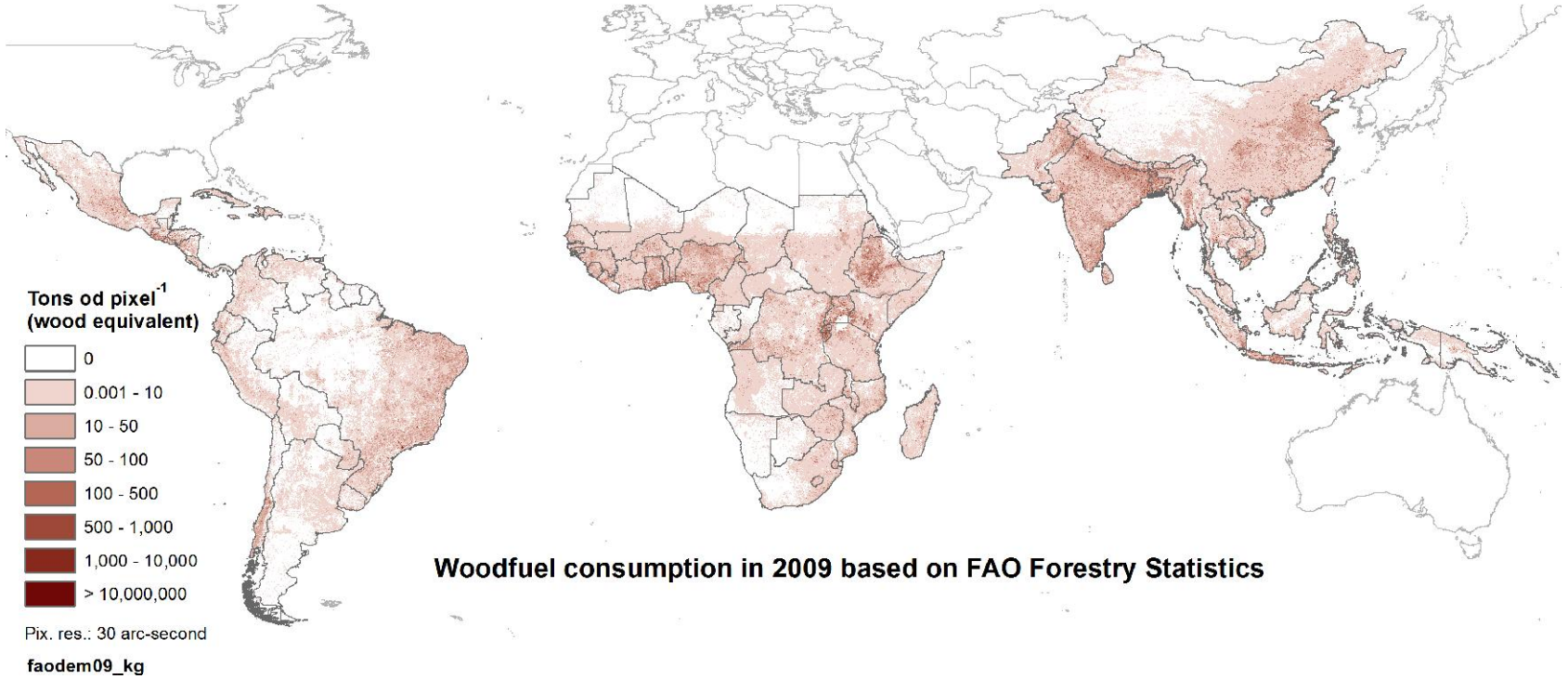


Figure 26: Distribution of woodfuels consumption in 2009 based on UN Energy Statistics.

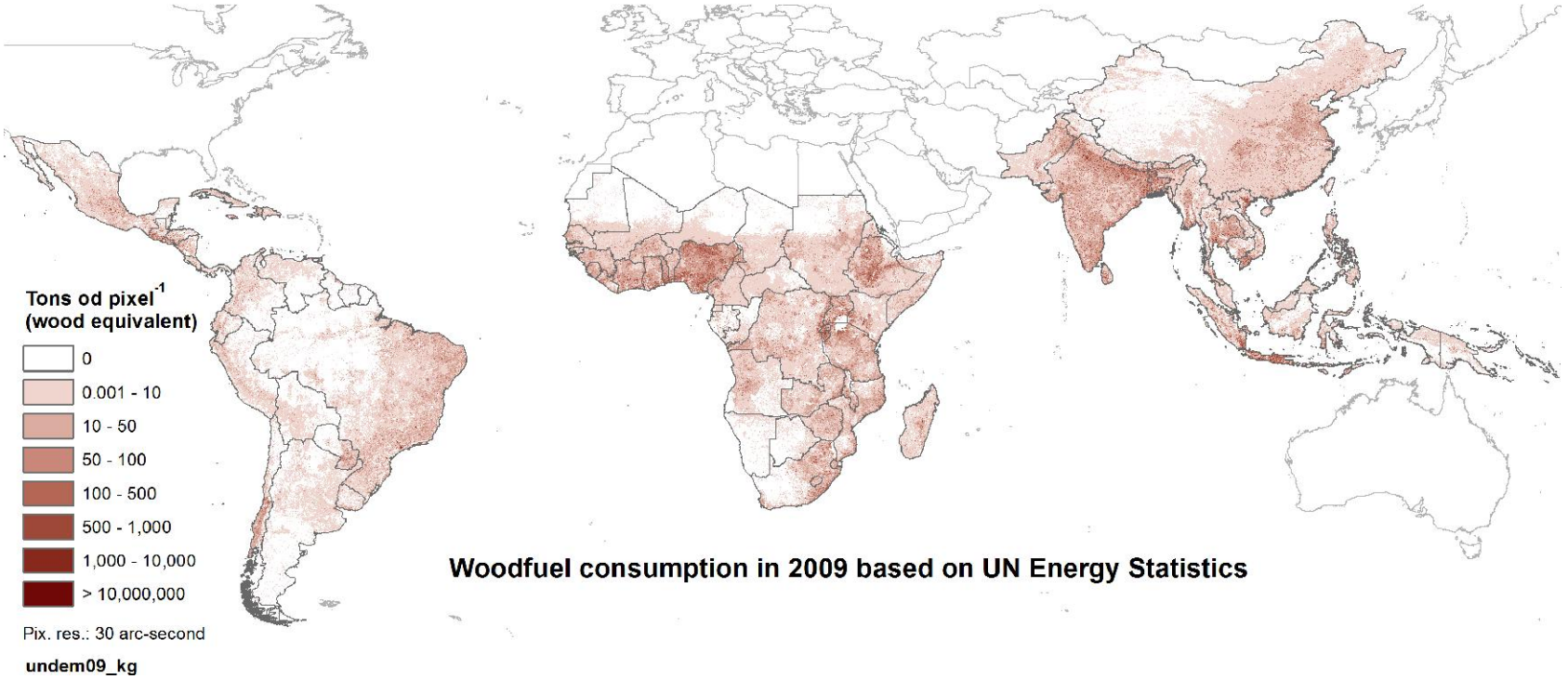


Figure 27: Distribution of woodfuels consumption in 2009 based on "Best Estimates" variant.

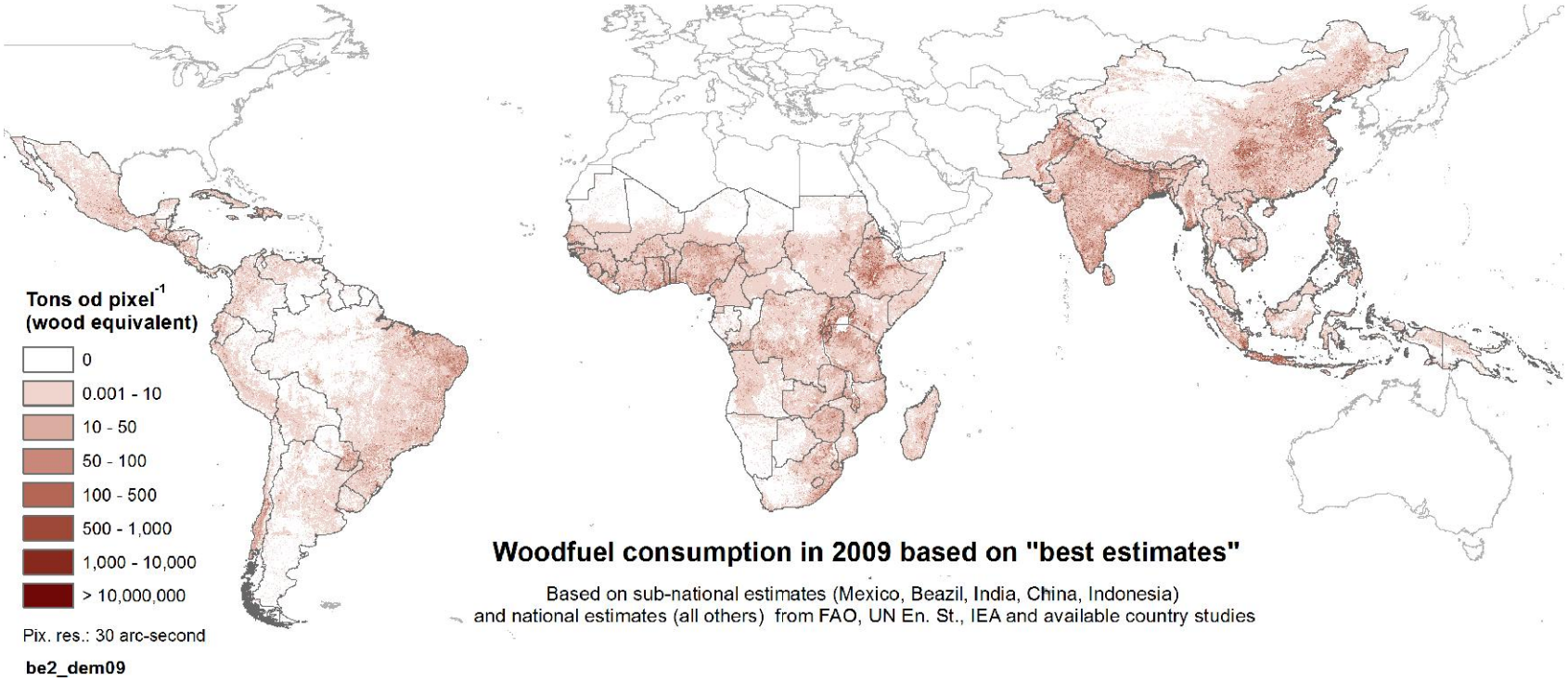


Figure 28: Supply/demand balance in 2009 based on supply potential and FAO-based woodfuels demand.

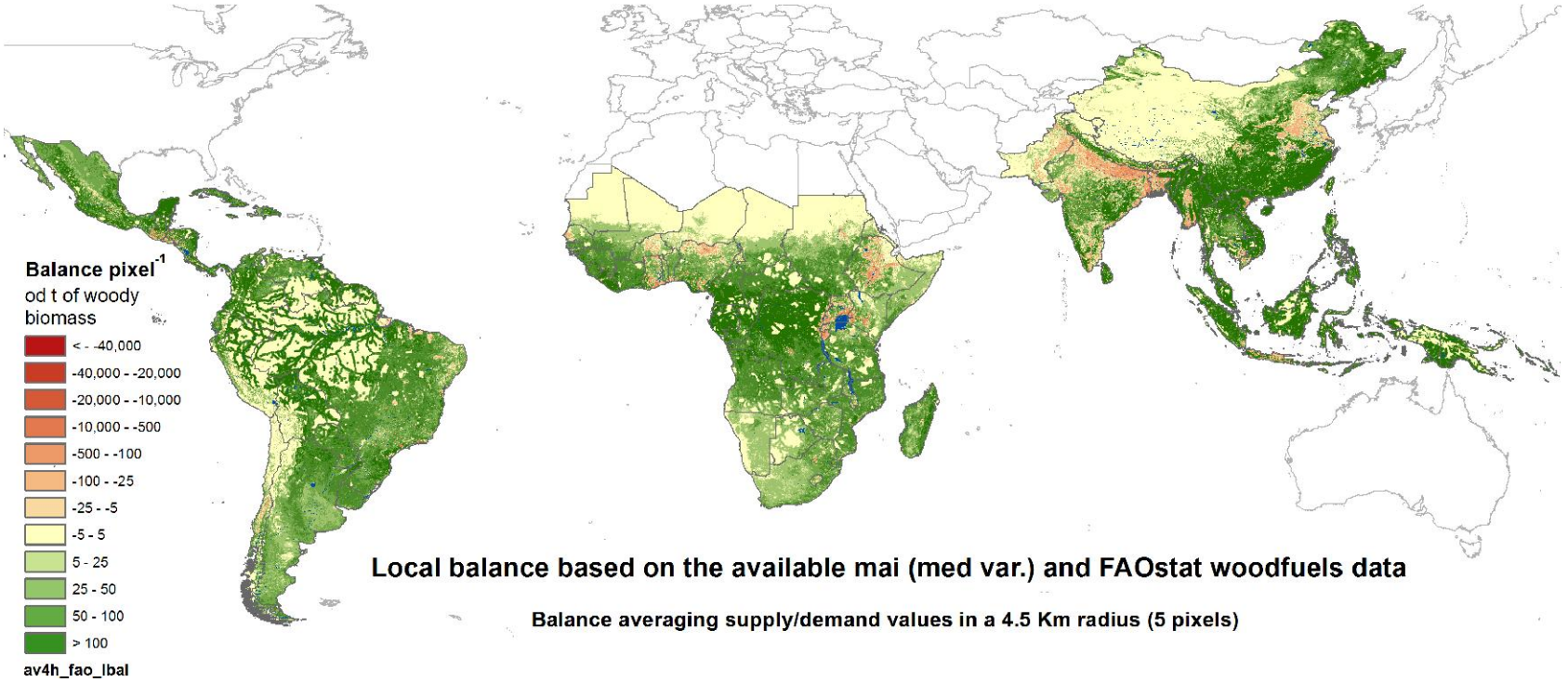


Figure 29: Supply/demand balance in 2009 based on supply potential and UN energy-based woodfuels demand.

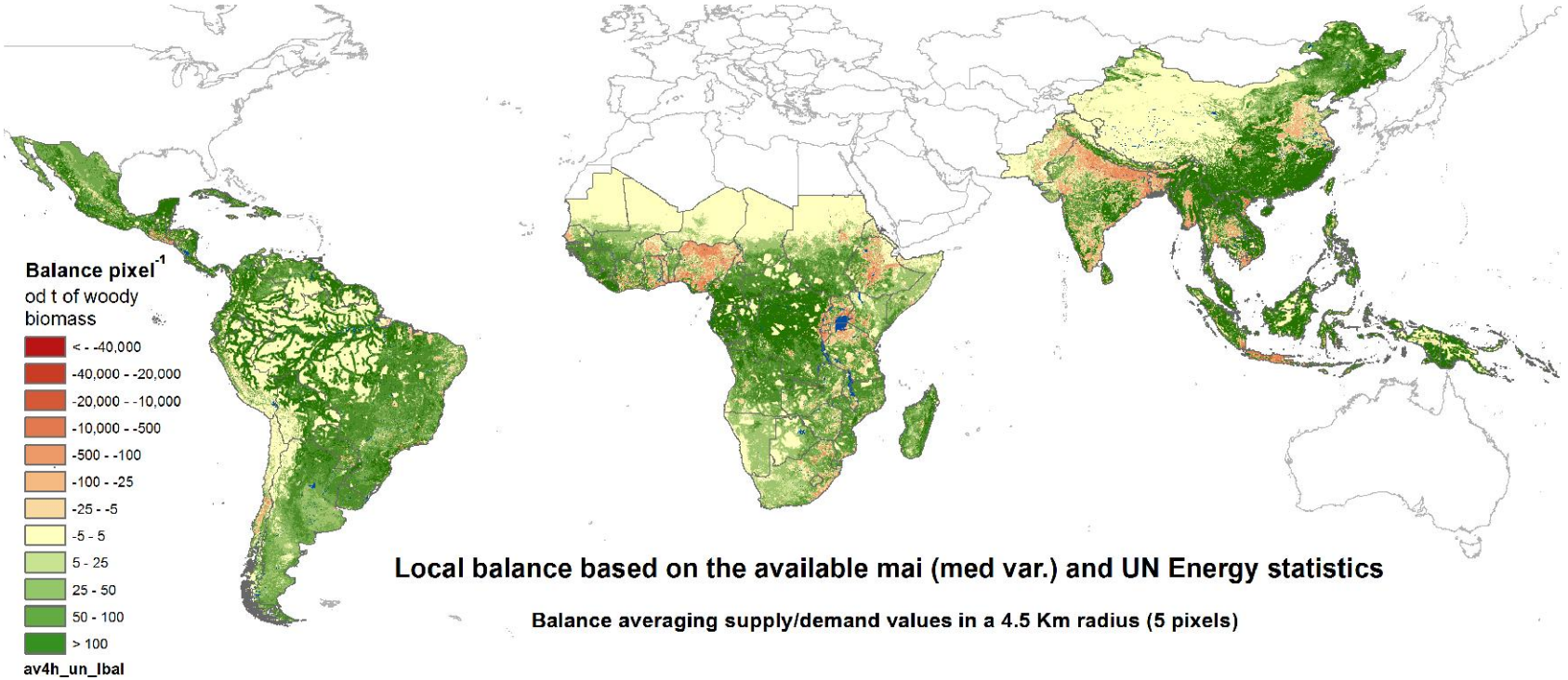


Figure 30: Supply/demand balance in 2009 based on supply potential and woodfuels demand according to "Best Estimate" variant

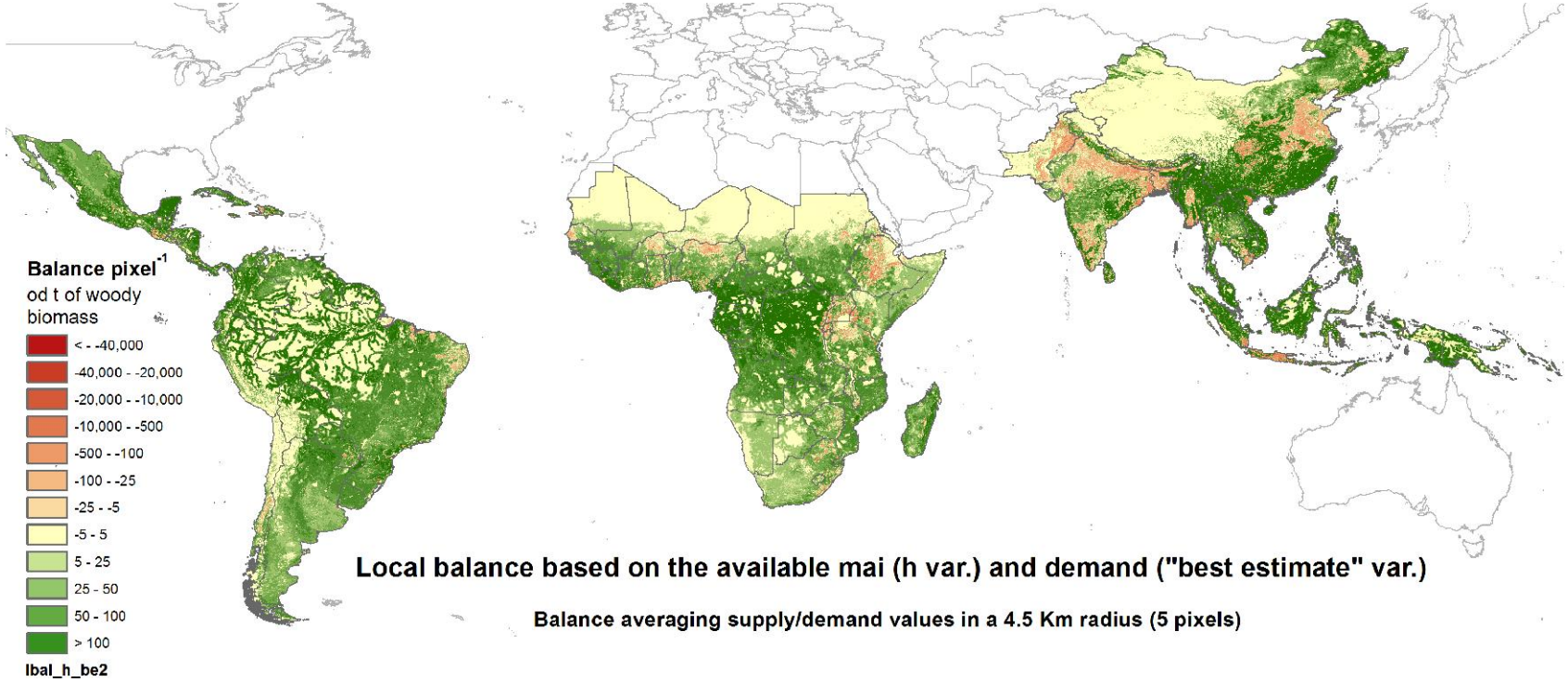


Figure 31: African woodsheds – here and in the following three maps, colored areas represent major commercial woodsheds (consumption areas in red shades and wood resources where harvesting is concentrated in green shades). Light grey shades indicate local supply/demand areas. White areas indicate absent or negligible supply/demand areas.

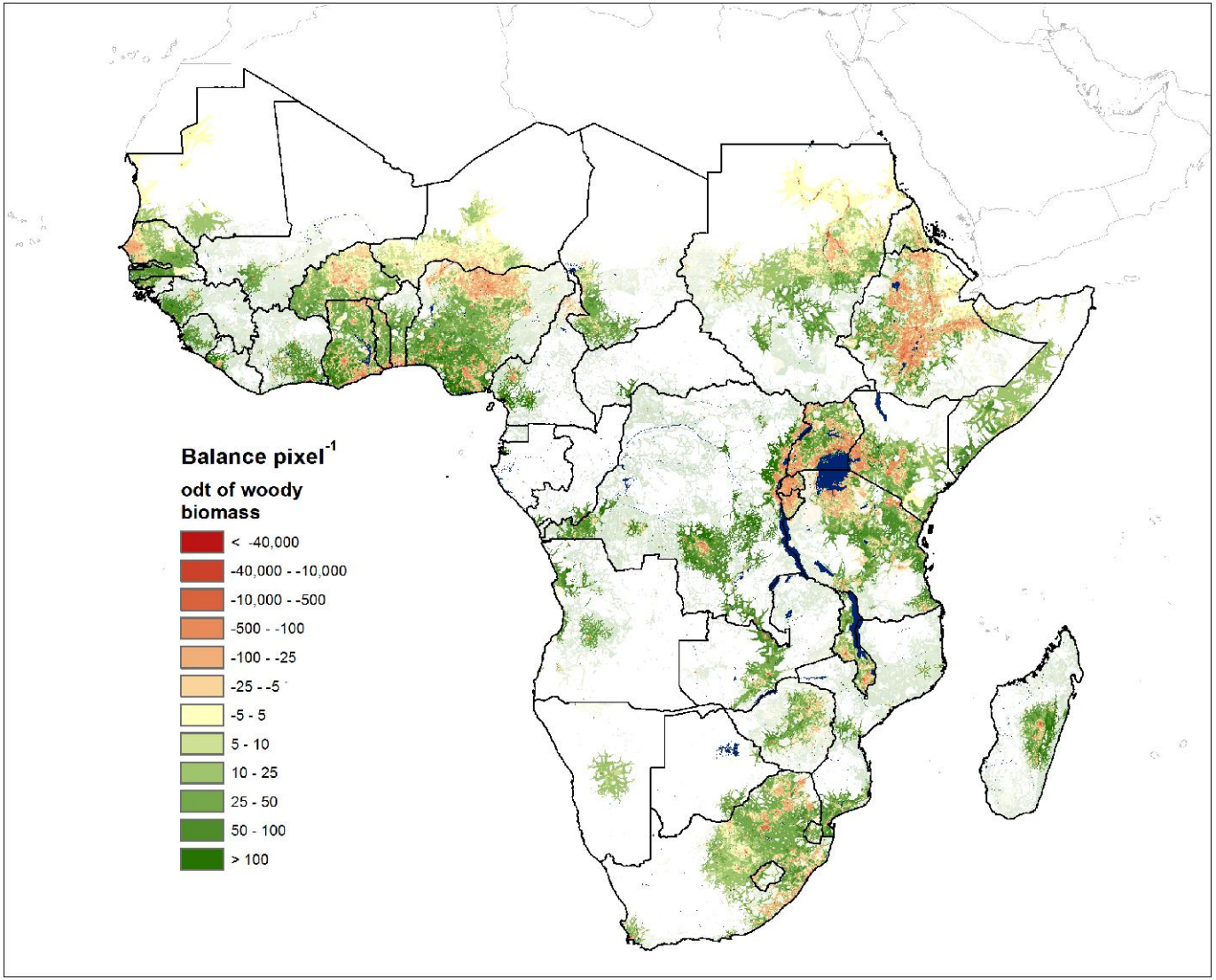


Figure 32: Central American woodsheds

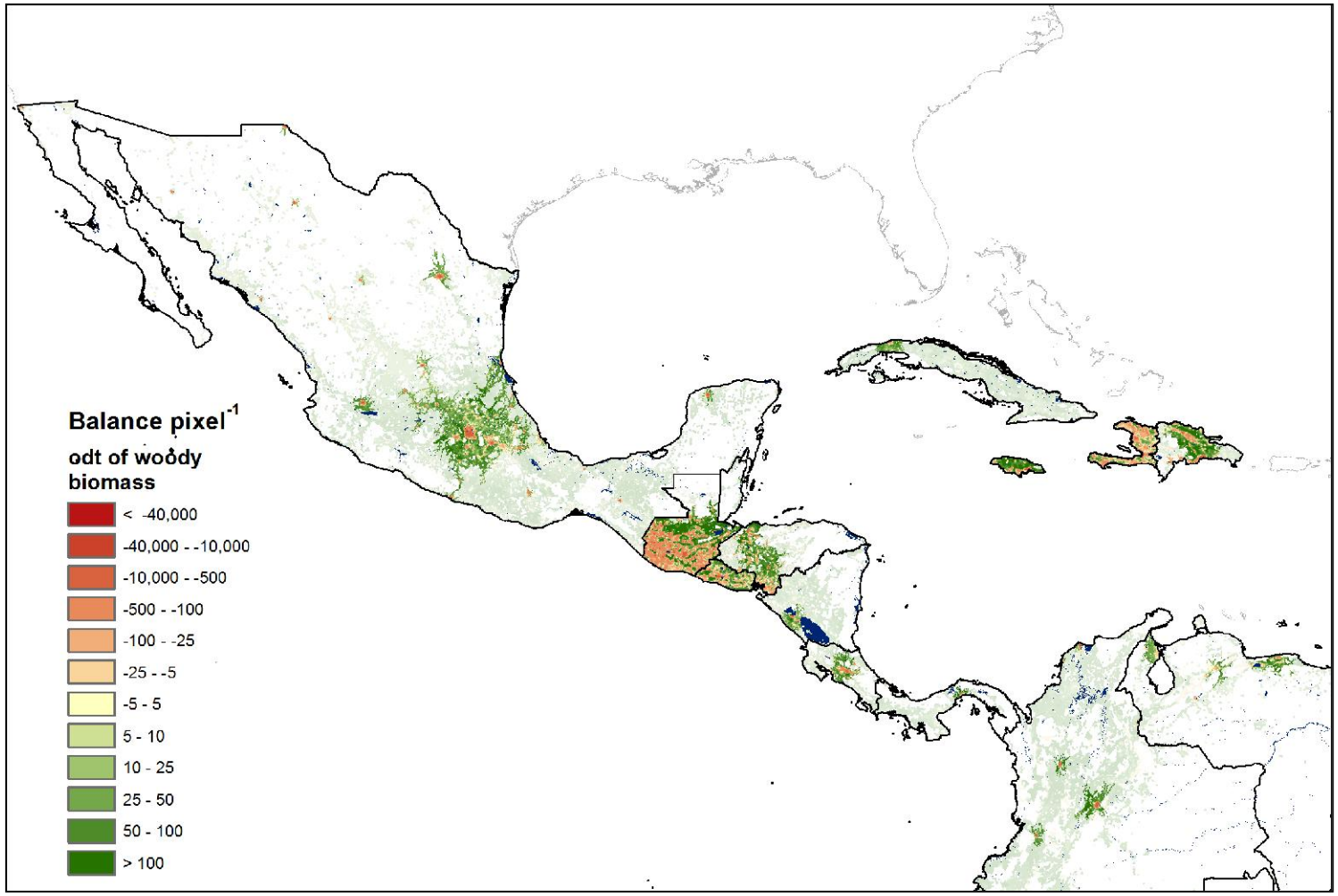


Figure 33: South American woodsheds

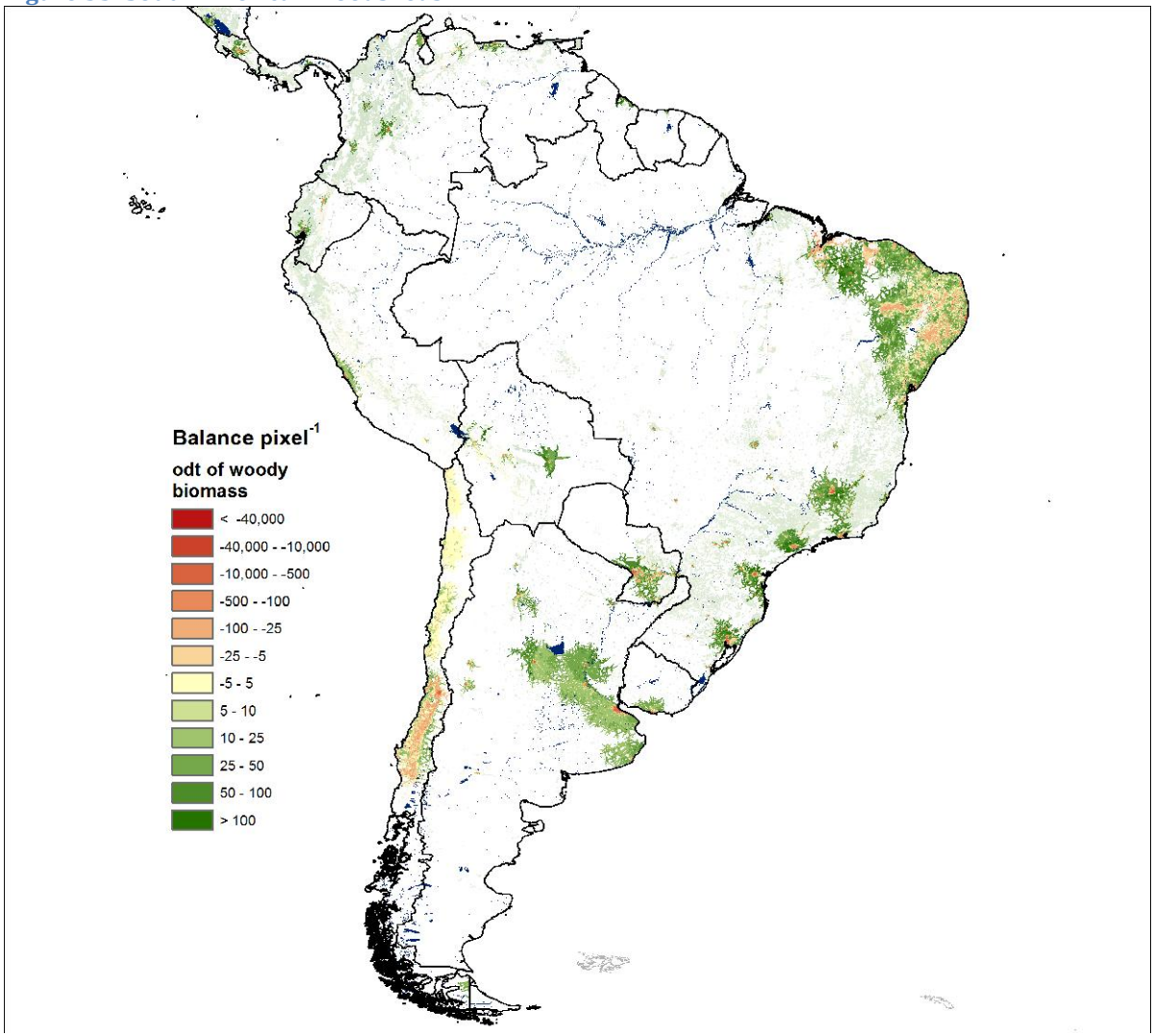


Figure 34: Asian woodsheds

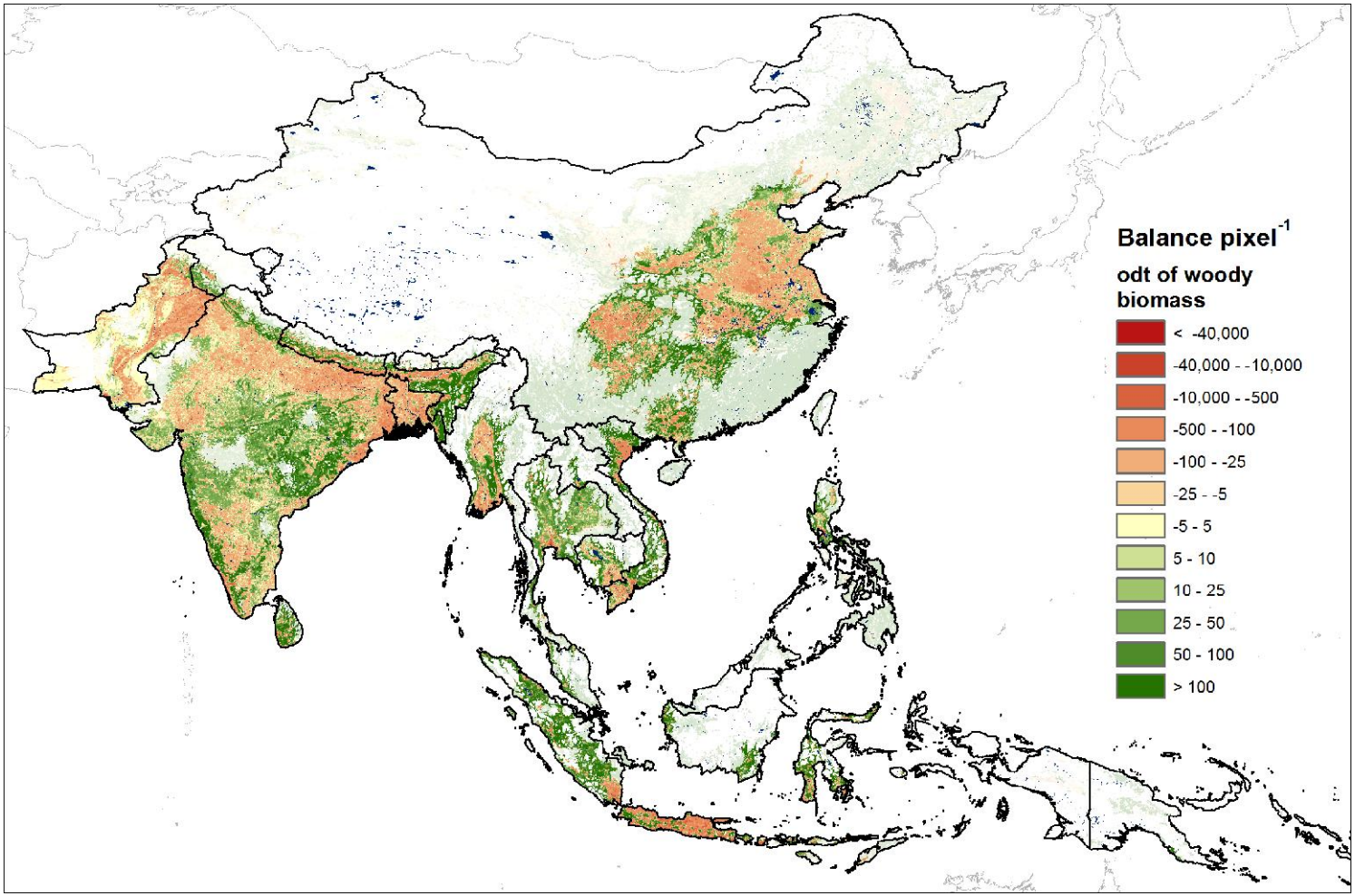


Figure 35: NRB from deforestation and RB from afforestation processes by sub-national units. Top map shows comparable absolute values and bottom map shows percent of total harvesting for energy uses.

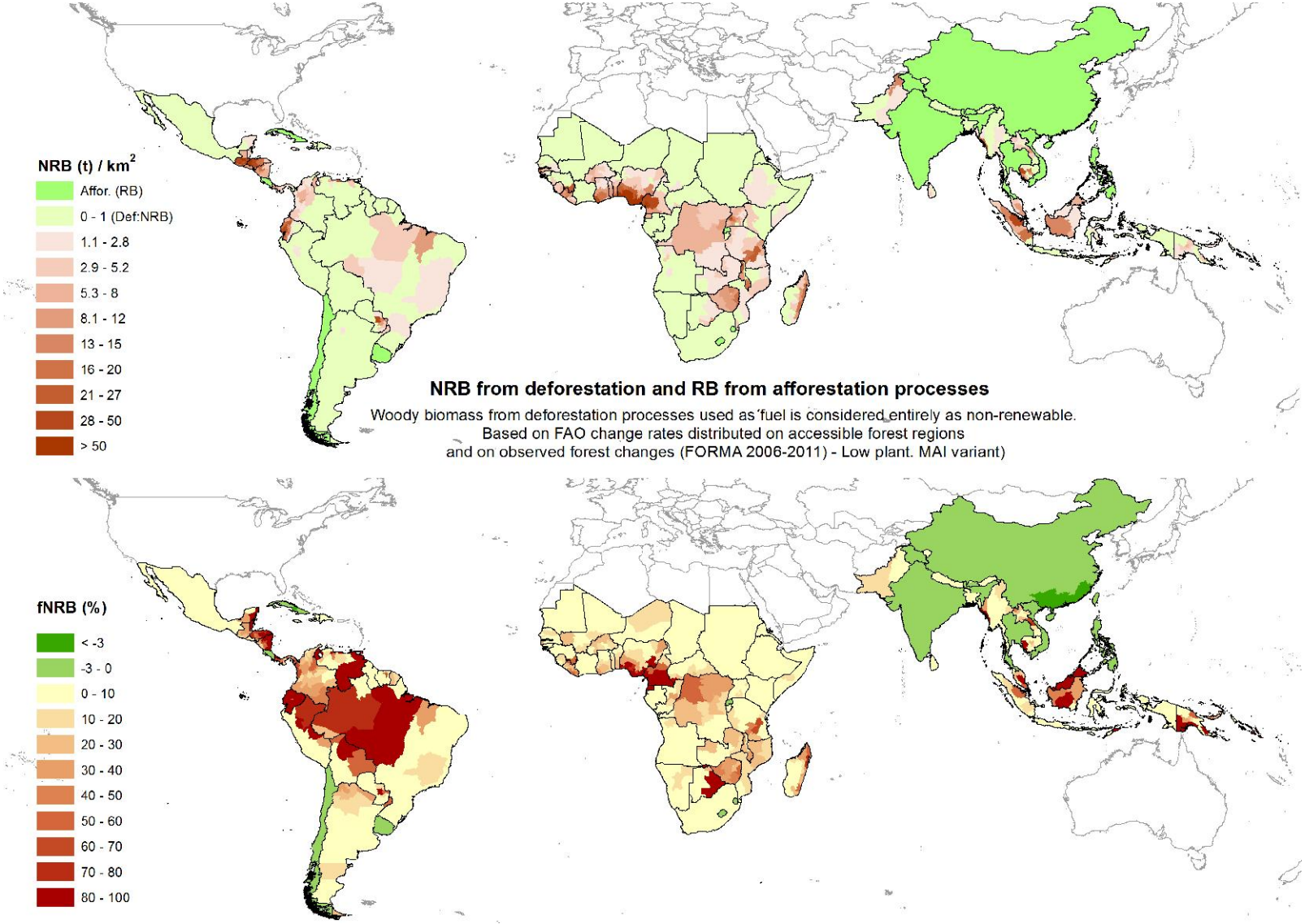


Figure 36: Minimum NRB values without and with inclusion of deforestation and afforestation. Low (IIT) plantation productivity variant.

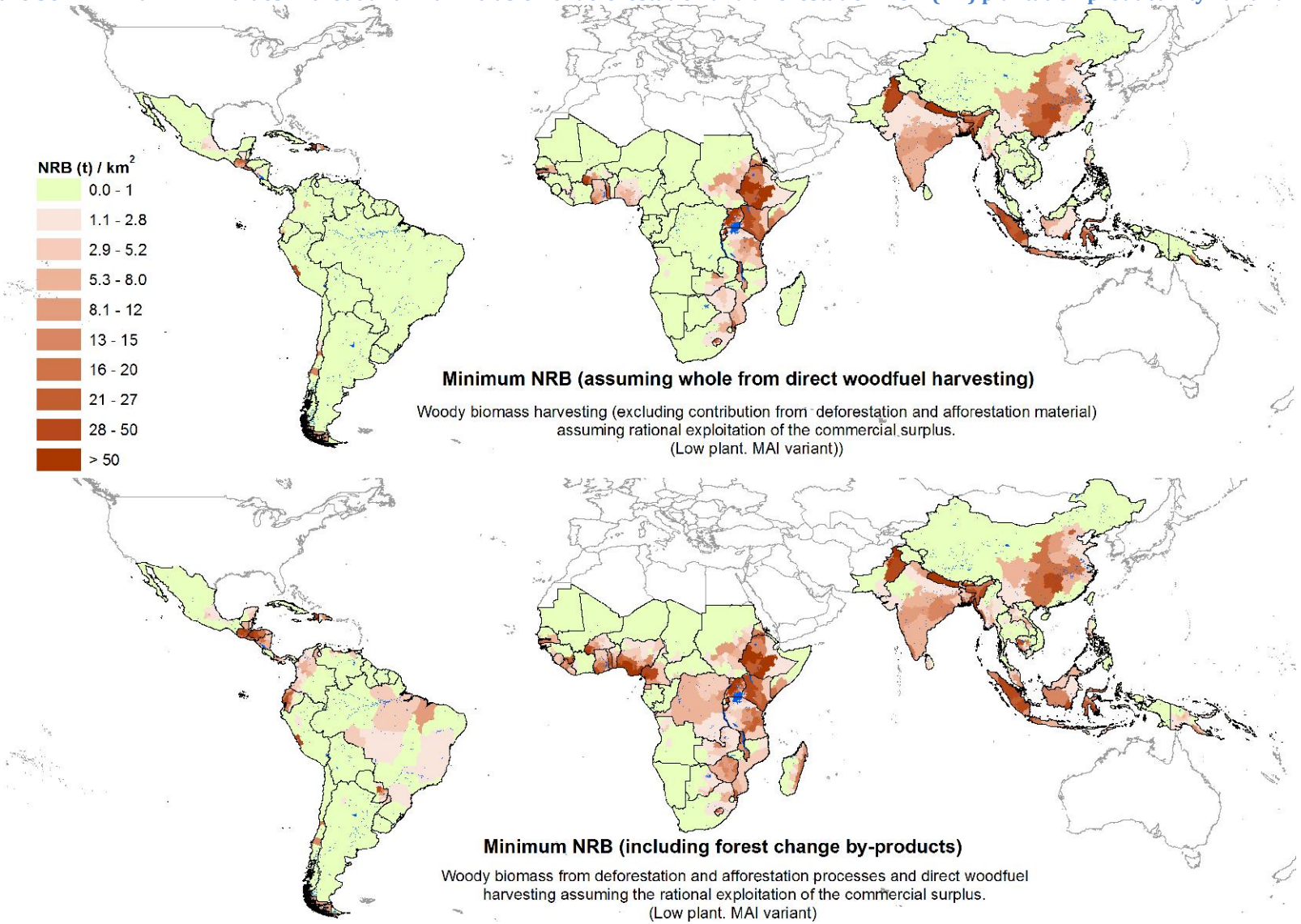


Figure 37: Minimum NRB values without and with inclusion of deforestation and afforestation. High (IPCC) plantation productivity variant.

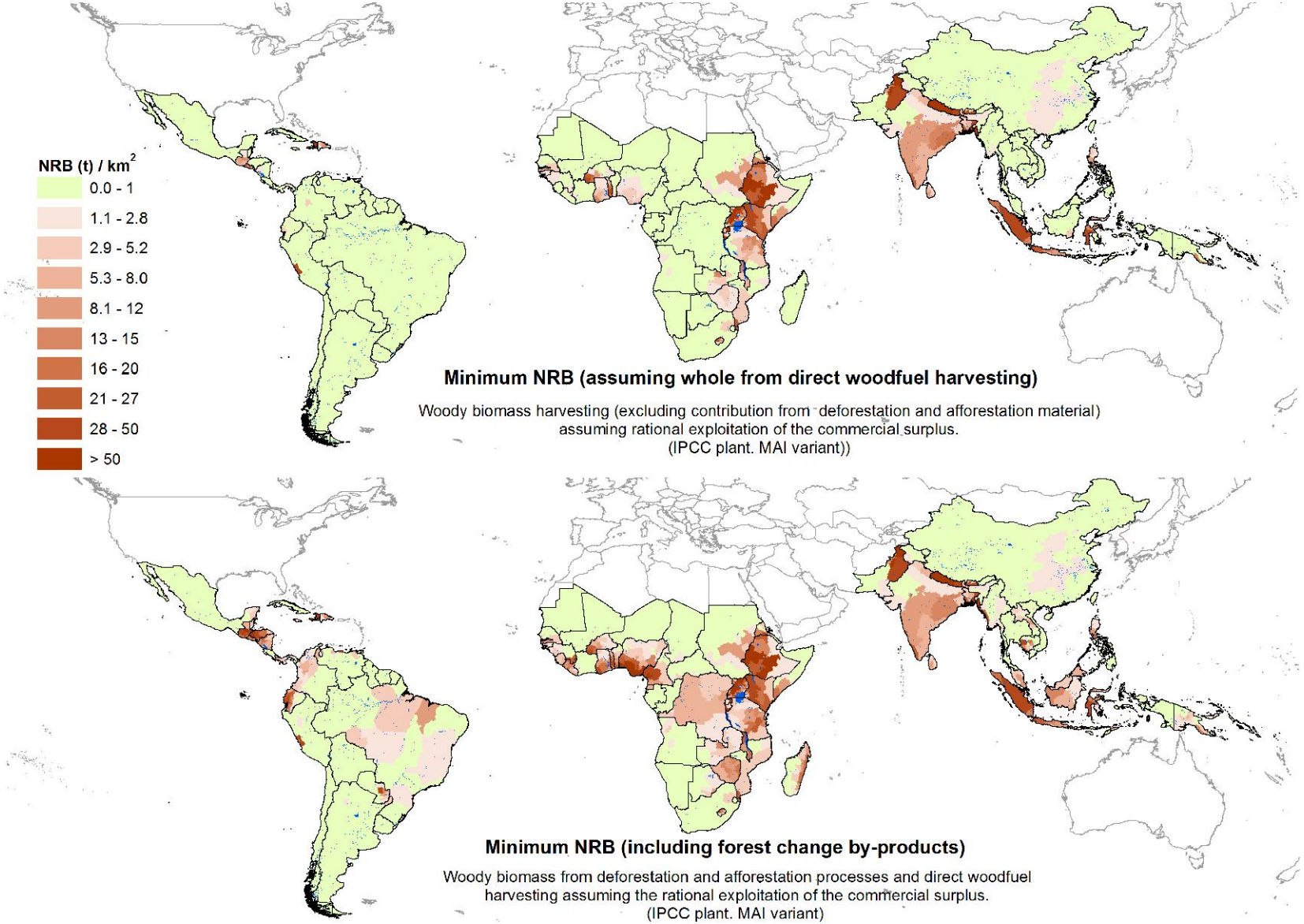


Figure 38: Expected NRB values without and with inclusion of deforestation and afforestation. Low (IIT) plantation productivity variant.

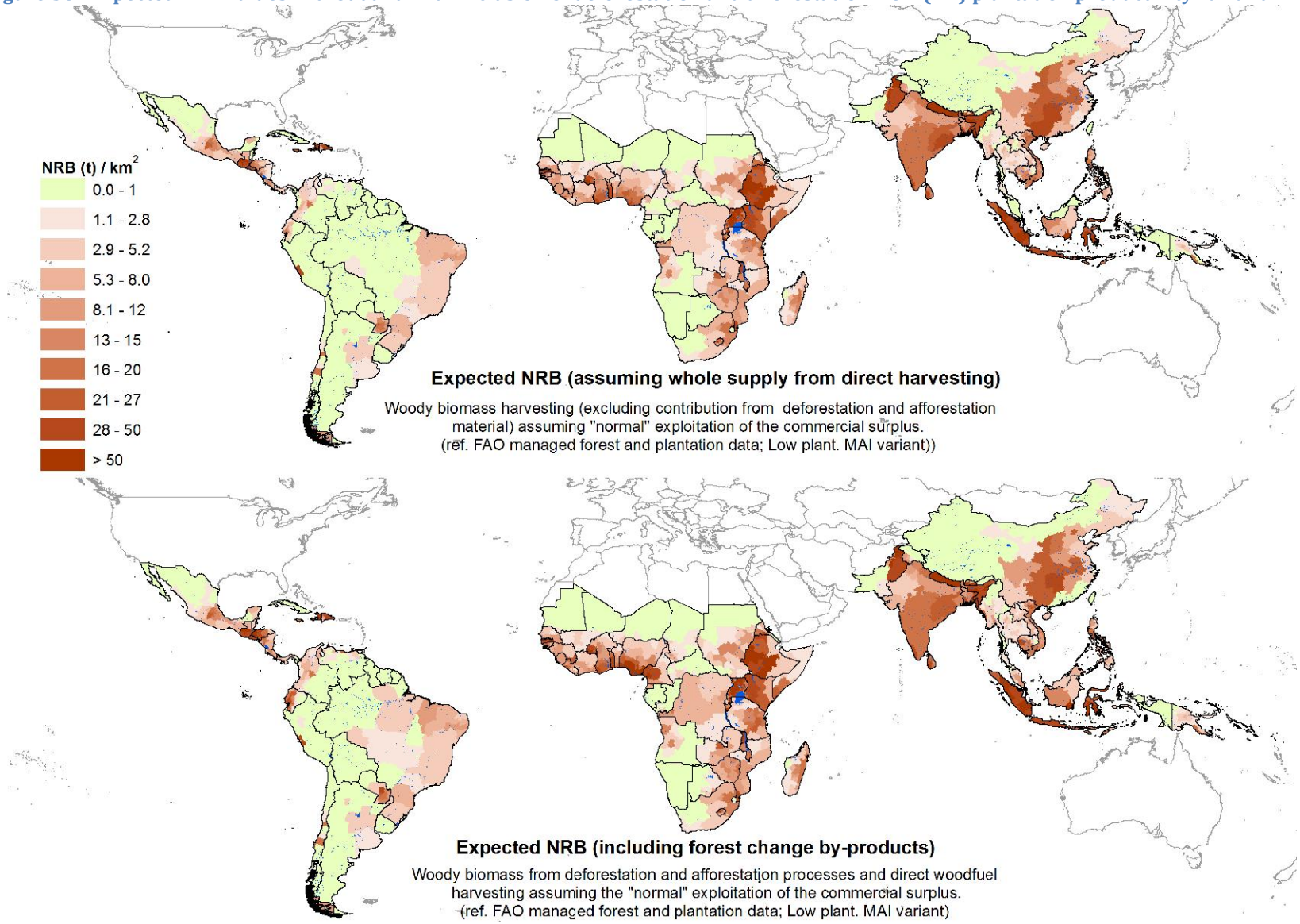


Figure 39: Expected NRB values without and with inclusion of deforestation and afforestation. High (IPCC) plantation productivity variant.

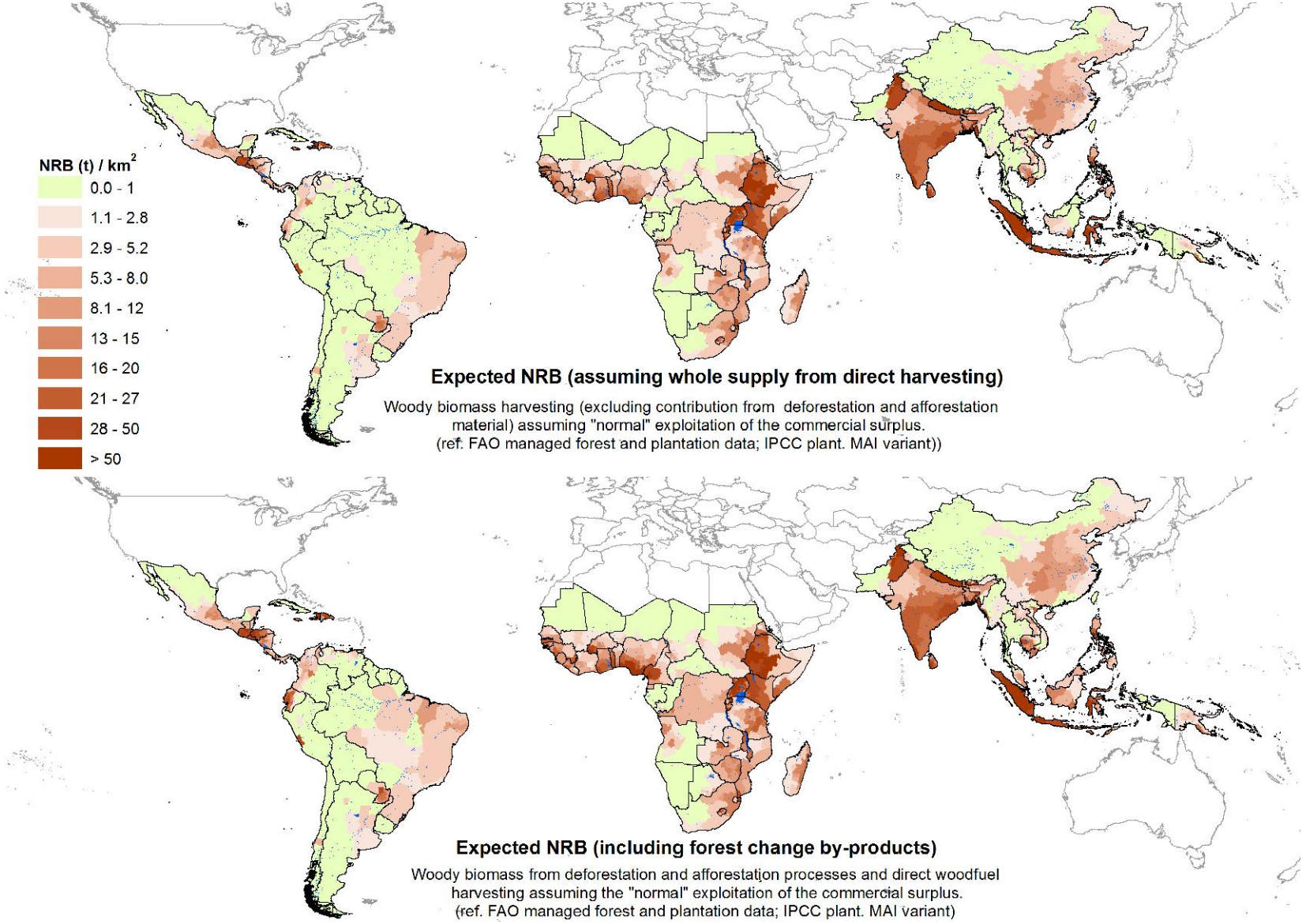


Table 6: Country-level NRB results: minimum fNRB assumes the rational, or optimal exploitation of woody biomass resources; expected fNRB assumes current management practices

		Low plantation productivity variant							High plantation productivity variant						
	Harvesting (**)	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation					NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation				
				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**	
		Minimum	Expected		Minimum	Expected	Minimum	**Expected**	Minimum	Expected		Minimum	Expected	Minimum	**Expected**
Country	Kt	%	%	%	%	%	%	**%**	%	%	%	%	%	%	%
	rec_dem_l_tot	mfNRB_00_l	efNRB_00_l	fNRB_def_aff	mfNRB_oth_l	efNRB_oth_l	mfNRB_tot_l	efNRB_tot_l	mfNRB_00_h	efNRB_00_h	fNRB_def_aff	mfNRB_oth_h	efNRB_oth_h	mfNRB_tot_h	efNRB_tot_h
Angola	8,310	5.1	35.1	5.6	1.5	29.5	7.1	35.1	4.7	34.9	5.6	1.3	29.2	6.9	34.9
Benin	3,748	3.1	19.6	17.0	0.1	4.9	17.1	21.9	2.4	19.0	17.0	0.1	4.5	17.1	21.5
Botswana	677	0.8	17.0	85.4	0.6	4.1	86.0	89.5	0.8	17.0	85.4	0.6	4.1	86.0	89.5
Burkina Faso	7,623	31.6	48.1	12.9	23.2	35.2	36.1	48.1	30.3	47.1	12.9	21.9	34.2	34.8	47.1
Burundi	3,194	49.8	57.6	2.8	49.2	56.3	51.9	59.1	46.4	54.8	2.8	43.7	52.0	46.4	54.8
Cameroon	8,846	0.9	9.1	73.8	0.0	2.0	73.8	75.8	0.9	9.0	73.7	0.0	2.0	73.7	75.7
Central African Rep.	1,882	1.8	23.5	11.8	0.2	14.6	12.0	26.4	1.8	23.5	11.8	0.2	14.6	12.0	26.4
Chad	5,481	1.8	23.7	3.7	0.8	20.0	4.6	23.7	1.8	23.7	3.7	0.8	19.9	4.6	23.7
Congo	2,043	0.0	9.0	4.3	0.0	5.5	4.3	9.8	0.0	9.0	4.3	0.0	5.5	4.3	9.9
Côte d'Ivoire	10,984	1.1	17.6	0.5	0.9	17.1	1.4	17.6	1.0	15.0	0.5	0.8	14.6	1.3	15.0
Dem. Rep. of Congo	52,531	0.5	16.7	22.6	0.0	1.5	22.6	24.0	0.5	16.7	22.6	0.0	1.5	22.6	24.0
Equatorial Guinea	247	0.0	10.7	94.0	0.0	0.0	94.0	94.0	0.0	10.7	94.0	0.0	0.0	94.0	94.0
Eritrea	1,807	56.5	68.1	1.3	55.3	66.8	56.5	68.1	55.9	67.6	1.3	54.6	66.4	55.9	67.6
Ethiopia	60,478	48.1	61.6	1.7	46.3	59.9	48.1	61.6	47.2	60.9	1.7	45.4	59.2	47.2	60.9
Gabon	635	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gambia	647	25.7	41.9	-0.4	25.3	41.5	25.3	41.5	25.0	41.3	-0.4	24.6	40.9	24.6	40.9
Ghana	15,465	9.5	29.4	18.1	0.6	11.3	18.7	29.4	7.4	27.7	18.1	0.0	9.5	18.1	27.7
Guinea	8,344	1.8	21.4	11.1	1.1	15.1	12.2	26.2	3.5	28.3	11.1	2.0	22.0	13.1	33.1
Guinea-Bissau	1,515	3.2	27.9	6.2	0.2	21.7	6.4	27.9	3.0	27.8	6.2	0.2	21.6	6.4	27.8
Ilemi triangle *	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kenya	23,154	54.2	63.9	2.7	51.5	61.1	54.2	63.9	53.3	63.1	2.7	50.6	60.4	53.3	63.1
Lesotho	1,129	40.9	53.0	0.0	40.9	53.0	40.9	53.0	39.5	51.9	0.0	39.5	51.9	39.5	51.9
Liberia	3,840	1.6	23.1	24.8	0.0	3.4	24.8	28.3	1.6	22.9	24.8	0.0	3.4	24.8	28.2
Madagascar	11,652	1.7	27.5	20.9	0.4	12.4	21.2	33.3	1.5	25.7	20.9	0.3	11.2	21.2	32.1
Malawi	5,003	24.2	41.4	29.3	1.9	12.2	31.2	41.4	12.9	32.8	29.3	0.0	3.5	29.3	32.8
Mali	3,243	4.0	29.6	10.7	0.2	19.0	10.9	29.6	2.5	28.5	10.7	0.2	17.8	10.9	28.5
Mauritania	1,101	55.9	69.1	2.1	53.8	67.0	55.9	69.1	55.8	69.1	2.1	53.7	67.0	55.8	69.1
Mozambique	13,092	16.2	39.7	13.7	8.8	26.0	22.5	39.7	16.1	39.6	13.7	8.6	25.8	22.3	39.6
Namibia	286	21.5	45.3	11.8	15.0	35.8	26.7	47.6	21.5	45.3	11.8	15.0	35.8	26.7	47.6
Niger	3,633	35.2	49.4	1.3	33.9	48.1	35.2	49.4	34.7	49.0	1.3	33.3	47.7	34.7	49.0
Nigeria	38,098	5.1	19.5	48.0	0.0	3.2	48.0	51.2	3.4	18.1	47.9	0.0	2.9	48.0	50.9

		Low plantation productivity variant							High plantation productivity variant						
	Harvesting (**)	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation					NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation				
				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**	
		Minimum	Expected		Minimum	Expected	Minimum	**Expected**	Minimum	Expected		Minimum	Expected	Minimum	**Expected**
Country	Kt	%	%	%	%	%	%	**%**	%	%	%	%	%	%	%
Rwanda	4,313	64.3	65.6	-0.9	63.4	64.7	63.4	64.7	51.3	53.1	-0.9	50.4	52.2	50.4	52.2
Senegal	5,239	16.6	38.8	10.3	8.7	28.5	19.0	38.8	9.1	33.3	10.3	2.3	23.0	12.6	33.3
Sierra Leone	3,264	0.1	22.1	9.7	0.0	12.4	9.7	22.1	0.1	21.7	9.7	0.0	12.0	9.7	21.7
Somalia	7,019	25.4	52.4	6.5	19.1	46.0	25.6	52.4	25.4	52.4	6.5	19.1	45.9	25.5	52.4
South Africa	23,911	4.6	24.8	0.0	4.6	24.8	4.6	24.8	2.7	22.8	0.0	2.7	22.8	2.7	22.8
Sudan	17,836	22.7	41.0	0.9	21.9	40.2	22.7	41.0	23.0	41.1	0.9	22.2	40.2	23.1	41.1
Swaziland	634	0.0	1.5	-0.5	0.0	1.4	0.0	1.4	0.0	13.6	-0.5	0.0	13.1	0.0	13.1
Togo	3,778	29.1	44.9	10.1	18.9	34.8	29.1	44.9	26.8	43.1	10.1	16.6	33.0	26.8	43.1
Uganda	23,431	48.6	61.5	6.9	42.1	54.6	49.0	61.5	48.1	61.1	6.9	41.5	54.2	48.5	61.1
Un.Rep. of Tanzania	32,861	14.5	18.1	14.7	6.5	9.2	21.2	23.9	13.5	17.1	14.7	5.7	8.3	20.4	23.0
Zambia	11,569	12.9	33.9	12.2	6.2	21.9	18.4	34.0	12.6	33.8	12.2	6.0	21.7	18.2	33.9
Zimbabwe	10,584	9.2	33.3	35.6	0.0	2.2	35.6	37.8	8.5	32.8	35.6	0.0	1.9	35.6	37.5
Argentina	8,099	0.0	27.4	9.6	0.0	19.2	9.6	28.8	0.0	26.3	9.6	0.0	18.1	9.6	27.7
Belize	81	0.7	22.6	99.2	0.0	0.0	99.2	99.2	0.7	22.7	99.3	0.0	0.0	99.3	99.3
Bolivia	1,548	0.8	9.8	24.5	0.7	8.0	25.2	32.5	0.8	9.8	24.5	0.7	8.0	25.2	32.5
Brazil	92,698	0.0	18.5	13.7	0.0	11.0	13.7	24.7	0.0	16.2	13.8	0.0	9.0	13.8	22.8
Chile	9,278	22.3	25.3	-0.2	22.2	25.2	22.2	25.2	0.0	2.3	-0.2	0.0	2.3	0.0	2.3
Colombia	6,676	4.8	29.9	26.7	0.5	7.9	27.2	34.6	4.0	29.4	26.7	0.0	7.5	26.7	34.2
Costa Rica	2,020	0.6	22.8	-0.7	0.3	22.1	0.3	22.1	0.0	14.6	-0.7	0.0	13.9	0.0	13.9
Cuba	1,335	0.1	3.8	-1.9	0.0	2.0	0.0	2.0	0.3	3.9	-1.9	0.0	2.1	0.0	2.1
Dominican Republic	3,358	7.5	33.0	0.0	7.5	33.0	7.5	33.0	7.5	33.0	0.0	7.5	33.0	7.5	33.0
Ecuador	3,018	5.7	28.2	99.0	0.0	0.1	99.0	99.0	4.0	27.0	98.9	0.0	0.1	98.9	99.0
El Salvador	2,227	18.3	38.1	10.5	8.0	27.6	18.5	38.1	15.9	36.3	10.5	5.7	25.8	16.2	36.3
French Guiana	66	0.0	4.3	16.5	0.0	0.0	16.5	16.5	0.0	4.4	16.5	0.0	0.0	16.5	16.5
Guatemala	10,541	11.0	34.9	29.0	0.0	6.0	29.0	34.9	6.4	31.5	29.0	0.0	2.9	29.0	31.9
Guyana	559	0.2	3.9	0.0	0.2	3.9	0.2	3.9	0.2	3.9	0.0	0.2	3.9	0.2	3.9
Haiti	4,272	59.6	67.2	0.5	59.1	66.6	59.6	67.2	58.2	66.0	0.5	57.7	65.5	58.2	66.0
Honduras	5,097	1.1	19.9	63.6	0.0	0.0	63.6	63.7	1.1	19.9	63.6	0.0	0.0	63.6	63.7
Jamaica	1,115	0.0	19.4	2.4	0.0	17.1	2.4	19.4	0.0	17.5	2.4	0.0	15.1	2.4	17.5
Mexico	17,848	3.4	27.9	1.7	2.9	26.7	4.6	28.4	0.8	24.6	1.7	0.5	23.4	2.2	25.1
Nicaragua	2,201	7.4	32.2	53.8	0.0	4.4	53.8	58.2	6.6	31.6	53.8	0.0	3.8	53.8	57.6
Panama	696	2.1	23.7	47.4	0.0	1.5	47.4	48.9	5.9	31.4	46.6	0.0	3.7	46.6	50.3
Paraguay	7,458	0.2	29.3	18.4	0.1	20.1	18.5	38.5	0.2	29.0	18.4	0.1	19.8	18.5	38.2
Peru	4,449	24.2	26.4	5.3	23.9	25.9	29.2	31.2	23.5	25.7	5.3	23.3	25.2	28.5	30.5

		Low plantation productivity variant							High plantation productivity variant						
	Harvesting (**)	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation					NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from deforestation e afforestation				
				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**				NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		**Total NRB incl. def or aff and addit. harvesting**	
		Minimum	Expected		Minimum	Expected	Minimum	**Expected**	Minimum	Expected		Minimum	Expected	Minimum	**Expected**
Country	Kt	%	%	%	%	%	%	**%**	%	%	%	%	%	%	%
Suriname	121	0.0	12.5	9.5	0.0	8.6	9.5	18.1	0.0	12.5	9.5	0.0	8.6	9.5	18.1
Trinidad and Tobago	39	0.0	1.2	55.5	0.0	0.1	55.5	55.6	0.0	1.4	55.2	0.0	0.1	55.2	55.2
Uruguay	1,326	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Venezuela	2,421	0.0	21.5	42.7	0.0	10.0	42.7	52.7	0.0	21.5	42.7	0.0	10.0	42.7	52.7
Aksai Chin *	0	70.2	75.2	0.0	70.2	75.2	70.2	75.2	69.8	74.9	0.0	69.8	74.9	69.8	74.9
Arunachal Pradesh *	429	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bangladesh	17,584	46.6	52.3	0.2	46.4	52.1	46.6	52.3	43.6	49.6	0.2	43.4	49.4	43.6	49.6
Bhutan	2,777	39.6	56.4	-0.3	39.3	56.0	39.3	56.0	39.2	56.0	-0.3	38.8	55.7	38.8	55.7
Brunei Darussalam	12	0.0	0.0	87.2	0.0	0.0	87.2	87.2	0.0	0.0	87.2	0.0	0.0	87.2	87.2
Cambodia	5,969	0.6	23.7	26.3	0.5	12.4	26.8	38.7	0.6	22.6	26.3	0.4	11.8	26.7	38.1
China	242,127	15.3	23.3	-1.3	14.5	22.2	14.5	22.2	1.3	10.8	-1.3	1.1	9.8	1.1	9.8
China/India *	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
India	200,298	11.0	23.9	-0.1	10.9	23.7	10.9	23.7	9.6	22.6	-0.1	9.5	22.5	9.5	22.5
Indonesia	99,890	20.3	41.0	12.9	12.6	30.1	25.5	43.1	21.2	41.2	11.8	14.3	31.8	26.2	43.6
Jammu Kashmir *	2,600	2.2	16.4	-0.2	2.0	16.2	2.0	16.2	40.7	49.4	-0.2	40.5	49.2	40.5	49.2
Lao People Dem.Rep.	3,613	1.4	18.5	17.1	0.5	10.3	17.5	27.4	1.4	18.0	17.1	0.5	10.0	17.5	27.1
Malaysia	3,317	0.0	0.0	46.9	0.0	0.0	46.9	46.9	0.0	0.0	46.1	0.0	0.0	46.1	46.1
Myanmar	22,862	4.7	5.3	6.4	2.9	3.4	9.3	9.8	1.2	1.8	6.4	0.4	0.7	6.8	7.2
Nepal	18,700	44.0	52.8	0.0	44.0	52.8	44.0	52.8	43.1	52.0	0.0	43.1	52.0	43.1	52.0
Pakistan	38,544	79.7	83.8	4.3	76.2	79.6	80.5	83.8	79.0	83.3	4.3	75.4	79.0	79.7	83.3
Philippines	12,563	3.5	21.0	-0.9	2.6	20.1	2.6	20.1	6.6	23.5	-0.9	5.8	22.6	5.8	22.6
Singapore	64	66.8	75.6	0.0	66.8	75.6	66.8	75.6	66.6	75.4	0.0	66.6	75.4	66.6	75.4
Sri Lanka	6,831	0.0	21.8	1.7	0.0	20.1	1.7	21.8	4.7	27.0	1.7	2.9	25.3	4.7	27.0
Thailand	21,924	1.6	5.2	-0.1	1.5	5.1	1.5	5.1	0.1	0.9	-0.1	0.1	0.9	0.1	0.9
Timor-Leste	95	3.7	24.0	100.0	0.0	0.0	100.0	100.0	3.7	23.4	100.0	0.0	0.0	100.0	100.0
Viet Nam	25,105	0.3	17.3	-0.5	0.2	16.8	0.2	16.8	0.2	6.6	-0.5	0.2	6.2	0.2	6.2
Papua New Guinea	3,736	9.9	31.4	20.1	8.9	20.5	29.0	40.5	9.3	31.1	20.1	8.4	20.0	28.5	40.1
Solomon Islands	73	0.0	0.0	100.0	0.0	0.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Africa	**443,132**	**19.9**	**35.7**	**15.0**	**16.1**	**26.7**	**31.1**	**41.6**	**18.8**	**34.8**	**15.0**	**15.4**	**25.9**	**30.4**	**40.9**
Americas	**188,549**	**4.7**	**23.7**	**15.8**	**3.5**	**15.0**	**19.4**	**30.9**	**3.0**	**20.8**	**15.8**	**2.1**	**12.2**	**17.9**	**28.1**
Asia (& Oceania)	**729,113**	**17.8**	**29.2**	**2.9**	**16.2**	**26.7**	**19.1**	**29.6**	**12.9**	**24.2**	**2.7**	**11.6**	**22.0**	**14.3**	**24.7**
Total Tier I countries	**1,360,794**	**16.7**	**30.5**	**8.6**	**14.4**	**25.1**	**23.0**	**33.7**	**13.4**	**27.2**	**8.5**	**11.5**	**21.9**	**20.0**	**30.5**

(*) Disputed area. (**) Harvesting includes woody biomass used as fuelwood, for charcoal production and used as construction material.

Overview of Regional Results

In this section, we examine the national-level NRB estimations for each major region of the pan-tropics: Asia, Latin America and sub-Saharan Africa. We discuss results for the assumption of low plantation productivity. In some cases, an assumption of high productivity will lead to different results (discussed in more detail in the section on "Biomass Productivity" starting on p. 26; also see Figure 11).

Asia

We estimate that tropical Asia's annual demand for woodfuel is roughly 707 million tons, including 683 million tons utilized directly as wood and some 24 million tons converted to charcoal. In addition, some 22 million tons are used as construction material. This demand is concentrated largely in China and India, which together constitute 61% of the total. Indonesia is responsible for 14% of demand, and the remaining demand is concentrated in South Asia (Pakistan, Nepal, and Bangladesh) and SE Asia (Vietnam, Myanmar and Thailand).

We estimate that the majority of the region's demand is harvested renewably. Under optimal management, the proportion of woodfuels harvested sustainably is roughly 81%. The remaining 19% is non-renewable. Of this, almost 3% is met through LULCC, including deforestation driven mainly by other processes as well as afforestation (as described in Appendix 7 and illustrated in Figure 35) and the remaining 16% is met by non-renewable extraction specifically for woodfuels.

If we assume management is not optimal (also described in Appendix 7) the proportion of woodfuels harvested sustainably drops to roughly 70% with the remaining 30% non-renewable. The same amount (some 3%) is met through deforestation driven by other processes while 27% is met by non-renewable extraction that contributes to forest degradation.

Of course, there is wide variation across the region. This is illustrated in Figure 40, which shows the *expected* fraction of NRB (efNRB) for each Asian country. Figure 40 also shows the estimated contribution of LULCC to national woodfuel supply throughout the region. We make this estimation by comparing total NRB *without consideration* of deforestation/afforestation by-products (xNRB_00_y), which is shown by blue bars, and NRB *including* deforestation or afforestation by-products (xNRB_tot_y), which is shown in red.[14] We assume all DEB originating from deforestation is non-renewable, but would probably be unaffected by cookstove interventions (xNRB_def_aff), because it is usually driven by other sources, like agricultural expansion or demand for timber.

In countries where LULCC is minimal or concentrated in thinly populated regions, deforestation contributes little to woodfuel supply and the red and blue bars are nearly identical. However, in

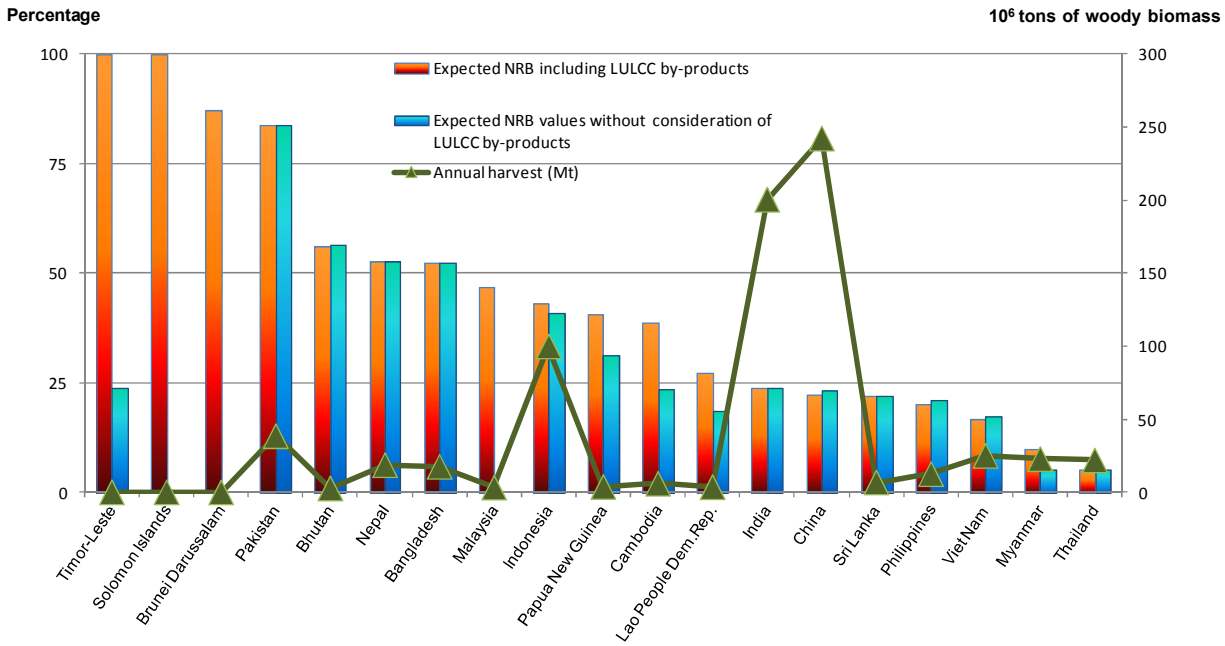
[14] Here x is a placeholder for m (minimum) or e (expected) and y is a placeholder for l (low plantation productivity) or h (high plantation productivity). Note, xNRB_tot_y has a component that may be reduced by the introduction of efficient cookstoves (xNRB_oth_y) and a component will probably be unaffected by cookstove interventions (xNRB_def_aff), because it is driven by other sources, like agricultural expansion or demand for timber.

countries where deforestation occurs across populated rural regions, then we assume that woody biomass available via deforestation contributes to woodfuel supply.

When by-products of LULCC are included in the assessment of NRB, efNRB varies from as much as 100% in the Solomon Islands and Timor-Leste, where DEB supplied via deforestation can completely satisfy the nation's woodfuel demand, to below 20% in Vietnam, Myanmar, and Thailand. If we do not consider by-products of deforestation, then efNRB in the most extreme cases declines considerably, while for many cases in other countries, it is unchanged. Pakistan stands out with efNRB approaching 85% in both cases, with minimal contribution from deforestation as reported captured in the FAO database. Nepal and Bangladesh show similar patterns, each with efNRB in excess of 50% and unaffected by LULCC.

India and China, the world's largest woodfuel consumers, have efNRB values of 24 and 22% respectively. These results are also relatively unaffected by consideration of LULCC, which incidentally is dominated by afforestation in both countries. We discuss our findings for the sub-national units of both India and China further below (other sub-national results are illustrated in Figure 36 - Figure 39 with detailed data provided in Appendix 9).

Figure 40: Woodfuel harvest and *ef*NRB in tropical Asia (assuming low plantation productivity)



LAC

We estimate that the annual demand for woodfuel in Latin America and the Caribbean is roughly 187 million tons, including 149 million tons utilized directly as wood and 39 million tons converted to charcoal. In addition, 1 million tons is used as construction material. Brazil, which is the most populous country in the region and a major industrial consumer of woodfuels, represents over 49%

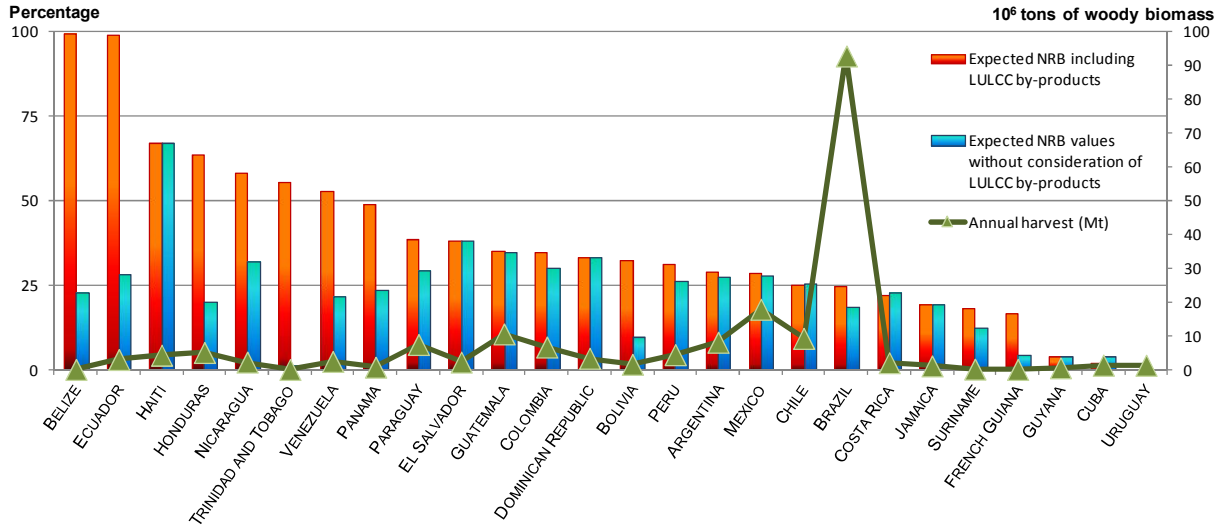
of the region's demand. Mexico and Guatemala are the next largest consumers of woodfuels, responsible for 9 and 6% of the region's demand, respectively.

As is the case in Asia, we estimate that the majority of the LAC's woodfuel demand is also harvested renewably. Under optimal management, the proportion of woodfuels harvested sustainably would be roughly 81%, with the remaining 19% considered non-renewable. In contrast to Asia, a much larger fraction, 16%, is met through forest change processes, dominated by deforestation driven by other processes (as described in Appendix 7 and illustrated in Figure 35). The remaining 3% is met by non-renewable extraction that likely contributes to degradation.

Under less optimistic assumptions, the proportion of woodfuels harvested sustainably in LAC drops to roughly 69%, while the remaining 31% is harvested non-renewably. The fraction made accessible through deforestation by other processes is unchanged, which leaves roughly 15% met by non-renewable extraction.

As in Asia, there is variation throughout the LAC region (Figure 41). When LULCC by-products are considered, efNRB ranges from nearly 100% in Belize and Ecuador, where accessible LULCC by-products exceed woodfuel demand, to below 10% in Guyana and Cuba[15]. If we do not consider by-products of deforestation, then, as in Asia, efNRB in the most extreme cases declines considerably. There are also marked declines in other cases, like Honduras, Nicaragua, and Venezuela and Bolivia. However, the largest consumer in the region, Brazil, shows little change because most of its deforestation takes place far from consumption areas. NRB estimations in the next largest consumers, Mexico, and Guatemala, are also relatively unchanged by LULCC. Also, Haiti stands out with 67% efNRB independent of LULCC processes.

Figure 41: Woodfuel harvest and *ef*NRB in the LAC region (assuming low plantation productivity)



[15] In Cuba, LULCC is dominated by afforestation, so that efNRB is lower when LULCC processes are accounted for.

Sub-Saharan Africa

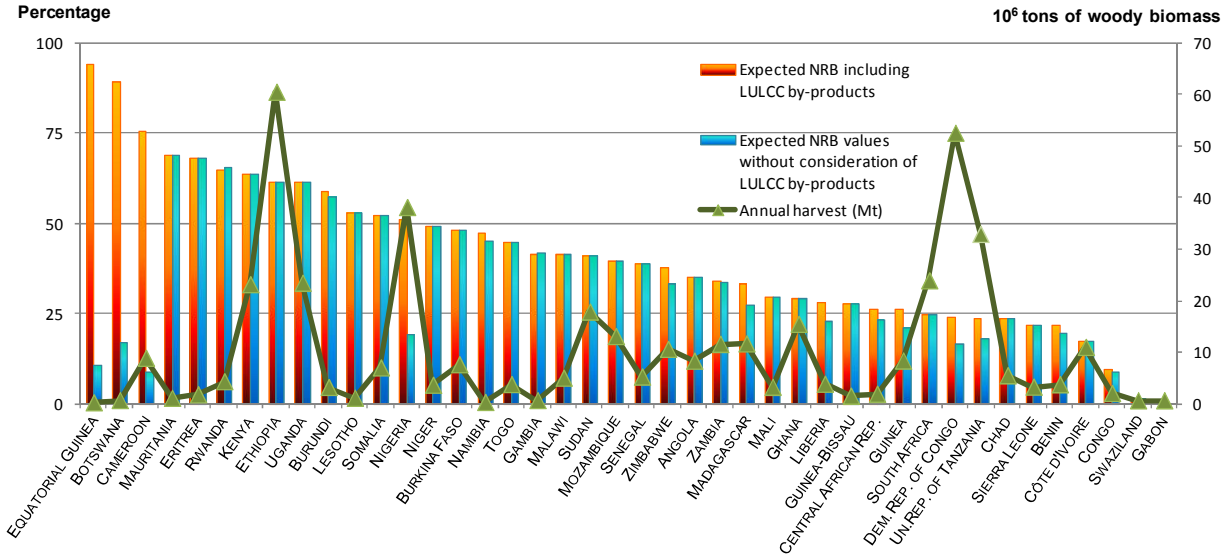
Our data indicate that the annual woodfuel harvest in SSA is roughly 438 million tons including 340 million tons utilized directly as wood and 98 million tons converted to charcoal. In addition, some 5 million tons are used as construction material. The highest consuming countries are Ethiopia, DR Congo, Nigeria and Tanzania, which account for 14, 12, 9, and 7% of consumption respectively.

As in other regions, the *majority* of woodfuel demand in SSA is harvested renewably. Under optimal management, the proportion of woodfuels harvested sustainably would be roughly 69%. The remaining 31% is non-renewable, which is divided evenly between by-products of LULCC driven mainly by other processes and non-renewable extraction specifically to supply woodfuels.

Under sub-optimal harvesting, the proportion of woodfuels harvested sustainably in SSA drops to roughly 58%, with the remaining 42% harvested non-renewably. The fraction made accessible through deforestation is unchanged, which leaves roughly 27% of demand satisfied by non-renewable extraction.

As in other regions, efNRB spans a wide range (Figure 42). If we consider by-products from LULCC, then Equatorial Guinea, Botswana and Cameroon have rates of efNRB of 75-90%, due to high LULCC in accessible regions. At the low, efNRB in Swaziland and Gabon is below 3%. Without considering the by-products of LULCC, the three highest values drop considerably, leaving Mauritania, Eritrea, Rwanda, Kenya, Ethiopia, Uganda, Burundi, Lesotho, Somalia and Nigeria with efNRB above 50%.

Figure 42: Woodfuel harvest and *ef*NRB in countries of SSA (assuming low plantation productivity)

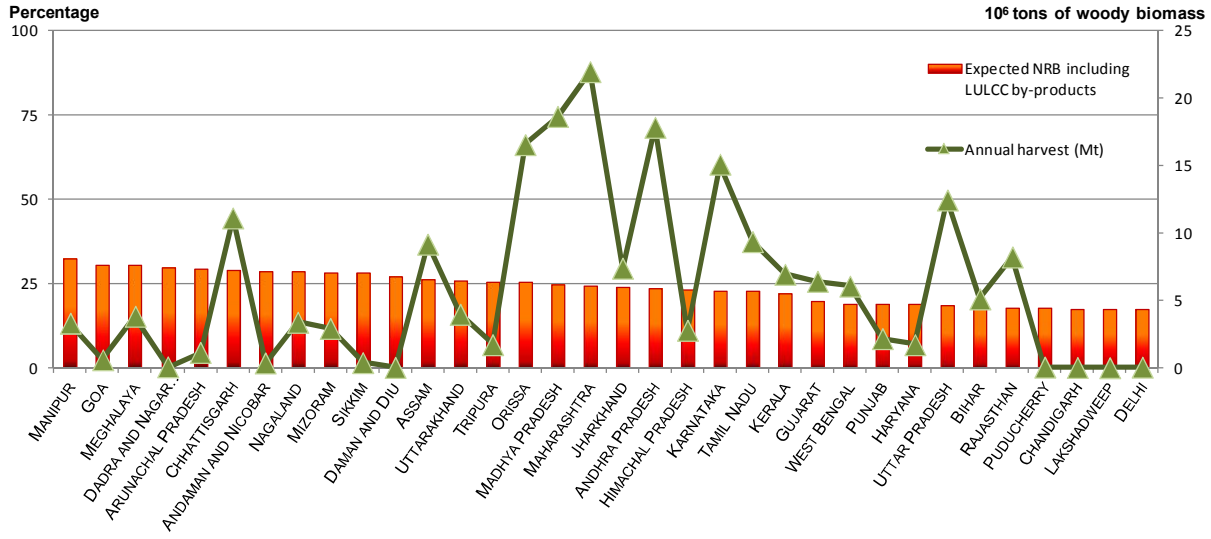


Subnational overviews of key countries

India

As discussed above, we estimate that India's nationwide efNRB is approximately 25%. In this section, we examine the country's sub-national results. India consists of 28 states and 7 "union territories". These units consist of a wide range of geographic diversity, including Himalayan peaks, arid deserts, rain-soaked coastlines, and rapidly growing mega-cities. With this diversity, access to forest resources and patterns of woodfuel consumption vary widely. Sub-national values of efNRB also vary by nearly a factor of two (Figure 43).

Figure 43: Woodfuel harvest and *ef*NRB in Indian states and union territories (assuming low plantation productivity)



Manipur, a small and relatively poor state along the eastern edge of India bordering Myanmar (Datanet India Pvt. Ltd. 2013), has the highest rate of efNRB (32%). The lowest rate, 17%, is shared among several sub-national units including the state of Rajasthan, and union territories of Puducherry, Chandigarh, and Delhi[16]. The latter three are primarily urban areas and rank among the country's wealthiest regions (Datanet India Pvt. Ltd. 2013). They have lower incidences of cooking with wood and higher uses of LPG than most of India's states, which include sizable rural populations. In addition, their urban landscapes lack forest resources so that any woodfuel demand that exists within their boundaries is likely sourced from outside. Therefore, the harvesting required to supply woodfuel to these territories occurs in other units.

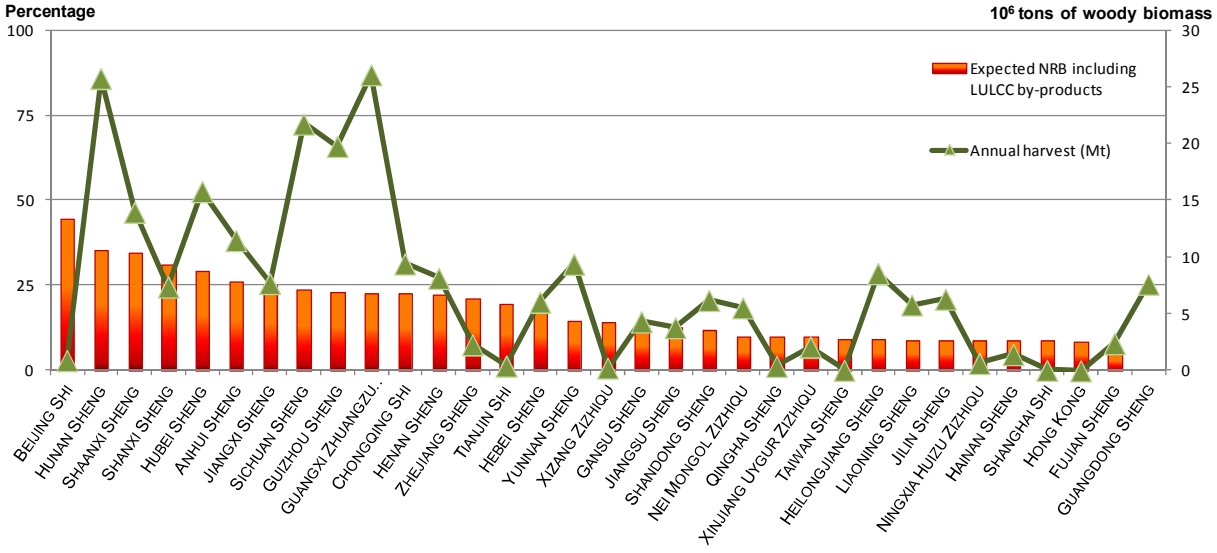
[16] Another union territory, Lakshadweep, is also included among this group. This is a small group of islands 400 km SE of India.

China

Like India, China covers a large territory with wide ranging geographic conditions. In addition, China's administrative units include large provinces and autonomous regions with considerable rural populations as well as four municipalities that include some of the world's largest urban areas (Beijing, Shanghai, Tianjin, and Chongqing). Thus, we observe tremendous variation in utilization of forest resources and woodfuel consumption.

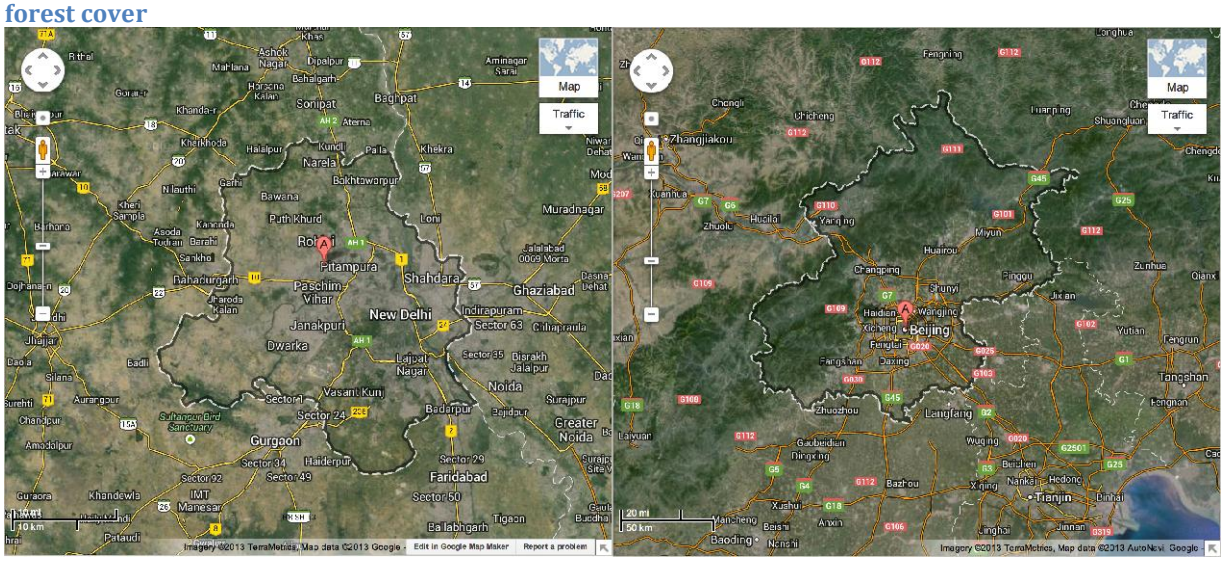
At the national level, we estimate China's efNRB is roughly 22%. Examining sub-national administrative units in detail (Figure 44), we can observe significant variation from a high value of 45% in Beijing municipality to near zero in Guangdong Province.

Figure 44: Woodfuel harvest and *ef*NRB in China's provinces (assuming low plantation productivity)



Why is Beijing's efNRB so high? In the previous section, we demonstrated that India's "urban" states had relatively low values of efNRB, which was explained by the lack of available DEB within their boundaries. However, China's largest municipalities differ from India's in that their official boundaries are much larger and include surrounding rural areas. Thus, while urban populations consume almost no woodfuel, the municipal administrative regions include rural populations that do use biomass. Moreover, the municipal administrative regions retain some forest cover (Figure 45). In the methodology we apply to assess NRB, forest areas within municipalities are subject to potential exploitation, by demand from the city itself as well as any surrounding rural population centers. In the case of Beijing and Chongqing, this leads to estimations of NRB that are higher than China's national average. In reality, China may have strict rules in place that prevent over-exploitation. Moreover, the result is sensitive to assumptions about plantation yield. Therefore we suggest further investigation is needed before applying these results to China's provinces and municipalities.

Figure 45: Google images of Delhi and Beijing administrative regions showing differences in area and forest cover



Brazil

Brazil represents several contrasts to China and India. Unlike India and China, Brazil is experiencing net deforestation rather than afforestation. In addition, the majority of the nation's woodfuel is consumed by industry rather than the residential sector (EPE 2011). Roughly 1/3 of Brazil's woodfuel harvest is converted to charcoal, making Brazil the world's largest charcoal producer. About 70% of the country's charcoal is derived from plantation-grown timber, making plantations particularly important to Brazil's woodfuel supply (Bailis, Rujanavech et al. 2013). In addition, the country possesses a wide range of ecosystems, leading to variation in woodfuel availability and utilization.

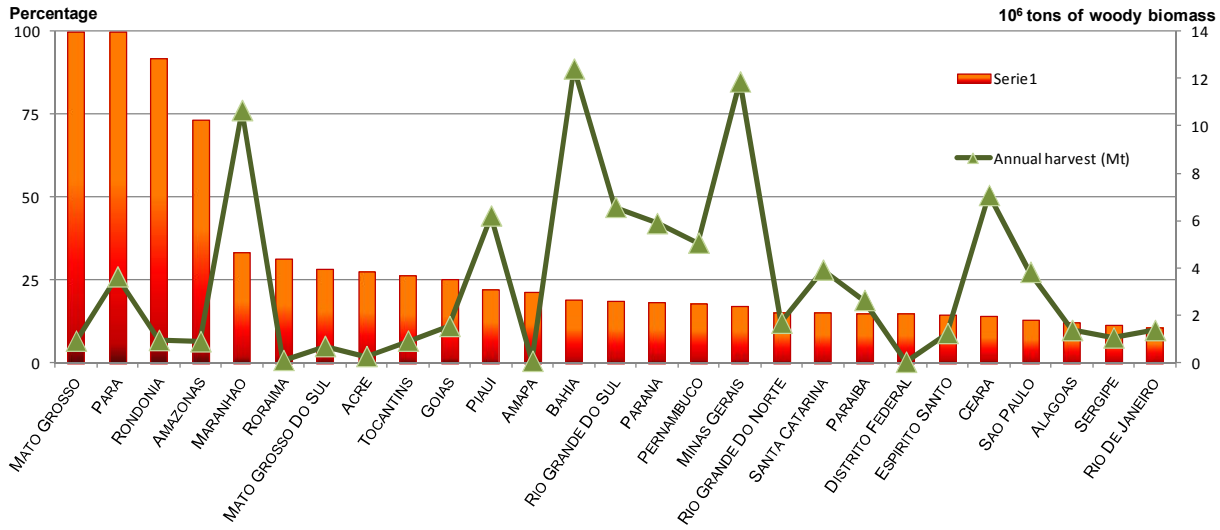
Looking at results of our analysis for individual Brazilian states shows this variety clearly (Figure 46). In most of the Amazon region,[17] woodfuel consumption is relatively low because these regions host little industry and have smaller populations than other regions. However, these areas host the majority of the country's deforestation. Thus, in Mato Grosso, Para, and Rondonia, by-products of deforestation are sufficient to meet most or all of the states' woodfuel demand and efNRB approaches 100%.

Other Brazilian states are affected by different circumstances. For example, the states of the Northeast Region (Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe and Bahia) are the country's least developed, with the highest incidence of poverty and residential woodfuel use. The region is largely semi-arid and has much lower forest cover than the rest of the country. Nevertheless, several states in the Northeast region are major woodfuel consumers and efNRB values in the region range from 15-33%. Minas Gerias, in the southeast of the country, is also worth examining more closely. The state hosts the majority of the country's

[17] The "Legal Amazon" consists of the states of Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima and Tocantins as well as parts of Maranhão.

charcoal production as well as a large number of industrial woodfuel consumers like ore and metal refining.

Figure 46: Woodfuel harvest and *e*fNRB in Brazilian states (assuming low plantation productivity)



Conclusions

In this project, we aim to develop and, in selected cases, validate multi-scalar geospatial estimates of the fraction of non-renewable biomass (fNRB) at national and sub-national levels for the world's tropical regions. Specifically, we proposed to integrate models working at three different geographic scales to provide a spatially explicit global dataset of woodfuel demand, accessible supply potential, woodshed analyses and estimates of fNRB at subnational levels. This could be used to identify "high risk areas".

The present report details the results of the "Tier I" analysis. We have presented the data, methodology, and results of sub-national estimations of woodfuel harvested in excess of the landscape's capacity to maintain existing stocks of woody biomass throughout the tropics. The results allow us to identify specific areas and clusters of sub-national administrative units that are likely to experience depletion of biomass stocks as a result of woodfuel demand.

However, these areas at-risk from chronic over-harvesting are still too coarse to capture complex local dynamics associated with biomass harvesting for residential, commercial and industrial energy uses. A refinement of the Tier I analysis (as suggested in the future research directions below) and progress in our ongoing Tier II and III analyses will help us improve our understanding of the processes that are most important for a reliable ranking of fNRB risks.

The results presented in this report should therefore be taken as a preliminary estimate that will be revisited as new information becomes available. Nevertheless, we believe the results are more consistent than any previous attempts to quantify the sustainability of woodfuel harvesting.

Further analysis and future research directions

Uncertainty and validation

We have identified two primary lines of inquiry for future research on this pantropical database: an uncertainty analysis and validation of estimates. As we discuss in the main text (p. 25) and Appendix 3, many of the parameters used to construct the model are not presented with statistical errors. Often these parameters are picked from one or two references, making it impossible to calculate confidence intervals, which could then be propagated along the entire analysis. One way to cope with this is to conduct a sensitivity analysis to test how various input parameters influence the final estimates in order to identify the most influential factors. This is done by varying one parameter randomly while others are held constant and recording how final results are affected. Once the most influential parameters are identified, these data can be treated more carefully. For example, we could conduct a Monte Carlo analysis or utilize "Bootstrapping" techniques. These methods can be applied to uncertain input parameters in order to produce output with upper and lower bounds on uncertainty that can be propagated through the full spatial assessment.

There are no obvious ways to validate a global assessment of this nature. Multiple drivers of forest degradation and LULCC coincide in space and time. We are carrying out a series of local-level analyses that will permit a comparison of our global assessment with a few select locations, but these will not be generalizable. Nevertheless, there are some analytic approaches that can throw light on the consistency of our results. If we assume that NRB estimates in 2009 are not substantially different from previous years, then we may select a small sample of administrative units showing acute deficits and generous surpluses and compared in each of them the changes in vegetation cover within forested areas (for example, using vegetation continuous field from NASA's MODIS instrument) over the past 10 years. If our assessment is accurate, then areas with high NRB estimates should consistently show more pronounced decreases in VCF. It is important to stress that such a comparison will validate the consistency of NRB estimates between administrative units, not the actual value of NRB estimates.

Integration of socio-economic data to identify vulnerable communities

Among the directions of further investigation, one of particular relevance is the integration of socio-economic and health parameters related to poverty in order to define areas where poor rural and suburban populations that depend primarily on woodfuels for their subsistence energy supply are likely to suffer severe shortages. This analysis will contribute to the definition of vulnerability from a subsistence energy perspective on a geographic basis and will provide a new tool for poverty alleviation and food security policies, and forestry and energy development planning (Drigo, 2007). This analysis will also contribute to the identification of deficit areas with higher or lower risk of environmental impact due to the ability of local populations to shift to alternative commercial fuels.

Critical data gaps

Concerning the analysis of supply, a crucial parameter lacking reliable and representative reference data is the sustainable productivity of forests and woodlands, but also farmlands and rangelands. While for forests some information exist, thanks to field inventories and permanent sampling, there is little data on sparse woodlands and virtually no data for farmlands and rangelands, although it is

clear that they play a fundamental role for woodfuel-dependent communities that are far from forests and other "conventional" sources of woody biomass.

This information gap is coupled by little understanding (and absence of data) on the coping strategies adopted by rural populations in biomass-scarse scarce rural areas. Available statistics indicate dependance on non-wood biomass fuels such as crop residues and cow dung, but there is no information on the practices to maximize woody biomass supply through annual or periodic pruning of trees and shrubs, lopping etc. The common effect of this information gap is that, when the consumption is confronted with "conventional" woody biomass growth and not with these adaptive harvesting systems, the woodfuel unbalances tend to be overestimated.

Appendix 1 – Sources of data for biomass Stock and Growth estimates

Geo-referenced data layers

Global land cover mapping, such as the version 2009 of the Globcover dataset at 10 arc-second resolution (300 m at 0 Lat.) produced by ESA (Arino, Gross et al. 2007; Bicheron, Amberg et al. 2008).

Global ecological data, such as the Global Ecological Zone (GEZ) Map produced by FAO in the framework of the 2000 Global Forest Resources Assessment Programme, in collaboration with UNEP-WCMC and USGS Eros Data Center.

Global vegetation density data, such as the Regional Tree Cover maps based on the Vegetation Continuous Field (VCF) algorithm applied to Moderate Resolution Imaging Spectroradiometer (MODIS) multiseasonal data (Hansen et al., 2003). This data has a spatial resolution of 15 arc-second (approx. 500-m at 0 Lat.).

Geo-referenced data on biomass stock and productivity derived from National Forest Inventories and other compiled databases (Baccini et al. 2008; Olson and Gibbs, several references, Brown et al. 2001; Teobaldelli, 2008; Cannell, 1982)

World Database on Protected Areas (WDPA). The WDPA is a joint product of UNEP and IUCN, prepared by UNEP-WCMC, supported by IUCN WCPA and working with Governments, the Secretariats of MEAs and collaborating NGOs.

FAO Forest Resource Assessment 2010 country data: includes change rates, state of management, etc.)

Plot level data

Plot-level data include the following:

- Teobaldelli M. 2008. THE BIOMASS COMPARTMENTS DATABASE version 1.00. EC- JRC, Institute for Environment and Sustainability, Climate Change Unit (containing 354 observ. from Cannell and 3996 observ. from Usoltsev data included below)
- Cannell M.G.R. (1982). World Forest Biomass and Primary Production Data. Academic Press. London. pp.375.
- Usoltsev V.A. (2001). Forest biomass of northern Eurasia: database and geography. Russian Academy of Sciences, Ural Branch, Yekarinenburg.
- Australia biomass mature native veg. NCAS Tech.Rep 44.
- Henry M. 2009 (personal communication). CARBOAFRICA. Summary biomass data by Globcover classes for Tropical Africa.
- Marzoli A. 2009. (personal communication). Biomass estimation in Mozambique forests and shrub formations.
- Komiyama et al. 2008. Mangrove data.
- Chidumayo, 1993. Zambian charcoal production-Miombo woodland recovery

Forest inventory results

- Forest inventory of Mexico
  http://www.cnf.gob.mx:8080/snif/portal/infys
  http://www.cnf.gob.mx:8080/snif/portal/infys/temas/resultados-2004-2009
- Forest inventory of Chile
  INFOR, 2009. Los recursos forestales en Chile-Informe final-Inventario continuo de bosques nativos y actualizacion de plantaciones forestales.
  www.infor.cl/es/component/docman/doc_download/41-inventario-continuo-de-bosques-nativos-y-actualizaciones-de-plantaciones-forestales.html
- Drigo R., M.A.Latif, J.A. Chowdhury and Md. Shaheduzzaman. 1987. The maturing mangrove plantations of the coastal afforestation project. Field Document 2. FAO/UNDP Project BGD/85/085 Assistance to the forestry sector-Phase II-Bangladesh.
- Drigo R., Md. Shaheduzzaman and J.A. Chowdhury. 1988. Inventory of forest resources of Southern Sylhet Forest Division. FAO Project BGD/85/085. Bamboo formations
- Field data related to Globcover classes in Africa from previous FAO studies
- Houghton et al. 2007. Mapping Russian forest biomass with data from satellites and forest inventories
- MCPFE UNECE FAO 2007. State of Europe's forests 2009
- Ordonez et al. Carbon content in vegetation, litter and soil under ten different land-use and land-cover classes in the central Highlands of Michoacan, Mexico. Forest Ecology and Management 2008. 255 (7): 2074-84.
- Palladino Correa de Lima J. (Draft) 2007. Biomes and biomass of Brazil
- INFOR, 2009. Los recursos forestales en Chile-Informe final-Inventario continuo de bosques nativos y actualizacion de plantaciones forestales.
- Chidumayo, 1988. Estimating Fuelwood Production and Yield in Regrowth Dry Miombo Woodland in Zambia
- Chidumayo, 1993. Zambian charcoal production-Miombo woodland recovery
- Okello et al.2001. Growth, biomass estimates, and charcoal production of Acacia drepanolobium in Laikipia, Kenya. Forest Ecology and Management 142 (2001) 143±153
- Malimbwi et al. (approx 2000). Impact of Charcoal Extraction To The Forest Resources Of Tanzania: The Case Of Kitulangalo Area, Tanzania
- Young T.P and C. Francombe. 1991. Growth and yield estimates in natural stands of leleshwa (Tarconanthus camphoratus)
- National Forest and Tree Resources Assessment 2005-2007 Bangladesh. Bangladesh Forest Department, MoEF; Bangladesh Space Research and Remote Sensing Organization, FAO.

Appendix 2: Comparing AGB estimates with FAO, WHRC and JPL data

Table A.1: Comparison of country-level AGB (in million metric tons-medium range values)

	AGB in full country areas			AGB in overlap between Tier I & JPL			Values in overlap between Tier I, JPL and WHRC		
	This study	**FAO** (forest only)		**This study**	**JPL**		**This study**	**JPL**	**WHRC**
Angola	5,208	8,817	full	5,208	6,526	full	5,208	6,526	9,288
Benin	243	540	full	243	321	full	243	321	419
Botswana	366	1,301	full	366	614	part	213	394	462
Burkina Faso	247	600	full	247	295	full	247	295	281
Burundi	76	35	full	76	146	full	76	146	151
Cameroon	6,475	5,540	full	6,475	7,428	full	6,475	7,428	7,355
Central African Rep.	4,320	5,740	full	4,320	4,848	full	4,320	4,848	6,821
Chad	717	1,290	full	717	876	full	717	876	782
Congo	6,254	6,886	full	6,254	6,440	full	6,254	6,440	6,712
Côte d'Ivoire	1,650	3,689	full	1,650	2,201	full	1,650	2,201	2,583
DR Congo	37,068	39,477	full	37,068	36,463	full	37,068	36,463	44,120
Equatorial Guinea	615	413	full	615	735	full	615	735	518
Eritrea	38	0	full	38	103	full	38	103	96
Ethiopia	2,618	455	full	2,618	3,972	full	2,618	3,972	3,789
Gabon	5,830	5,420	full	5,830	6,936	full	5,830	6,936	5,306
Gambia	25	63	full	25	17	full	25	17	29
Ghana	879	804	full	879	1,200	full	879	1,200	1,376
Guinea	1,212	1,255	full	1,212	1,595	full	1,212	1,595	1,696
Guinea-Bissau	184	194	full	184	176	full	184	176	218
Ilemi triangle	4	0	full	4	10	full	4	10	2
Kenya	836	965	full	836	1,615	full	836	1,615	1,086
Lesotho	83	4	full	83	74	excl			
Liberia	1,606	1,190	full	1,606	2,011	full	1,606	2,011	1,812
Madagascar	2,682	3,289	full	2,682	3,624	part	2,394	3,198	3,286
Malawi	254	295	full	254	426	full	254	426	528
Mali	489	573	full	489	736	full	489	779	602
Mauritania	42	15	full	42	40	full	42	40	117
Mozambique	3,137	3,425	full	3,137	4,419	part	3,025	4,318	5,782
Namibia	190	431	full	190	525	part	61	217	294
Niger	54	75	full	54	126	full	54	126	161
Nigeria	2,641	2,402	full	2,641	3,127	full	2,641	3,127	3,275
Rwanda	72	74	full	72	144	full	72	144	151
Senegal	272	688	full	272	374	full	272	374	353
Sierra Leone	609	440	full	609	688	full	609	688	817
Somalia	413	809	full	413	796	full	413	796	900
South Africa	2,052	1,614	full	2,052	2,991	excl			
Sudan (former)	2,454	2,791	full	2,454	3,005	full	2,454	3,005	3,398
Swaziland	59	44	full	59	84	excl			
Togo	144	0	full	144	214	full	144	214	248
Uganda	912	233	full	912	993	full	912	993	1,217
United Rep. of Tanzania	2,977	4,158	full	2,977	4,011	full	2,977	4,011	5,368
Zambia	2,591	4,873	full	2,591	4,071	full	2,591	4,071	5,505
Zimbabwe	798	1,035	full	798	1,447	full	798	1,447	1,273
Africa Total	**99,396**	**111,942**		**99,396**	**116,442**		**96,519**	**112,280**	**128,176**
Aksai Chin	4	0	full	4	230	excl			
Arunachal Pradesh	1,514	0	full	1,514	1,764	excl			
Bangladesh	589	162	full	589	984	excl			
Bhutan	799	660	full	799	896	excl			

	AGB in full country areas			AGB in overlap between Tier I & JPL			Values in overlap between Tier I, JPL and WHRC		
	This study	**FAO** (forest only)		**This study**	**JPL**		**This study**	**JPL**	**WHRC**
Brunei Darussalam	142	146	full	142	149	full	142	149	148
Cambodia	2,372	959	full	2,372	2,535	full	2,372	2,535	2,192
China	40,255	12,005	part	34,901	52,690	part	437	500	426
China/India	0	0	full	0	24	excl			
India	13,135	5,415	full	13,135	20,047	excl			
Indonesia	33,638	27,316	full	33,638	40,073	full	33,638	40,073	38,083
Jammu Kashmir	340	0	full	340	1,262	excl			
Lao People Dem. Rep.	4,931	2,180	full	4,931	5,504	full	4,931	5,504	4,588
Malaysia	6,639	6,574	full	6,639	8,638	full	6,639	8,638	7,160
Myanmar	10,944	3,388	full	10,944	12,604	part	127	320	239
Nepal	1,333	970	full	1,333	2,057	excl			
Pakistan	342	456	full	342	3,611	excl			
Papua New Guinea	9,358	4,671	full	9,358	10,781	full	9,358	10,781	11,607
Philippines	3,342	1,323	full	3,342	5,121	full	3,342	5,121	4,430
Singapore	2	0	full	2	4	full	2	4	2
Solomon Islands	485	366	excl			excl			
Sri Lanka	826	127	full	826	766	full	826	766	688
Thailand	4,467	1,757	full	4,467	6,260	full	4,467	6,260	5,251
Timor-Leste	115	0	full	115	203	full	115	203	137
Viet Nam	4,288	1,952	full	4,288	5,037	full	4,288	5,037	4,127
Asia Total	**139,860**	**70,427**		**134,022**	**181,241**		**70,683**	**85,891**	**79,078**
Argentina	7,973	6,205	full	7,973	7,840	excl			
Belize	453	349	full	453	393	full	453	393	427
Bolivia	12,680	0	full	12,680	11,114	full	12,680	11,114	15,824
Brazil	113,664	126,286	full	113,664	104,936	part	110,854	101,747	127,203
Chile	3,118	2,687	full	3,118	4,071	part	1	40	0
Colombia	18,715	13,667	full	18,715	17,225	full	18,715	17,225	20,679
Costa Rica	697	465	full	697	792	full	697	792	822
Cuba	839	438	full	839	737	full	839	737	1,012
Dominican Republic	418	228	full	418	388	full	418	388	596
Ecuador	3,843	0	full	3,843	3,959	full	3,843	3,959	4,757
El Salvador	148	0	full	148	149	full	148	149	205
French Guiana	2,046	3,305	full	2,046	2,334	full	2,046	2,334	2,316
Guatemala	1,623	584	full	1,623	1,479	full	1,623	1,479	1,597
Guyana	4,400	3,258	full	4,400	4,952	full	4,400	4,952	5,188
Haiti	86	11	full	86	132	full	86	132	235
Honduras	1,560	698	full	1,560	1,412	full	1,560	1,412	1,649
Jamaica	144	96	full	144	158	full	144	158	175
Mexico	12,951	4,119	part	12,950	8,958	part	8,309	5,623	7,520
Nicaragua	1,506	738	full	1,506	1,666	full	1,506	1,666	1,709
Panama	1,147	741	full	1,147	1,118	full	1,147	1,118	1,250
Paraguay	2,882	0	full	2,882	1,755	part	1,805	910	2,459
Peru	19,596	17,214	full	19,596	20,543	full	19,596	20,543	23,067
Suriname	3,133	6,333	full	3,133	3,732	full	3,133	3,732	3,831
Trinidad and Tobago	85	39	full	85	66	full	85	66	77
Uruguay	652	0	full	652	652	excl			
Venezuela	12,873	0	full	12,873	12,478	full	12,873	12,478	14,141
LatAm Total	**227,230**	**187,461**		**227,229**	**213,040**		**206,959**	**193,148**	**236,741**
Total Tier I	**466,485**	**369,830**		**460,646**	**510,723**		**374,161**	**391,319**	**443,994**

Table A.2: Country-level AGB in million metric tons by ecological zones within overlapping areas of WHRC, JPL and this study. To allow comparison, only eco-zones fully represented by all studies are included.

		Global Ecological Zone								
Country	Source	11	12	13	14	15	16	21	25	Total
Angola	This study	1,394	3,183	578	38	10	6			5,208
	JPL	1,126	4,204	1,073	82	30	11			6,526
	WHRC	1,577	6,196	1,416	47	39	12			9,288
Benin	This study	42	180	21						243
	JPL	48	252	21						321
	WHRC	55	339	25						419
Botswana	This study			213						213
	JPL			394						394
	WHRC			462						462
Burkina Faso	This study		79	150	18					247
	JPL		85	196	14					295
	WHRC		88	179	14					281
Burundi	This study		9				67			76
	JPL		14				131			146
	WHRC		17				134			151
Cameroon	This study	5,612	577	46	9		231			6,475
	JPL	6,063	961	83	8		313			7,428
	WHRC	5,816	1,124	59	16		340			7,355
Central African Republic	This study	1,913	2,197	210						4,320
	JPL	1,758	2,828	262						4,848
	WHRC	2,405	4,093	323						6,821
Chad	This study		175	463	80	0	0			717
	JPL		188	502	137	41	9			876
	WHRC		280	431	70	0	0			782
Congo	This study	6,214		40						6,254
	JPL	6,377		62						6,440
	WHRC	6,645		66						6,712
Côte d'Ivoire	This study	1,311	339				1			1,650
	JPL	1,650	549				1			2,201
	WHRC	1,860	721				2			2,583
DR Congo	This study	33,996	2,010	21			1,042			37,068
	JPL	32,705	2,462	28			1,268			36,463
	WHRC	38,264	4,044	43			1,769			44,120
Equatorial Guinea	This study	608					7			615
	JPL	723					12			735
	WHRC	509					9			518
Eritrea	This study				22	1	15			38
	JPL				57	11	36			103
	WHRC				54	11	32			96
Ethiopia	This study		108	274	615	13	1,609			2,618
	JPL		149	344	1,079	46	2,353			3,972
	WHRC		178	365	670	96	2,480			3,789
Gabon	This study	5,824		6						5,830
	JPL	6,923		13						6,936
	WHRC	5,294		12						5,306
Gambia	This study		16	9						25
	JPL		10	7						17
	WHRC		19	10						29
Ghana	This study	606	232	41						879
	JPL	846	306	49						1,200
	WHRC	857	456	63						1,376
Guinea	This study	499	696				17			1,212
	JPL	448	1,125				22			1,595
	WHRC	537	1,140				19			1,696
Guinea-Bissau	This study	74	109							184
	JPL	60	116							176
	WHRC	73	145							218
Ilemi triangle	This study				4					4
	JPL				10					10
	WHRC				2					2
Kenya	This study	22	98	14	307		395			836
	JPL	30	152	20	805		607			1,615
	WHRC	28	108	28	354		568			1,086
Liberia	This study	1,600	6				0			1,606
	JPL	2,004	7				1			2,011
	WHRC	1,801	11				1			1,812
Madagascar	This study	1,153	408				834			2,394
	JPL	1,732	576				890			3,198
	WHRC	1,505	666				1,114			3,286
Malawi	This study		179	37			38			254
	JPL		297	65			65			426

	WHRC		358	84			86	528
Mali	This study		212	206	71	0		489
	JPL		296	347	93	43		779
	WHRC		254	204	145	0		602
Mauritania	This study				42			42
	JPL				40			40
	WHRC				117			117
Mozambique	This study		1,361	1,656			8	3,025
	JPL		1,673	2,634			11	4,318
	WHRC		2,519	3,247			16	5,782
Namibia	This study			57			3	61
	JPL			184			33	217
	WHRC			264			30	294
Niger	This study			7	45	2		54
	JPL			10	57	59		126
	WHRC			9	152	1		161
Nigeria	This study	1,636	752	149	62		42	2,641
	JPL	1,632	1,118	224	87		66	3,127
	WHRC	1,651	1,307	180	68		68	3,275
Rwanda	This study						72	72
	JPL						144	144
	WHRC						151	151
Senegal	This study		125	108	39			272
	JPL		122	174	78			374
	WHRC		172	137	44			353
Sierra Leone	This study	318	287				3	609
	JPL	351	333				4	688
	WHRC	407	405				5	817
Somalia	This study		15		348	44	6	413
	JPL		24		698	66	8	796
	WHRC		13		560	305	23	900
Sudan (former)	This study	222	939	709	551	2	30	2,454
	JPL	132	1,087	846	819	73	46	3,005
	WHRC	213	1,497	1,163	472	6	46	3,398
Togo	This study	72	70	2				144
	JPL	76	135	3				214
	WHRC	82	163	3				248
Uganda	This study	589	190	2	0		132	912
	JPL	578	223	1	0		189	993
	WHRC	723	287	2	0		205	1,217
United Republic of Tanzania	This study	118	983	919	748		209	2,977
	JPL	122	1,253	1,351	932		353	4,011
	WHRC	170	1,911	2,147	700		441	5,368
Zambia	This study		1,966	597			28	2,591
	JPL		2,802	1,222			46	4,071
	WHRC		4,213	1,240			53	5,505
Zimbabwe	This study			769			28	798
	JPL			1,406			41	1,447
	WHRC			1,215			58	1,273
Total Africa	This study	**63,823**	**17,498**	**7,304**	**2,999**	**72**	**4,822**	**96,519**
	JPL	**65,385**	**23,349**	**11,523**	**4,995**	**369**	**6,659**	**112,280**
	WHRC	**70,471**	**32,721**	**13,377**	**3,485**	**458**	**7,664**	**128,176**
Brunei Darussalam	This study	141					1	142
	JPL	148					1	149
	WHRC	148					1	148
Cambodia	This study	539	773	1,060				2,372
	JPL	566	797	1,172				2,535
	WHRC	480	699	1,013				2,192
China	This study	0	436					437
	JPL	1	499					500
	WHRC	1	425					426
Indonesia	This study	28,885	886	1	119		3,748	33,638
	JPL	35,147	706	0	114		4,105	40,073
	WHRC	33,037	709	1	85		4,251	38,083
Lao People's Democratic Republic	This study	1,714	1,495	589			1,133	4,931
	JPL	1,788	1,767	733			1,216	5,504
	WHRC	1,568	1,402	562			1,055	4,588
Malaysia	This study	6,199					440	6,639
	JPL	8,146					491	8,638
	WHRC	6,687					473	7,160
Myanmar	This study			127				127
	JPL			320				320
	WHRC			239				239
Papua New Guinea	This study	7,135	523	175			1,526	9,358
	JPL	8,715	315	116			1,634	10,781

	WHRC	9,287	492	139		1,690			11,607
Philippines	This study	2,351	596			394			3,342
	JPL	3,795	790			536			5,121
	WHRC	3,271	651			508			4,430
Singapore	This study	2							2
	JPL	4							4
	WHRC	2							2
Sri Lanka	This study	340	266	216		4			826
	JPL	324	262	176		4			766
	WHRC	278	227	179		4			688
Thailand	This study	1,378	1,681	1,198		210			4,467
	JPL	2,107	2,026	1,915		211			6,260
	WHRC	1,824	1,770	1,445		212			5,251
Timor-Leste	This study	43	5		54	13			115
	JPL	114	7		53	29			203
	WHRC	72	5		38	22			137
Viet Nam	This study	1,173	1,954	227	77	672	162	22	4,288
	JPL	1,331	2,401	263	101	758	158	25	5,037
	WHRC	1,054	1,923	241	72	667	142	29	4,127
Total Asia	This study	**49,900**	**8,616**	**3,593**	**250**	**8,140**	**162**	**22**	**70,683**
	JPL	**62,187**	**9,571**	**4,696**	**268**	**8,986**	**158**	**25**	**85,891**
	WHRC	**57,708**	**8,303**	**3,820**	**195**	**8,882**	**142**	**29**	**79,078**
Belize	This study	215	238						453
	JPL	186	208						393
	WHRC	203	223						427
Bolivia	This study	6,714	2,643	1,204		2,119			12,680
	JPL	5,638	2,368	811		2,296			11,114
	WHRC	7,522	3,407	2,032		2,863			15,824
Brazil	This study	90,621	16,177	2,740		1,317			110,854
	JPL	84,893	13,636	2,336		882			101,747
	WHRC	98,236	22,756	4,641		1,569			127,203
Chile	This study				1				1
	JPL				40				40
	WHRC				0				0
Colombia	This study	14,554	1,110	88	6	2,957			18,715
	JPL	13,508	995	110	24	2,587			17,225
	WHRC	15,582	1,448	182	25	3,442			20,679
Costa Rica	This study	453	96	6		142			697
	JPL	549	125	9		108			792
	WHRC	519	144	11		148			822
Cuba	This study	291	461	15		72			839
	JPL	249	418	17		54			737
	WHRC	308	601	28		74			1,012
Dominican Republic	This study	250	43			125			418
	JPL	270	47			71			388
	WHRC	356	97			143			596
Ecuador	This study	2,265	56	41	12	1,469			3,843
	JPL	2,474	57	52	12	1,364			3,959
	WHRC	2,791	115	62	13	1,776			4,757
El Salvador	This study	18	93	31		6			148
	JPL	13	95	36		4			149
	WHRC	13	127	60		5			205
French Guiana	This study	2,046							2,046
	JPL	2,334							2,334
	WHRC	2,316							2,316
Guatemala	This study	719	590	21	7	286			1,623
	JPL	793	509	19	4	155			1,479
	WHRC	699	598	36	6	258			1,597
Guyana	This study	3,291	900			208			4,400
	JPL	3,549	1,146			256			4,952
	WHRC	3,816	1,147			225			5,188
Haiti	This study	59	13			14			86
	JPL	98	23			12			132
	WHRC	164	42			28			235
Honduras	This study	964	343	103	2	147			1,560
	JPL	887	273	140	2	110			1,412
	WHRC	918	394	191	3	143			1,649
Jamaica	This study	121	22						144
	JPL	140	18						158
	WHRC	147	28						175
Mexico	This study	1,310	4,654			2,345			8,309
	JPL	1,359	3,191			1,073			5,623
	WHRC	1,353	4,136			2,032			7,520
Nicaragua	This study	1,222	225	40		19			1,506
	JPL	1,249	343	54		20			1,666
	WHRC	1,126	460	103		21			1,709

Panama	This study	753	327	7			60			1,147
	JPL	759	300	11			48			1,118
	WHRC	801	370	18			62			1,250
Paraguay	This study			1,805						1,805
	JPL			910						910
	WHRC			2,459						2,459
Peru	This study	14,985		21	103	29	4,457			19,596
	JPL	15,639		24	196	186	4,498			20,543
	WHRC	17,832		23	131	33	5,050			23,067
Suriname	This study	1,975	1,158							3,133
	JPL	2,118	1,613							3,732
	WHRC	2,380	1,451							3,831
Trinidad and Tobago	This study	85								85
	JPL	66								66
	WHRC	77								77
Venezuela	This study	7,103	2,376	249	98		3,047			12,873
	JPL	6,720	2,555	306	97		2,800			12,478
	WHRC	7,320	3,263	451	115		2,992			14,141
Total Latin America	This study	**150,013**	**31,526**	**6,370**	**229**	**29**	**18,791**			**206,959**
	JPL	**143,493**	**27,920**	**4,836**	**375**	**186**	**16,339**			**193,148**
	WHRC	**164,478**	**40,809**	**10,298**	**293**	**33**	**20,830**			**236,741**
Total – all regions	This study	**263,737**	**57,640**	**17,267**	**3,478**	**101**	**31,753**	**162**	**22**	**374,161**
	JPL	**271,066**	**60,840**	**21,056**	**5,637**	**554**	**31,983**	**158**	**25**	**391,319**
	WHRC	**292,657**	**81,832**	**27,495**	**3,973**	**491**	**37,376**	**142**	**29**	**443,994**

Appendix 3: Parameters for the estimation of uncertainty in AGB estimates

Table A.3: 95% Confidence Intervals of AGB based on data points from individual studies (± %)

	Global Ecological Zone													
Master-class	**11**	**12**	**13**	**14**	**15**	**16**	**21**	**22**	**23-24**	**25**	**31-32**	**33-34**	**35**	**41-50**
Africa														
B1	2	19	19			47				143				
B2	34	9	6	58		54								
N1		33	18											
N2														
B-N		86	49											
B5		30	58	4										
S	46	33	11	40		130	109			135				
America														
B1														
B2											68		30	
N1							27				20		26	4
N2														
B-N														
B5														
S														
EurAsia														
B1														
B2			39				11				5	11	15	
N1							13	26	69	12	4	13	9	
N2							23				12	49	16	
B-N														
B5														
S														

Table A.4: Country means (weighted on biomass values) of pixel-level error of JPL biomass estimation. Values derived from JPL pixel-level error data

Country	error ± %
Angola	33
Benin	32
Botswana	27
Burkina Faso	27
Burundi	33
Cameroon	33
Central African Republic	33
ChadJPL	28
Congo	35
Côte d'Ivoire	33
Dem. Rep. of the Congo	35
Equatorial Guinea	33
Eritrea	24
Ethiopia	31
Gabon	33
Gambia	32
Ghana	33
Guinea	32
Guinea-Bissau	33
Ilemi triangle	26
Kenya	30
Lesotho	31
Liberia	34
Madagascar	33
Malawi	32
Mali	30
Mauritania	6
Mozambique	33
Namibia	23
Niger	3
Nigeria	32
Rwanda	32
Senegal	30
Sierra Leone	34
Somalia	27
South Africa	30
Sudan (former)	28
Swaziland	32
Togo	32
Uganda	32
United Republic of Tanzania	32
Zambia	33
Zimbabwe	32
mean Africa error	**33**

Country	error ± %
Aksai Chin	27
Arunachal Pradesh	34
Bangladesh	36
Bhutan	36
Brunei Darussalam	38
Cambodia	38
China	48
China/India	28
India	35
Indonesia	37
Jammu Kashmir	32
Lao People's Dem. Rep.	34
Malaysia	36
Myanmar	34
Nepal	36
Pakistan	30
Papua New Guinea	36
Philippines	36
Singapore	38
Sri Lanka	37
Thailand	36
Timor-Leste	37
Viet Nam	36
mean Asia error	39

Country	error ± %
Argentina	27
Belize	34
Bolivia	33
Brazil	32
Chile	35
Colombia	32
Costa Rica	34
Cuba	33
Dominican Republic	34
Ecuador	32
El Salvador	34
French Guiana	31
Guatemala	35
Guyana	33
Haiti	32
Honduras	34
Jamaica	35
Mexico	32
Nicaragua	35
Panama	34
Paraguay	34
Peru	30
Suriname	33
Trinidad and Tobago	34
Uruguay	32
Venezuela	33
mean Latin America error	**32**

Appendix 4: Country-level summary of biomass productivity

Table A.5: Country-wise results of DE biomass stock and productivity (preliminary, medium variant)

				AGB stock	DEB	Total MAI	Legally accessible MAI	Legally and physically accessible MAI	Accessible MAI inc. plantations	Accessible MAI exc. industrial roundwood
Region	**Admin Map Code**	**FAO Cty code2013**	**FAOstat 2013-country**	10^6 tons		10^3 dry tons per year				
Af	8	7	**Angola**	5,218	4,491	111,147	107,994	68,337	68,725	68,055
S_Am	12	9	**Argentina**	8,014	6,917	182,272	178,616	144,194	149,222	143,340
As	23	16	**Bangladesh**	592	514	11,137	11,041	10,015	11,439	11,271
C_Am	28	23	**Belize**	453	399	4,744	3,568	2,803	2,817	2,792
Af	29	53	**Benin**	243	203	7,881	7,248	5,991	6,062	5,809
As	31	18	**Bhutan**	799	703	8,064	6,281	4,185	4,203	4,093
S_Am	33	19	**Bolivia**	12,703	11,152	158,344	132,187	88,354	88,432	87,865
Af	35	20	**Botswana**	367	311	17,377	15,749	10,945	10,945	10,885
S_Am	37	21	**Brazil**	114,026	99,961	1,383,730	1,223,610	801,955	840,308	767,477
As	40	26	**Brunei Darussalam**	142	125	1,410	1,076	811	831	768
Af	42	233	**Burkina Faso**	247	205	11,026	10,324	8,358	8,679	7,987
Af	43	29	**Burundi**	76	64	2,017	1,957	1,751	2,042	1,519
As	44	115	**Cambodia**	2,371	2,082	29,193	23,682	17,783	18,202	18,135
Af	45	32	**Cameroon**	6,478	5,676	76,957	71,498	54,677	55,238	53,948
Af	49	37	**Central African Republic**	4,322	3,723	74,696	69,563	46,254	46,254	45,866
Af	50	39	**Chad**	718	600	26,473	25,018	18,425	18,465	18,009
S_Am	51	40	**Chile**	3,164	2,766	50,684	43,783	32,763	42,573	20,969
As	53 +2	351	**China**	40,293	35,211	625,072	596,352	460,947	871,174	811,665
S_Am	57	44	**Colombia**	18,721	16,446	210,126	186,686	109,830	111,910	110,532
Af	59	46	**Congo**	6,254	5,497	68,873	62,731	37,590	38,009	36,832
C_Am	61	48	**Costa Rica**	697	611	8,613	6,959	5,528	7,106	6,340
Af	66	107	**Côte d'Ivoire**	839	733	12,229	10,850	10,059	10,948	10,822
C_Am	63	49	**Cuba**	1,651	1,418	33,121	30,826	25,781	31,828	29,276
Af	68	250	**Dem. Rep. of the Congo**	37,092	32,557	431,221	404,204	287,337	287,622	284,842
C_Am	72	56	**Dominican Republic**	418	365	6,100	5,595	5,072	5,072	5,067
S_Am	73	58	**Ecuador**	3,704	3,253	43,862	38,442	26,837	27,836	26,694
C_Am	75	60	**El Salvador**	148	129	2,444	2,426	2,322	2,449	2,045
Af	76	61	**Equatorial Guinea**	615	541	6,372	5,393	4,424	4,424	4,114
Af	77	178	**Eritrea**	38	31	1,969	1,941	1,541	1,599	1,599

				AGB stock	DEB	Total MAI	Legally accessible MAI	Legally and physically accessible MAI	Accessible MAI inc. plantations	Accessible MAI exc. industrial roundwood
Region	**Admin Map Code**	**FAO Cty code2013**	**FAOstat 2013-country**	10^6 tons			10^3 dry tons per year			
Af	79	238	**Ethiopia**	2,622	2,232	69,259	64,999	44,738	46,291	44,556
S_Am	86	69	**French Guiana**	2,046	1,801	20,733	19,641	9,552	9,561	9,505
Af	89	74	**Gabon**	5,831	5,130	60,429	59,725	35,649	35,856	33,844
Af	90	75	**Gambia**	25	21	732	730	597	602	535
Af	94	81	**Ghana**	879	752	19,947	19,009	16,160	17,417	16,644
C_Am	103	89	**Guatemala**	1,621	1,424	19,227	16,236	12,993	14,059	13,796
Af	106	90	**Guinea**	1,212	1,037	25,234	25,186	21,224	21,678	21,291
Af	105	175	**Guinea-Bissau**	184	158	3,612	3,612	2,816	2,820	2,742
S_Am	107	91	**Guyana**	4,400	3,871	47,014	45,519	24,619	24,619	24,356
C_Am	108	93	**Haiti**	86	74	2,072	2,069	1,847	2,021	1,880
C_Am	111	95	**Honduras**	1,560	1,368	19,158	17,296	13,498	13,498	13,184
As	115+15+52+40781	100	**India**	15,067	13,070	267,725	259,303	225,181	304,236	290,565
As	116	101	**Indonesia**	33,654	29,581	373,614	343,274	208,946	232,956	204,540
C_Am	123	109	**Jamaica**	144	126	1,803	1,713	1,622	1,689	1,524
Af	133	114	**Kenya**	837	708	26,496	24,672	18,296	18,829	18,091
As	139	120	**Lao People's Dem. Rep.**	4,926	4,334	52,256	49,990	37,121	38,860	38,736
Af	142	122	**Lesotho**	83	71	2,126	2,122	1,429	1,466	1,466
Af	144	123	**Liberia**	1,607	1,412	18,832	18,599	13,895	13,965	13,714
Af	150	129	**Madagascar**	2,692	2,332	50,695	48,448	38,348	40,683	40,534
Af	152	130	**Malawi**	254	215	7,060	6,256	5,168	6,293	5,461
As	153	131	**Malaysia**	6,640	5,839	70,629	66,176	41,470	54,372	42,404
Af	155	133	**Mali**	490	408	20,796	20,324	16,040	17,340	17,095
Af	159	136	**Mauritania**	41	35	4,060	4,060	2,899	2,926	2,926
C_Am	162	138	**Mexico**	12,975	11,331	203,422	196,618	162,807	181,185	178,191
Af	170	144	**Mozambique**	3,140	2,679	73,191	69,972	53,922	54,109	53,311
As	171	28	**Myanmar**	10,894	9,574	123,028	116,379	89,040	96,122	93,603
Af	172	147	**Namibia**	192	170	15,233	14,216	9,470	9,470	9,470
As	175	149	**Nepal**	1,333	1,169	18,038	16,755	13,149	13,464	12,718
C_Am	180	157	**Nicaragua**	1,506	1,319	18,846	16,568	12,434	12,912	12,876
Af	181	158	**Niger**	54	48	6,053	5,856	4,572	4,744	4,328
Af	182	159	**Nigeria**	2,644	2,266	61,934	59,251	50,239	51,900	46,316
As	188	165	**Pakistan**	336	289	13,043	12,786	10,801	12,089	10,314

				AGB stock	DEB	Total MAI	Legally accessible MAI	Legally and physically accessible MAI	Accessible MAI inc. plantations	Accessible MAI exc. industrial roundwood
Region	**Admin Map Code**	**FAO Cty code2013**	**FAOstat 2013-country**	10^6 tons		10^3 dry tons per year				
C_Am	191	166	**Panama**	1,147	1,007	13,175	10,683	7,966	8,429	8,329
3	192	168	**Papua New Guinea**	9,359	8,234	100,731	100,731	50,803	51,362	49,618
S_Am	194	169	**Paraguay**	2,887	2,519	49,996	48,345	33,026	33,230	30,822
S_Am	195	170	**Peru**	19,632	17,252	216,544	206,658	111,051	115,784	114,975
As	196	171	**Philippines**	3,343	2,928	44,506	41,160	32,879	35,880	33,634
Af	205	184	**Rwanda**	73	62	1,860	1,657	1,422	2,772	2,054
Af	217	195	**Senegal**	272	228	9,501	8,550	7,053	8,519	8,046
Af	221	197	**Sierra Leone**	609	531	9,930	9,718	8,445	8,548	8,476
As	222	200	**Singapore**	2	1	30	25	25	25	25
3	225	25	**Solomon Islands**	485	427	5,448	5,448	3,348	3,564	2,926
Af	226	201	**Somalia**	414	348	19,137	19,137	13,531	13,536	13,473
Af	227	202	**South Africa**	2,049	1,750	59,728	58,125	48,480	54,811	43,608
As	231	38	**Sri Lanka**	826	725	10,942	9,614	8,493	9,695	9,332
Af	40764+61013	206	**Sudan (former)**	2,465	2,079	76,444	74,346	56,929	74,923	73,615
S_Am	233	207	**Suriname**	3,134	2,758	33,350	30,154	14,398	14,454	14,328
Af	235	209	**Swaziland**	59	51	1,447	1,427	1,217	1,820	1,625
As	240	216	**Thailand**	4,467	3,896	66,034	47,800	39,214	58,559	53,392
As	242	176	**Timor-Leste**	115	100	1,860	1,860	1,151	1,500	1,500
Af	243	217	**Togo**	144	122	4,126	3,853	3,331	3,484	3,386
C_Am	246	220	**Trinidad and Tobago**	85	75	958	958	881	1,042	1,014
Af	253	226	**Uganda**	913	782	19,589	17,120	14,635	14,887	12,525
Af	257	215	**United Republic of Tanzania**	2,976	2,532	73,693	65,224	51,917	52,725	51,366
S_Am	260	234	**Uruguay**	652	550	15,965	15,965	13,238	18,632	14,968
S_Am	263	236	**Venezuela**	12,881	11,308	149,179	103,098	62,426	62,426	61,060
As	264	237	**Viet Nam**	4,287	3,762	53,616	51,051	42,240	67,990	64,537
Af	270	251	**Zambia**	2,594	2,206	63,500	55,908	39,123	39,303	38,522
Af	271	181	**Zimbabwe**	798	667	24,876	22,605	18,994	19,334	18,949
				467,045	**408,428**	**6,449,618**	**5,924,184**	**4,181,626**	**4,909,677**	**4,615,231**

[a] This productivity assumes that all vegetation is natural. The additional productivity of forest plantations (not distinguished in GlobCover data) is added subsequently.

Appendix 5: Legal and Physical Accessibility

A5.1 Legal accessibility – Protected Area Management Categories

IUCN has defined a series of six protected area management categories, based on the primary management objective of the area. These are summarized in Table A.1.

Table A.6 Summary descriptions of IUCN Protected Area Management Categories (Dudley 2008)

Category	Description
Ia	Strict Nature Reserve: protected area managed mainly for science **Definition:** Area of land and/or sea possessing some outstanding or representative ecosystems, geological or physiological features and/or species, available primarily for scientific research and/or environmental monitoring.
Ib	Wilderness Area: protected area managed mainly for wilderness protection **Definition:** Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.
II	National Park: protected area managed mainly for ecosystem protection and recreation **Definition:** Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
III	Natural Monument: protected area managed mainly for conservation of specific natural features **Definition:** Area containing one, or more, specific natural or natural/cultural feature which is of outstanding or unique value because of its inherent rarity, representative or aesthetic qualities or cultural significance.
IV	Habitat/Species Management Area: protected area managed mainly for conservation through management intervention **Definition:** Area of land and/or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/or to meet the requirements of specific species.
V	Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation **Definition:** Area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.
VI	Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems **Definition:** Area containing predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a sustainable flow of natural products and services to meet community needs.

These definitions do not explicitly determine the level of access to wood energy resources in a given protected area, which probably varies depending on the level of capacity and strength of environmental institutions in each country. Nevertheless, access is likely to be more limited in the lower numbered categories (i.e. Categories I – III) and less limited in higher numbered categories (i.e. Categories IV- VI). Only Category VI explicitly includes provisions for sustainable use to meet local communities' needs.

Accordingly, we assume only the wood resources of Category VI are available to satisfy the woodfuel demand of local communities. Other categories are considered as inaccessible to local communities and ALL categories are EXCLUDED from commercial fuelwood extraction and charcoal production. Therefore, in the calculation of the local balance, Category VI is considered moderately accessible (50% of MAI), while in the calculation of the commercial balance (that considers surplus resources available for commercial woodfuel production) all IUCN categories are excluded.

A5.2 Physical accessibility

In this study the physical accessibility is used in two separate phases of analysis:

1-In the Supply Module, in which the off-road accessibility of woody biomass resources is used to estimate the fraction of the total MAI that is accessible to both rural woodfuel users and to commercial woodfuel producers.

2- In the woodshed analysis, in which accessibility is based on each country's major consumption sites (i.e. urban centers). In addition to the off-road accessibility, this analysis also includes distances along roads and rivers to reach the selected consumption sites.

In the absence of a specific measurable parameter of accessibility, the time necessary to reach a certain location is considered as an indicator of the physical accessibility of biomass sources.

A5.2.1 Off-road accessibility-Travel time to nearest access feature (city, village, motorable road, railroad, waterway)

Given the assumption that the most accessible resources are located along communication routes (i.e. motorable roads, navigable rivers, railways) or are in close proximity to populated places (urban centers, villages and densely populated rural areas), the degrees of accessibility of resources located far from such features are inversely proportional to the time (or effort) necessary to reach them.

In order to estimate the physical accessibility of biomass resources a new travel time map is produced by adapting the Global Travel Time map procedure described by Nelson (2008). The adapted procedure redefines the target locations (from major cities to infrastructure and settlements), uses updated data sources for land cover and road networks, and adapts friction factors to better reflect transportation of woodfuels.

A5.2.2 Target locations

The target locations are all accessible areas, (i.e. with travel times equal to zero) including:

1. Populated places, based on PMUR population distribution maps (30 arc-second resolution) updated to 2009 according to UN Population Division statistics of rural and urban populations:
    a. Urban areas. Areas of urban population according to PMUR data (reporting census' populations defined as urban). Urban areas: **urb_msk_3**. A speed of 3 min/km is assumed for urban transport.
    b. Densely populated rural areas. Defined as rural areas with population densities above 100 people per km^2 (averaged over the surrounding 3 cells or ~2.7 km radius). With this population density, existing biomass resources are assumed to be totally accessible unless protected by law, independent of any road network. The mask of the densely populated rural areas is **rurp100km2_18**, derived from the map **pop09km2_f3**. A speed of 18 min/km is assumed for the rural areas (double the speed of cultivated areas in consideration of the expected high road and path density)
2. Infrastructure features:
    a. Road networks
    b. Railways
    c. Permanent water bodies

A5.2.3 Road network data used

The road network used in the analysis is based on the following datasets:

gROADS[18]

gROADS is a global dataset of road networks under development. The gROADS v.1 data set was recently released in beta version. (http://beta.sedac.ciesin.columbia.edu/data/set/groads-global-roads-open-access-v1)

Given the preliminary development stage of gROADS, most vectors miss attributes such as road type, surface, conditions, etc., which make the use of the dataset rather uncertain. The main issues in the use of gROADS are:

- Are all roads motorable? The road category "Trails" could be excluded in principle, but the attribute is available only in a few countries and there are tracts of secondary or tertiary roads that are only connected to Trails, which means that some Trails, if not all, are motorable.
- Data for north Pakistan, Jammu, and Kashmir is missing from gROADS. The NIMA WMap0 file shows roads for these areas that can be used to fill the data gap.

The dataset appears very heterogeneous, with some areas in which all paths are marked as roads, even for transhumance paths (i.e. in the Darfur/Kordofan region of Sudan, as well as grazing paths and field edges in Somalia). Some of these hypermapped network zones have sharp or undefined straight edges along country boundaries, which likely mark mapsheet limits.

NIMA VMap0[19]

In the case that VMap1 road data is not yet available, VMap0 includes a complete global road map that refers to the release of NIMA VMap0 help to replace/fill-in bad sections of gROADS.

NIMA VMap1[20]

The new NIMA release of the VMap1 dataset is under development, and is divided into 234 tiles of which only a few are available for download. All available tiles were downloaded, compared to the other available datasets, and used to replace or fill in bad sections of gROADS and VMap0 road data.

After comparison of gROADS, NIMA VMap0 and VMap1 datasets, and Nelson's Time Map (from which the road network used by Nelson can be perceived), we established the gROADS road network as the main reference and used sections from NIMA (VMap1 and VMap0) to fill in gaps as well as "overmapped"

---

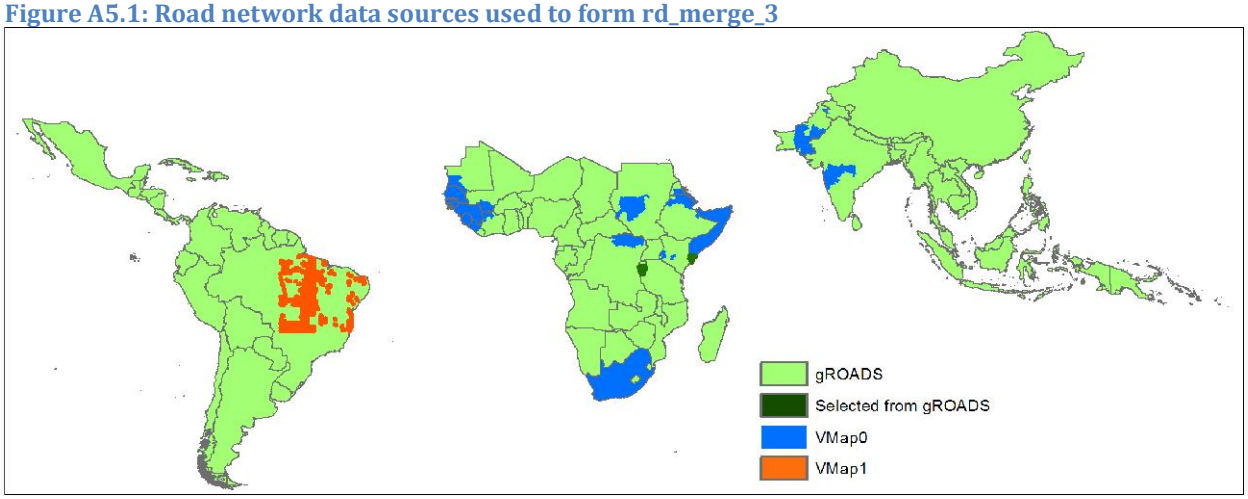
[18] Produced by the Committee on Data for Science and Technology (CODATA) Global Roads Data Development Working Group, and Center for International Earth Science Information Network (CIESIN)/Columbia University. 2009. CODATA Catalog of Roads Data Sets, Version 1. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC). http://sedac.ciesin.columbia.edu/data/set/groads-codata-roads-catalog-v1. Accessed 8- 5- 2013.

[19] Vector Map Level 0 (VMap0). VMap0, released by the National Imagery and Mapping Agency (NIMA) in 1997, is an updated and improved version of the Digital Chart of the World (DCW). The DCW is a vector base map of the world at a scale of 1:1,000,000, developed in 1992 by the Environmental Systems Research Institute, Inc. (ESRI) on commission for the US Defence Mapping Agency (DMA).

[20] Vector Map Level 1 (VMap1) product resolution is based on 1:250,000 map scale source, i.e. 1cm=2.5km, and is 4 times the resolution of VMAP0. It is based primarily on the vectorized versions of 1:250,000 scale NIMA Joint Operations Graphics (JOGs) - nearly 10,000 sheets. http://www.mapability.com/index1.html?http&&&www.mapability.com/info/vmap1_download.html

sectors. Figure A5.1 shows the map sources merged to form the selected road network and converted to raster (**rd_merge_3.grd**).

Figure A5.1: Road network data sources used to form rd_merge_3



Travel time along roads

Not knowing the road types[21], the transport speed along roads cannot be assumed discretionally. Therefore, a low and uniform speed of 20 km/hr is assumed, considering the poor conditions of the majority of local roads and that woodfuels transport is mostly done by old trucks (20 km/hr = 3 min/km).

Waterways

The reference used by Nelson (CIA World Databank II) could not be accessed (only tabular data available). As a surrogate, the perennial/permanent inwater features from VMap0 are used. The speed of woody biomass transport is assumed to be much lower than the speed of people's transport applied by Nelson (20 km/hr = 3min/km). A speed of 5 km/h (12 min/km) seems more realistic for river barges.

Result of the process of conversion[22] = **wat_minkm_12.**

Railroads network

Only VMap0 provides global railways data. Relevant sections taken from VMap0 were merged into rail_vmap0_s02.shp and rasterized (30as snap msk2_30as): **rail_mnt_km**

As per roads, a low speed is assumed for railroads of 20 km/hr = 3 min/km considering that woodfuels transport has lower priority than persons (Nelson applied a 40 km/hr = 1.5 min /km).

"Distance 0" features

The target locations (or source features of cost-distance analysis) are composed by the layers described above and merged into a single map as follows:

[21] Nelson states that the source of road data was VMap0 but the attribues he used to assign road speeds are not available in the current VMap0 data.

[22] Procedure: 1- Convert VMap0 perennial water to raster [presents many gaps along the rivers]; 2- convert inwater polygons to lines and convert lines to raster [no interruptions but too wide]; 3- mosaic the two rasters from 1 and 2; 4- thin the mosaic from 3 to obtain a linear raster; 5- mosaic the thinned raster to the first raster in order to fill the gaps.

dist0_2 = Mosaic of : urb_msk_3; rd_merge_3; rail_mnt_km; wat_minkm_12; rurp100km2_18

A5.2.4 Friction surface components

Land cover friction

The friction induced by land cover characteristics or, more precisely, the speed to travel across them is based on Globcover 2009 (resampled to 30 arc-sec). The crossing time relative to each land cover class, in terms of minutes needed to travel one km, are based on those defined by Nelson (in that case referred to GLC2000) with minor adaptations to the new land cover classes, as shown in Table A_.2 .

As a result, the map **min_km_glc30** provides cell-crossing time travel speed according to land cover conditions in minutes per km (30 arc-sec resolution).

Table A5.2: Crossing time assumed for Globcover classes.

Glc Code	**Globcover classes** (V2.3, 2009)	**Crossing time minutes/km**
11	Post-flooding or irrigated croplands (or aquatic)	36
14	Rainfed croplands	36
20	Mosaic cropland (50-70%) / vegetation (grassland/shrubland/forest) (20-50%)	36
30	Mosaic vegetation (grassland/shrubland/forest) (50-70%) / cropland (20-50%)	36
40	Closed to open (>15%) broadleaved evergreen or semi-deciduous forest (>5m)	60
50	Closed (>40%) broadleaved deciduous forest (>5m)	60
60	Open (15-40%) broadleaved deciduous forest/woodland (>5m)	48
70	Closed (>40%) needleleaved evergreen forest (>5m)	48
90	Open (15-40%) needleleaved deciduous or evergreen forest (>5m)	36
100	Closed to open (>15%) mixed broadleaved and needleleaved forest (>5m)	42
110	Mosaic forest or shrubland (50-70%) / grassland (20-50%)	48
120	Mosaic grassland (50-70%) / forest or shrubland (20-50%)	48
130	Closed to open (>15%) (broadleaved or needleleaved, evergreen or deciduous) shrubland (<5m)	36
140	Closed to open (>15%) herbaceous vegetation (grassland, savannas or lichens/mosses)	36
150	Sparse (<15%) vegetation	24
160	Closed to open (>15%) broadleaved forest regularly flooded (semi-permanently or temporarily)-Fresh or brackish water	60
170	Closed (>40%) broadleaved forest or shrubland permanently flooded-Saline or brackish water	66
180	Closed to open (>15%) grassland or woody vegetation on regularly flooded or waterlogged soil-Fresh, brackish or saline water	60
190	Artificial surfaces and associated areas (Urban areas >50%)	2
200	Bare areas	24
210	Water bodies (limited to those not considered as communication means and not included in Dist_0 layer)	30
220	Permanent snow and ice	48

Adapted from Nelson 2008

National borders

National borders pose strong limitations to the flow of goods among countries. In order to emulate the strong friction effect of national borders in the accessibility model, a high crossing time is assigned to the border lines. Tentatively, an additional crossing time of 12 hours is assigned to national borders (720 min to cross the border cell, approximately).

Map = **borders720** (0 value on background)

Elevation factor

A speed reduction factor is applied to higher elevation starting from elevations greater than 2000 msl, as done by Nelson.

Since the original factor reported in Nelson's documentation appears too abrupt (the speed gradient at 2000 m elevation immediately reduces to only 7% of the speed at elevations below 2000 m), the speed factor calculation was therefore revised as shown in Table A5.3. The revisions provide a smoother speed reduction progression.

```
Con("srtm30s02" > 2000,Power(0.14, 0.0006*"srtm30s02") * 10,1)
```

Table A5.3: Speed and crossing time factors based on altitude

	Nelson's factor	This study	
	f=0.15^(0.0007*Elevation(m))	f=10*(0.14^(0.0006*Elevation(m)))	
Altitude	f	speed factor	crossing time factor (1/speed factor)
below 2000		1.000	1.00
2000	0.070	0.945	1.06
2100	0.061	0.840	1.19
2200	0.054	0.746	1.34
2500	0.036	0.524	1.91
3000	0.019	0.290	3.44
3500	0.010	0.161	6.21
4000	0.005	0.089	11.20
4500	0.003	0.049	20.20
5000	0.001	0.027	36.44
6000	0.000	0.008	118.56
7000	0.000	0.003	385.71
8000	0.000	0.001	1254.83

Map of the speed reduction induced by altitude = **elev_fact_rev**

Map of the travel time increase induced by altitude (1 / elev_fact_rev) = **elev_timefact**

Slope factor

The slope map was produced from elevation data obtained during a space shuttle flight for NASA's Shuttle Radar Topography Mission (SRTM). The dataset used is **STRM30** at 30 arc-second resolution.

The effect of slope on travel speed is estimated following Nelson's approach, which was based on van Wagtendonk and Benedict (1980)[23] and is computed as follows: v = v0e-ks

Where:

v = off-road foot-based velocity over sloping terrain,

[23] van Wagtendonk, J. W. and Benedict, P. R. 1980. Travel time variation on backcountry trails. Journal of Leisure Research 12 (2): 99-106.

v0 = the base speed of travel over flat terrain, 5 km/hr in this case,

s = slope in gradient (metres per metre) and,

k = a factor which defines the effect of slope on travel speed

For this study, a base walking speed of 5 km/hr and slope factor of k = 3.0 were assumed (equivalent for both uphill and downhill travel). The velocities over the slope grid were computed and then converted into a friction factor by dividing the base speed by the slope speed. The friction factor was then used as a multiplier against foot-based travel components (map = **slp_timefact**). The estimated effects of slope on off-road speed and on crossing time are shown in Table A5.4.

Table A5.4: Effect of slope on off-road speed and on crossing time

slope (%)	gradient (meter per meter)	crossing time factor	speed decrease factor
0	0	1.00	1.00
1	0.01	1.05	0.95
2	0.02	1.10	0.91
5	0.05	1.27	0.79
10	0.1	1.62	0.62
15	0.15	2.06	0.48
20	0.2	2.63	0.38
25	0.25	3.34	0.30
30	0.3	4.26	0.23
35	0.35	5.42	0.18
40	0.4	6.90	0.14
45	0.45	8.78	0.11
50	0.5	11.18	0.09
60	0.6	18.12	0.06
70	0.7	29.37	0.03
80	0.8	47.59	0.02
90	0.9	77.13	0.01
100	1	125.00	0.01
200	2	15625.00	0.00

A5.2.5 Cost-distance analysis

In order to run cost-distance analysis, "target" and "cost features" maps were divided into regional datasets and projected to sinusoidal in order to obtain distance in meters:

Regional source features (from **dist0_2)** projected:

dist0_af_sin (continental sinusoidal)

dist0_am_sin (world sinusoidal)

dist0_as_si2 for cell size 875)

The cost feature is represented by the cell crossing friction (in minutes per km) resulting from the combination of the friction surface components described above, as follows:

crosstime_02 (float) = "min_km_glc30" * "slp_timefact" * "elev_timefact" + "borders720"

crosstime_02/1000 = cros2m_m (minutes needed to proceed for 1 meter across a cell friction as minutes/meter)

Border area cells that are not present in all components are missing from cros2m_m In order to add them, mosaic to raster cros2m_m (first, first) of border720 (border720_fl/1000)

Regional datasets: cros2m_m_af; cros2m_m_am; cros2m_m_as

Create projected regional source features using sinusoidal projections:

cromm2_af_sin (continental sinusoidal)

cromm2_am_sin (world sinusoidal)

cromm2_as_si2 (world sinusoidal; cell size 875)

Off-road travel time to nearest accessible feature resulting from cost-distance analysis of projected features (minutes): Source: dist0_*_si*; Cost: cromm2_*_si* = **cd2_*_sin**

The resulting sinusoidal regional cost-distance maps are converted to WGS84 (using model-builder, snap to msk_30as : **cd2_af; cd2_am; cd2_as .**

Merge of regional cd maps**: cd_02**

These cd maps present some problems along the edges due to projections. This is cleaned by focalmean (3, circle: cd_02_i_f3) producing reasonable values for the missing cells along the edges. The data is merged and clipped on msk2_30as = **cd_02_clip**

A5.2.6 Results of travel time

The results of the analysis, a map of travel times to the nearest accessible feature for Tier I countries, is presented in Figure A5.2. Table A5.5 summarizes the legally accessible DEB increment by travel zones for each Tier I Country.

Accessibility

The next fundamental step of analysis is to develop a map of accessibility based on the travel time map that helps assess what fraction of the existing (and legally accessible) DEB resources may be considered as truly accessible.

To guide this analysis, Table A5.6 presents several hypotheses of converting travel time into percent of accessibility.

Figure A5.2: Map of travel time to nearest accessible feature for Tier I countries based on the physical accessibility methodology presented in section A5.2.

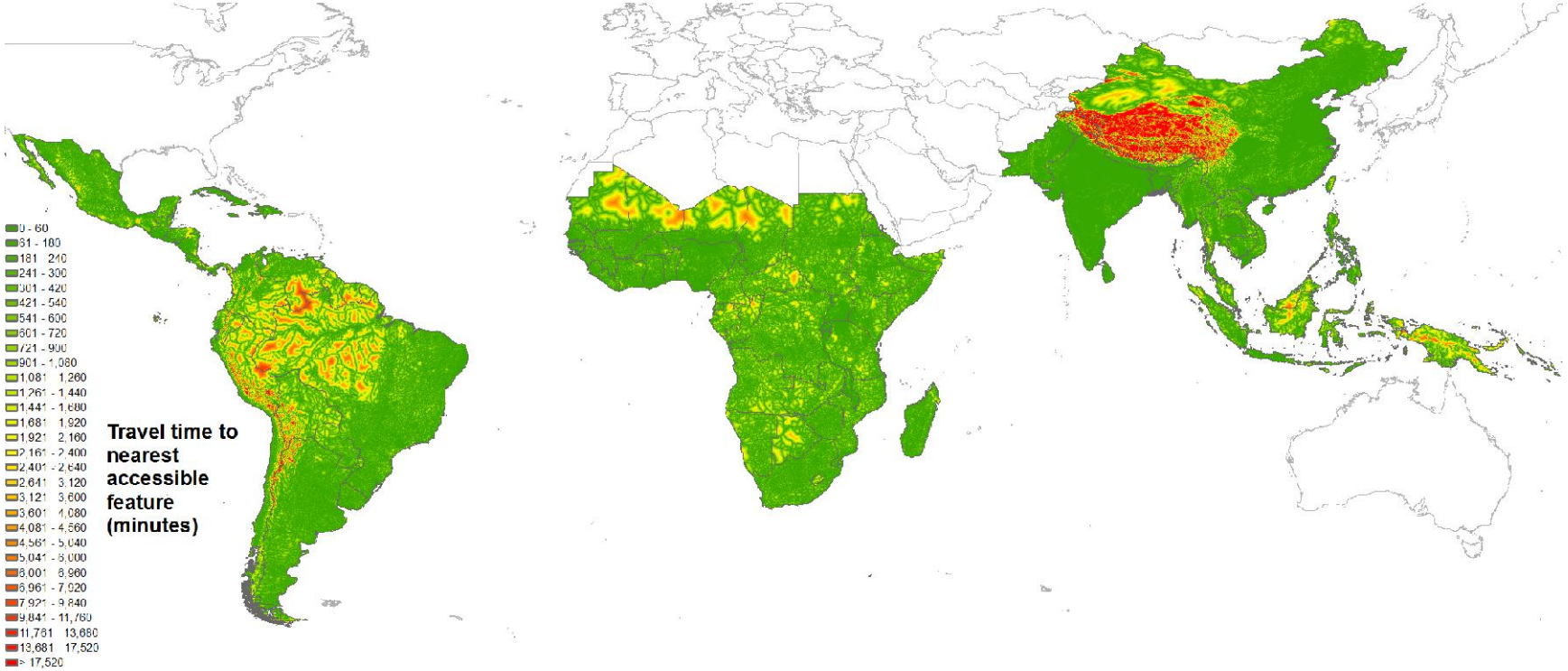
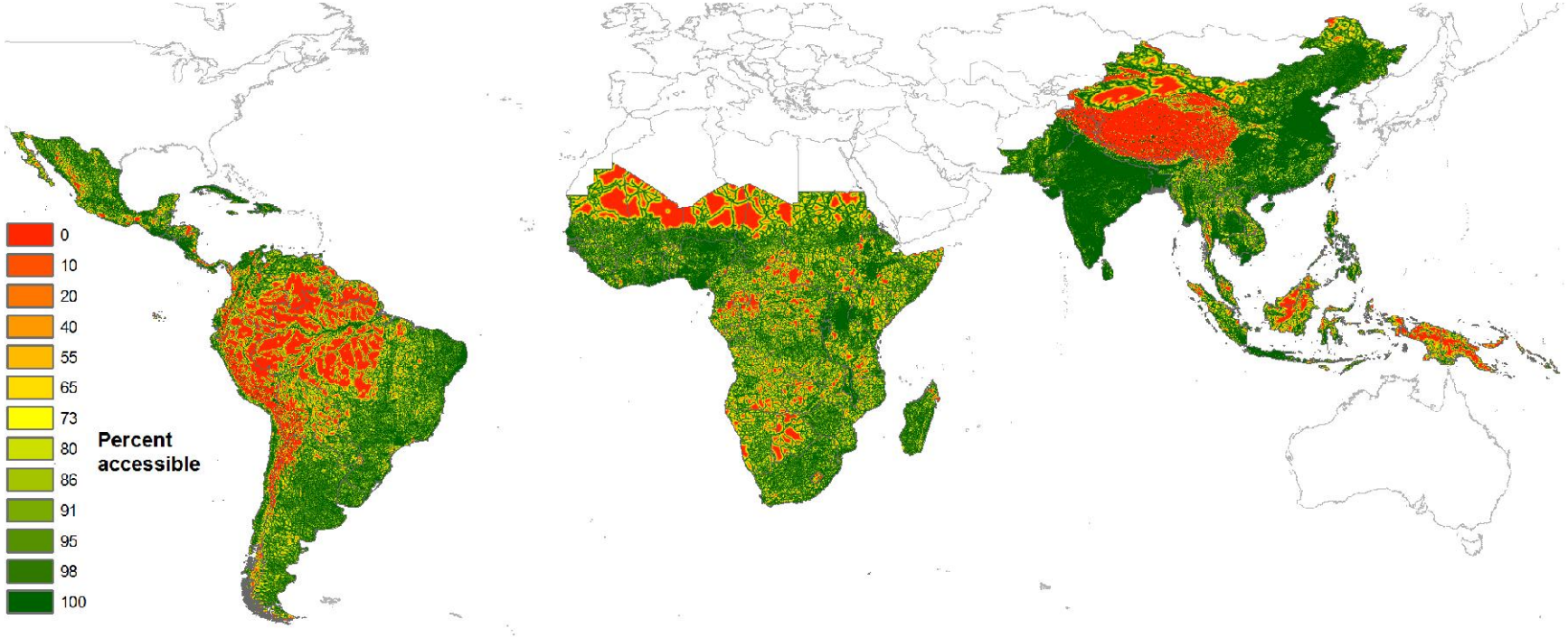


Figure A5.3: Provisional map of accessibility based on off-road travel time to nearest accessible feature. The 0% accessibility threshold is set at a 24 hour time of travel distance.



Note: The conversion of travel time to percent accessibility is based on the assumption that resources are rendered inaccessible for off-road travel times between resources and the nearest accessible feature of 24 hours or greater. The assumption is shown in Table A5.6 (right-hand columns), in which 76.2 % of all legally accessible resources are physically accessible.

Table A5.5: Distribution of DEB increment by travel time zones for Tier I countries.

	travel hours									
	< 1	**1-3**	**3-4**	**4-7**	**7-12**	**12-24**	**24-52**	**52-100**	**100-196**	**> 196**
Tier I summary-legally accessible DEB MAI										
(cumulative %)	**26.5**	**49.1**	**55.0**	**67.0**	**77.3**	**87.8**	**96.1**	**99.2**	**99.8**	**100.0**
(%)	**26.5**	**22.7**	**5.9**	**11.9**	**10.3**	**10.5**	**8.3**	**3.2**	**0.6**	**0.2**
(Mt)	**1,711**	**1,468**	**382**	**770**	**667**	**680**	**537**	**205**	**37**	**12**
Cty-wise legally accessible DE biomass (%)										
Angola	15	20	8	20	20	15	2	0		
Argentina	26	32	10	16	9	4	1	1	0	0
Bangladesh	79	13	2	3	3	1	0	0		
Belize	36	42	7	9	5	1	0			
Benin	33	27	10	18	10	3				
Bhutan	9	7	4	11	14	23	20	8	4	2
Bolivia	10	16	6	16	19	22	9	2	0	0
Botswana	15	22	8	17	15	15	8	0		
Brazil	13	17	5	11	11	15	18	8	1	
Brunei Darussalam	24	19	7	16	18	15	1	0		
Burkina Faso	34	35	10	15	5	1	0			
Burundi	87	11	1	1	0					
Cambodia	33	28	9	17	10	2	0			
Cameroon	20	24	9	19	15	10	4	0		
Central African Republic	12	17	8	18	18	16	8	2		
Chad	25	31	10	16	10	7	2	0		
Chile	23	29	6	13	12	11	4	1	1	0
China	45	33	4	6	4	3	2	1	1	1
Colombia	10	12	4	11	14	22	22	4	0	0
Congo	11	16	7	16	17	20	11	2		
Costa Rica	46	29	4	8	7	5	2	0		
Côte d'Ivoire	38	34	9	13	6	1	0			
Cuba	48	37	5	7	2	1	0	0	0	
Democratic Republic of the Congo	20	24	9	19	15	10	2	0		
Dominican Republic	40	28	8	12	7	4	1			
Ecuador	12	15	5	13	14	17	15	8	1	0
El Salvador	67	24	4	4	1	0				
Equatorial Guinea	31	34	10	16	8	1				
Eritrea	36	30	10	16	8	1	0	0	0	
Ethiopia	34	19	7	14	13	10	3	0	0	
French Guiana	2	6	3	9	15	27	28	10		
Gabon	11	17	7	16	17	18	12	1		
Gambia	83	13	1	2	1	0				
Ghana	48	31	7	10	3	0				
Guatemala	49	26	6	10	6	3	0	0		
Guinea	30	33	11	17	7	1	0	0		
Guinea-Bissau	32	36	10	15	5	1	0			
Guyana	4	11	4	12	16	26	24	3		
Haiti	74	19	3	3	1	0	0			
Honduras	20	21	7	15	14	13	9	0		
India	63	23	3	4	3	2	1	1	0	0
Indonesia	21	17	5	13	14	16	11	3	0	0
Jamaica	52	33	6	7	2	1				
Kenya	36	20	6	14	13	9	1	0		
Lao People's Democratic Republic	20	26	9	19	15	9	1			
Lesotho	12	11	5	11	14	25	21	1		
Liberia	30	30	9	16	11	4	0			
Madagascar	32	32	9	13	8	5	1	0	0	
Malawi	57	24	5	8	5	2	0			
Malaysia	20	20	4	10	11	15	15	6	1	
Mali	29	36	10	16	6	1	2	1		
Mauritania	21	31	11	20	11	6	0	0		

	travel hours									
	< 1	**1-3**	**3-4**	**4-7**	**7-12**	**12-24**	**24-52**	**52-100**	**100-196**	**> 196**
Mexico	24	27	8	16	12	9	3	0	0	0
Mozambique	21	25	10	21	16	8	0	0	0	
Myanmar	26	28	8	16	12	7	3	0	0	0
Namibia	17	26	10	22	16	8	1	0		
Nepal	46	16	5	9	6	7	7	3	1	1
Nicaragua	36	26	5	10	10	10	3	0		
Niger	37	32	7	10	5	4	4	0		
Nigeria	57	26	6	7	3	1	0			
Pakistan	62	19	4	6	4	2	1	0	0	0
Panama	22	19	5	10	13	22	10	1	0	
Papua New Guinea	8	9	4	11	15	24	23	6	0	0
Paraguay	17	22	9	19	17	14	3			
Peru	5	7	3	7	11	21	29	14	3	0
Philippines	52	17	5	10	9	6	1	0	0	
Rwanda	72	25	0	1	1	0				
Senegal	39	39	8	10	3	0				
Sierra Leone	37	35	9	13	5	1	0	0		
Singapore	96			2	2	1				
Solomon Islands	13	17	6	13	14	18	15	4	0	0
Somalia	19	27	9	19	16	9	1	0		
South Africa	34	33	9	15	7	2	0	0		
Sri Lanka	69	21	4	5	1	0	0	0		
Sudan (former)	28	31	8	15	11	6	1			
Suriname	4	9	3	9	12	19	27	17	1	
Swaziland	41	37	7	11	4	0				
Thailand	50	31	4	8	5	2	0	0		
Timor-Leste	35	32	8	15	8	1	0			
Togo	43	31	8	12	5	1				
Trinidad and Tobago	41	33	7	11	8	1				
Uganda	57	22	6	9	5	2	0			
United Republic of Tanzania	29	25	8	16	12	9	2	0		
Uruguay	37	40	8	12	3	0	0			
Venezuela	12	16	6	12	12	14	15	10	5	
Viet Nam	44	32	5	10	7	3	0	0	0	0
Zambia	16	20	8	19	18	15	3			
Zimbabwe	31	36	11	16	6	1				
Totale complessivo	**26**	**23**	**6**	**12**	**10**	**11**	**8**	**3**	**1**	**0**

Note: Not knowing the geographic location of forest plantations, their productivity has been assigned entirely to the areas less than 3 hours distance from nearest accessible feature, assuming good accessibility of planted areas.

Table A5.6: Hypotheses of accessibility factors to be applied to estimate DEB resources based on travel time (ref. cd_02_clip)

Class	time from nearest access			time group	lac_MAI_Mt nat veg.)	Plantation MAI (high yield)	Total leg.acc MAI	Hypotheses of conversion of travel time into percent of accessibility								
								access loss	accessi-ble	89.3 accessi-ble MAI	access loss	% accessi-ble	84.6 accessi-ble MAI	access loss	% accessi-ble	76.2 accessi-ble MAI
#	minutes	hours	days		Mt od	Mt od	Mt od	%	%	Mt od	%	%	Mt od	%	%	Mt od
1	60	1	0.0	< 1 hr	1348	363	1711		100	1711		100	1711		100	1711
2	180	3	0.1	1-3 hr	1105	363	1468	2	98	1439	2	98	1439	2	98	1439
3	240	4	0.2	3-4 hr	382		382	2	96	367	3	95	363	3	95	363
4	300	5	0.2	4-7 hr	307		307	2	94	288	3	92	282	4	91	279
5	420	7	0.3	4-7 hr	463		463	2	92	426	3	89	412	5	86	399
6	540	9	0.4	7-12 hr	325		325	2	90	293	3	86	280	6	80	260
7	600	10	0.4	7-12 hr	129		129	2	88	114	3	83	107	7	73	95
8	720	12	0.5	7-12 hr	212		212	2	86	183	3	80	170	8	65	138
9	900	15	0.6	12-24 hr	241		241	3	83	200	4	76	183	10	55	132
10	1,080	18	0.8	12-24 hr	181		181	3	80	145	4	72	130	15	40	72
11	1,260	21	0.9	12-24 hr	142		142	3	77	109	5	67	95	20	20	28
12	1,440	24	1.0	12-24 hr	116		116	3	74	86	5	62	72	10	10	12
13	1,680	28	1.2	24-52 hr	126		126	4	70	88	6	56	71	10	0	0
14	1,920	32	1.3	24-52 hr	103		103	4	66	68	6	50	51	0	0	0
15	2,160	36	1.5	24-52 hr	85		85	4	62	52	6	44	37	0	0	0
16	2,400	40	1.7	24-52 hr	71		71	4	58	41	8	36	25	0	0	0
17	2,640	44	1.8	24-52 hr	59		59	4	54	32	8	28	17	0	0	0
18	3,120	52	2.2	24-52 hr	94		94	4	50	47	8	20	19	0	0	0
19	3,600	60	2.5	52-100 hr	70		70	4	46	32	10	10	7	0	0	0
20	4,080	68	2.8	52-100 hr	50		50	4	42	21	10	0	0	0	0	0
21	4,560	76	3.2	52-100 hr	35		35	4	38	13	0	0	0	0	0	0
22	5,040	84	3.5	52-100 hr	23		23	4	34	8	0	0	0	0	0	0
23	6,000	100	4.2	52-100 hr	27		27	5	29	8	0	0	0	0	0	0
24	6,960	116	4.8	100-196 hr	14		14	5	24	3	0	0	0	0	0	0
25	7,920	132	5.5	100-196 hr	9		9	5	19	2	0	0	0	0	0	0
26	9,840	164	6.8	100-196 hr	10		10	5	14	1	0	0	0	0	0	0
27	11,760	196	8.2	100-196 hr	4		4	5	9	0	0	0	0	0	0	0
28	13,680	228	9.5	> 196 hr	3		3	5	4	0	0	0	0	0	0	0
29	17,520	292	12.2	> 196 hr	3		3	4	0	0	0	0	0	0	0	0
30	> 17,520	>292	> 12.2	> 196 hr	6		6	0	0	0	0	0	0	0	0	0
					5743	726	**6469**			**5777**			**5471**			**4928**

Appendix 6: Sources of fuelwood and charcoal consumption

The sources used for the "best estimate" variant are selected on the basis of three qualities: original source data, giving preference to country-level studies over routine national statistics, and giving preference to surveys over modeling. For larger countries such as Mexico, Brazil, India, China and Indonesia, the demand is estimated and mapped at the sub-national level based on country studies that provide sub-national consumption and saturation data.

Sources of information for "best estimates" of woodfuel consumption

Country	Selected source	Level (N=national; S-N=sub-nat.)	ref
Angola	IEA	N	FAO is based on GFPOS model. IEA Ch and extrapolated IEA Fw value (PSB reduced of non woody fraction) is considered more realistic.
Argentina	CR_nat	N	WISDOM Argentina (Drigo et al. FAO 2009)
Bangladesh	FAO	N	FAOSTAT 2013
Belize	FAO	N	FAOSTAT 2013
Benin	FAO	N	FAO considered more accurate; a national report (CERTI 2001) shows agreement with past years of FAO data[8].
Bhutan	FAO	N	FAOSTAT 2013
Bolivia	FAO	N	FAOSTAT 2013
Botswana	UN	N	UN Energy Statistics 2013
Brazil	CR_subnat	S-N	EPE 2005; Uhlig 2008.
Brunei Darussalam	FAO	N	FAOSTAT 2013
Burkina Faso	FAO	N	FAOSTAT 2013
Burundi	CR_nat	N	Extrapolated values from Rwanda (Drigo et al. 2013)
Cambodia	CR_nat	N	Heng 2002.
Cameroon	IEA	N	FAO values are all based on GFPOS model. For Ch IEA (IEA 2013) and UN are preferred. For Fw IEA PSB woody fraction is preferred.
Central African Rep.	UN	N	UN Energy Statistics 2013. Both FAO and UN give unrealistic charcoal values, since consumption in CAR is negligible. A national study (Yandji 2007) found 1.4% of HHs used charcoal and confirms UN Fw values.
Chad	CR_nat	N	Habib 2011
Chile	FAO	N	FAOSTAT 2013
China	CR_subnat	S-N	Sub-national estimates (Zhang et al. 2009).
Colombia	UN	N	UN Energy Statistics 2013
Congo, Dem. Rep.	IEA	N	FAO values are both based on GFPOS model. IEA Ch and extrapolated Fw PSB woody fraction is preferred (IEA 2013).
Congo, Rep.	UN	N	UN Energy Statistics 2013
Costa Rica	FAO	N	FAOSTAT 2013
Côte D'Ivoire	IEA	N	IEA 2013. For Ch IEA is preferred. For Fw IEA PSB woody fraction is preferred.
Cuba	UN	N	UN Energy Statistics 2013
Dominican Republic	IEA	N	IEA 2013. For Ch IEA is preferred. For Fw IEA PSB woody fraction is preferred.
Ecuador	FAO	N	FAOSTAT 2013

Country	Selected source	Level (N=national; S-N=sub-nat.)	ref
El Salvador	CR_nat	N	Country report (Current and Juarez 1992)
Equatorial Guinea	FAO	N	FAOSTAT 2013
Eritrea	UN	N	UN Energy Statistics 2013. FAO and IEA give very low Fw values while UN is in line with a previous country study (Arayal 1999).
Ethiopia	IEA	N	IEA 2013. FAO and UN are both based on GFPOS model. IEA Ch and Fw PSB woody fraction are preferred.
French Guiana	FAO	N	FAOSTAT 2013
Gabon	FAO	N	FAOSTAT 2013
Gambia	UN	N	UN Energy Statistics 2013
Ghana	FAO&IEA	N	FAO (FAOSTAT 2013) for Ch and IEA (IEA 2013) for Fw. A country report (FAO 2000) supports FAO Ch values and IEA PSB value, while FAO and UN based on GFPOS appear too high
Guatemala	FAO	N	FAOSTAT 2013
Guinea	UN	N	UN Energy Statistics 2013
Guinea-Bissau	FAO	N	FAOSTAT 2013
Guyana	UN	N	UN Energy Statistics 2013
Haiti	IEA	N	IEA 2013. FAO and UN are both based on GFPOS model. IEA Ch and Fw PSB woody fraction are preferred.
Honduras	FAO	N	FAOSTAT 2013
India	CR_subnat	S-N	Sub-national estimates (NSSO 2012)
Indonesia	CR_subnat	S-N	Province-wise consumption estimated using saturation data. Total quantities based on IEA for Ch (IEA 2013). For Fw IEA PSB woody fraction is preferred, which is similar to Nat. Biomass Energy data (MoE Indonesia 2010)
Jamaica	FAO&IEA	N	IEA (IEA 2013) for Ch and FAO (FAOSTAT 2013) for Fw.
Kenya	IEA	N	IEA 2013. FAO (FAOSTAT 2013) is very low. IEA is adjusted to an earlier national study (MoE, Kenya 2002).
Laos	CR_nat	N	GCP/RAS/173/EC Laos report by Mr Oukham Phiathep, Planning Dep. Min. Agr. and Forestry. (Main ref: 1997 STENO - Paper - Laos Internship for National Training on Wood Energy Planning). 2000 proj to 2009
Lesotho	FAO	N	FAOSTAT 2013. UN Fw values are based on FAO GFPOS model but FAO uses other values.
Liberia	FAO	N	FAOSTAT 2013
Madagascar	UN	N	UN Energy Statistics 2013. FAO Fw values are based on GFPOS model
Malawi	UN	N	UN Energy Statistics 2013. FAO Ch and Fw values are based on GFPOS model
Malaysia	FAO	N	FAOSTAT 2013. There is agreement on Fw btwn IEA and FAO but large difference on Ch.
Mali	FAO	N	FAOSTAT 2013
Mauritania	FAO	N	FAOSTAT 2013
Mexico	CR_subnat	S-N	WISDOM Mexico study (Gilardi et al 2007) and census data (INEGI 2000 & 2010; Serrano-Medrano et al, 2014)
Mozambique	CR_nat	N	WISDOM Mozambique (Drigo et al. 2008).
Myanmar	FAO	N	FAOSTAT 2013
Namibia	FAO	N	FAOSTAT 2013
Nepal	IEA	N	IEA 2013. FAO and UN are both based on GFPOS model. IEA Ch and Fw PSB woody fraction are preferred
Nicaragua	IEA	N	IEA 2013. FAO and UN are both based on GFPOS model. IEA Ch and Fw PSB woody fraction are preferred

Country	Selected source	Level (N=national; S-N=sub-nat.)	ref
Niger	CR_nat	N	Systeme Informatif Energetique, Niger with 2004 estimates but percapita values based on CTFED 89
Nigeria	FAO	N	FAO Ch and Fw values are based on GFPOS model (matching well consumption values applied in Nigeria. National sources 1.1.kg per person, thus totalling 401.5 kg/person/year air-dry (Marzoli 2013, personal communication) which is reasonably close to FAO and much less than estimated by IEA and UN.
Pakistan	IEA	N	IEA 2013. FAO Ch is based on GFPOS model. IEA Ch and Fw PSB woody fraction are preferred.
Panama	FAO	N	FAOSTAT 2013
Papua New Guinea	FAO	N	FAOSTAT 2013
Paraguay	UN	N	UN Energy Statistics 2013
Peru	FAO	N	FAOSTAT 2013
Philippines	UN	N	UN Energy Statistics 2013
Rwanda	CR_nat	N	WISDOM Rwanda 2012
Senegal	UN	N	UN Energy Statistics 2013. FAO Ch values appears too low
Sierra Leone	FAO	N	FAOSTAT 2013
Singapore	UN	N	UN Energy Statistics 2013
Solomon Islands	FAO	N	FAOSTAT 2013
Somalia	FAO	N	FAOSTAT 2013
South Africa	IEA	N	IEA 2013. For Ch IEA is preferred. For Fw IEA PSB reduced woody fraction is preferred.
Sri Lanka	UN	N	UN Energy Statistics 2013
Sudan (former)	UN	N	UN Energy Statistics 2013
Suriname	UN	N	UN Energy Statistics 2013
Swaziland	FAO	N	FAOSTAT 2013
Tanzania, United Rep.	FAO&IEA	N	FAO Ch and extrapolated IEA Fw value (PSB reduced of non woody fraction) are preferred
Thailand	CR_nat	N	GCP/RAS/173/EC Thailand report by Sriluck Tatayanon, Royal Forestry Department. Main ref.:surveys by Department of Energy Devel. RWEDP country study (2000) confirms FAO for Fw and confirms IEA for Ch.
Timor-Leste	FAO	N	FAOSTAT 2013
Togo	FAO&IEA	N	FAO (FAOSTAT 2013) for Fw and IEA (IEA 2013) for Ch.
Trinidad and Tobago	UN	N	UN Energy Statistics 2013
Uganda	FAO	N	FAOSTAT 2013. Fw consumption very high, but no other source available.
Uruguay	FAO	N	FAOSTAT 2013
Venezuela	FAO	N	FAOSTAT 2013. Low Ch value in FAO compared to IEA
Viet Nam	CR_nat	N	Country data reported by Heruela 2003.
Zambia	IEA	N	IEA 2013. For Ch IEA is preferred. For Fw IEA PSB reduced to woody fraction is preferred.
Zimbabwe	UN	N	UN Energy Statistics 2013. UN value for Fw better reflects the value of 10 Mt (airdry) in 1996 indicated by National experts (Magubu et al, FAO 1998).

Appendix 7: Procedure for the estimation of NRB values

Phases of analysis

Delineation of probable harvesting areas

The estimation of fNRB requires the definition of the ***probable*** **harvesting area**, including local harvesting (in response to the majority of rural consumption), and commercial harvesting areas (relative to major deficit areas). While the harvesting for rural consumption is "assigned" to local resources, the harvesting that feeds urban woodfuel markets is "assigned" to the *probable commercial harvesting area.* The latter is far more difficult to define and is estimated/outlined here with reference to the results of the woodshed analysis (i.e. nominal sustainable supply zone), travel time zones (as proxy for transport costs) and available wood resources (surplus to local consumption) that are suitable for commercial woodfuels production.

In the subsequent phase of analysis, the lower bound of fNRB is defined by assuming that the probable harvesting areas are exploited as *rationally* as possible. The result for each sub-national unit will be the "**minimum fraction of Non-Renewable Biomass**" (**mfNRB**, as % of total harvesting, or **m_NRB**, as tons of dry woody biomass), which indicates the lowest possible value of NRB for a given level of harvesting and potential supply. We simulate the actual level of management by assuming management strategies ranging from more to less sustainable. Foe each country, the level of management is estimated with reference to forest management and plantation data of the FAO Forest Resources Assessment Programme. The result at this level is the "**expected fraction of Non-Renewable Biomass**" (**efNRB** [%], or **e_NRB** [od t]), which indicates the range of NRB values for given levels of harvest, supply, and management systems. The procedure includes the following five steps:

1. Estimation of the "**potential Renewable Biomass fraction**" (**pRBf**)
2. Estimation of the "**minimum fraction of Non-Renewable Biomass**" (**mfNRB**).
3. Estimation of the **Sustainable Increment Exploitation Fraction** (**SIEF**).
4. Estimation of the "**expected Renewable Biomass fraction**" (**eRBf**)
5. Estimation of the "**expected fraction of Non-Renewable Biomass**" (**efNRB**).

For analytical purposes, the following situations are distinguished:

- **rural areas** (areas of rural population with more than 10 inhabitants per km^2 as calculated on a 5 cell radius (approx 4.5 km);
- **urban areas** (usually defined by census data and reported by PMUR2005);
- **areas uninhabited or sparsely populated (USPA)**(areas with less than 10 inhabitants per km^2 calculated on a 5 cell radius (approx 4.5 km).

Step 1: Estimation of the "potential Renewable Biomass fraction" (pRBf)

Based on the geo-referenced WISDOM layers of supply and demand and further processing described below, the pRBf is estimated as the highest possible degree of renewable biomass harvesting within a particular territory. To estimate pRBF, the biomass resources are assumed to be rationally exploited. Rational exploitation of biomass resources is defined as exploiting the sustainable increment first and, in the case that the demand is higher than the sustainable supply, using the full sustainable increment of biomass resources.

The pRBf within a given territory can be formulated as follows:

(Eq. 1) pRBf = (<sustainable supply potential> - <harvest>) / <harvest>

where,

<sustainable supply potential> = Locally available supply that is used to satisfy the local demand (including non-commercial DEB) of the entire sub-national unit, plus the commercial surplus within the probable commercial harvesting area of the sub-national unit (i.e. woodshed area as defined by less than 12 hours travel time);

<harvest> = The demand that is locally satisfied (considered local harvesting), plus the fraction of the local deficit of the entire country that, when converted into commercial harvesting, is assigned to the sub-national unit. The distribution of the total commercial harvesting of the country among sub-national units is done proportionally to the surplus available in the woodshed of each sub-national unit.

The <sustainable supply potential> can be estimated and mapped using available information, while the **<**harvest> is rarely known. However, it can be assumed that within a given country, <harvest> is equal to <consumption> (subtracting out imports and adding exports), which is a key parameter of the WISDOM model[24] that can be estimated and mapped on the basis of available information.

For a given unit, the <harvest> includes harvesting for local rural demand plus the commercial harvesting assigned to the unit according to the woodshed and probable harvesting area analyses. In fact, the location of the harvesting related to urban consumption is crucial and indeed quite challenging. In the present model, the "urban" harvesting is distributed among neighboring administrative units in proportion to the commercial surplus resources of each unit located within the woodshed zone.

[24] In WISDOM, all woody biomass use is considered, including woodfuels as well as industrial wood products and construction material. Industrial roundwood production (based on FAOstat data) is usually deducted from the available wood energy supply potential while construction material used by rural households is added to the woodfuel consumption.

Even if the exploitation system assumed is fully rational, the DEB value considered in the calculation of **pRBf** is not the whole commercial supply potential, but rather a slightly reduced value due to local constraints independent of the management approach adopted. The factors applied are 0.9 for uninhabited areas and 0.95 for rural and urban areas.

- Positive pRBf values indicate that the harvested biomass is less than the supply potential and the biomass extracted is potentially "renewable". The value shows the margin of surplus as the ratio between the supply potential and current harvesting level within the area under consideration.
- Negative pRBf values indicate that the harvesting is more than the sustainable supply potential and show the fraction of the consumption that cannot be met by the sustainable supply capacity of the area under consideration.

It should be noted that the pRBf represents the best possible situation given the resources available within the study area, and not the actual situation, which depends on how rationally the resources are exploited.

Step 2: Estimation of the "minimum fraction of Non-Renewable Biomass" (mfNRB)

The "*minimum* fraction of Non-Renewable Biomass" (mfNRB) indicates the best possible situation, given the estimated level of harvesting and the sustainable supply potential of the area under consideration, and assuming the rational management of biomass resources. It is assumed that the harvesting is as sustainable as possible, which means using only the sustainable increment or, in the case that the estimated harvesting is greater than the supply potential, using the full sustainable increment of biomass.

The mfNRB for a given area is derived from the pRBf as follows:

(Eq. 2) mfNRB	**=**	**pRBf * (-1) * 100**	**if pRBf ≤ 0**
	=	**0**	**if pRBf > 0**

Step 3: Estimation of the Sustainable Increment Exploitation Fraction (SIEF)

The pRBf and mfNRB assume rational harvesting practices that maximize the renewable potential of the resource and may be quite different from actual practices in the field. For example, if the exploitation insists on part of the accessible forest and causes the depletion of biomass resources, the true fNRB tends to 100% even in a biomass-rich area. Alternatively, if the accessible forest is exploited entirely on a rotational basis, the true fNRB shows the lowest possible value (corresponding to the value of mfNRB derived in Equation 2).

The true Renewable Biomass fraction (RBf), and hence the true fNRB, depend on how rationally the production of fuelwood and charcoal is conducted, i.e. what fraction of the sustainable productivity is actually exploited. To estimate this, we introduce a factor representing the **Sustainable Increment Exploitation Fraction (SIEF)** for a given area. The SIEF ranges from zero to one and indicates the extent to which harvesting is rational in the area of focus.[25] .

A SIEF ≈ 1 indicates that the harvesting is homogeneous over all of the forest resources in a given area; a SIEF ≈ 0 indicates that the harvesting is concentrated only on part of the area's resources, leaving potential supply areas untapped and overexploiting others.

Extreme SIEF values (0 or 1) are highly unlikely. We account for differential levels of management depending on these demographic factors: a) in densely populated urban areas, which usually have few accessible biomass resources, high SIEF values are expected; b) in rural areas characterized by subsistence wood collection, medium-to-high SIEF values may be expected; c) in uninhabited or sparsely populated forest regions, SIEF values are likely to be lower than in rural areas, although wide variation may exist depending on the type and degree of exploitation. Relying on available knowledge of country-specific forest management practices and plantation areas, we use the following assumptions:

- Generic minimum and maximum SIEF values were assumed for urban areas (0.7 - 0.95), rural areas (0.7 - 0.95) and in uninhabited/sparsely populated areas (USPA) (0.5 - 0.9).
- Specific values for each country were subsequently calculated on the basis of the fraction of forest resources under management plans and/or planted according to FAO Forest Resources Assessment statistics[26]. Countries with high proportions of forest either managed or planted obtained a high SIEF (upper values of the range), while countries without management plans or with natural forest only obtained low SIEF values (lower values of the range).

The SIEF is a key parameter in the fNRB estimation process that considerably influences the final results (i.e. to the degree that forest management influences the sustainability of forest exploitation). Other specific parameters and indicators to guide the definition of reliable SIEF values will be identified, with the Tier II and Tier III studies expected to contribute significantly to this phase of analysis.

Step 4: Estimation of the "expected Renewable Biomass fraction" (eRBf)

The *expected* Renewable Biomass fraction (eRBf), which is the probable degree to which biomass will be harvested sustainably within a particular territory, is estimated by applying the SIEF to the potential Renewable Biomass Fraction (pRBf), as per Equation 3:

[25] To be noted that *rational* does not mean *sustainable*; sustainable forest management is always rational, but rational exploitation is not always sustainable. For instance: a forest could be *rationally over*exploited when the harvesting is done over the entire forest with a rotation period that is too short; on the contrary, it is *not rational* if the *over*exploitation is done only over part of the forest.

[26] FAO FRA 2010 provides country-wise statistics on forest areas under management plans.

(Eq. 3)

$$eRBF = \frac{\left\{\left(\sum_{i=a,b,c} SIEF_i * Supply_i\right) - Harvest\right\}}{Harvest}$$

where a, b, and c denote urban, rural and uninhabited regions as defined above

Step 5: Estimation of the "expected fraction of Non-Renewable Biomass" (efNRB)

The *expected* fraction of Non-Renewable Biomass (efNRB), which indicates the probable situation given the estimated level of harvesting, the supply potential, and the assumption of current management practices, is derived from the eRBf as follows:

(Eq. 4)	**efNRB**	**= eRBf * (-1) * 100**	**if eRBf≤ 0**
		= 0	**if eRBf > 0**

Accounting for woody biomass from deforestation and afforestation

Deforestation and afforestation processes are often significant sources of woody biomass used as fuel, construction material or industrial roundwood.

The FAO produces estimates of annual change rates of forest cover at the national level, but the distribution of the change is not specified. In order to account for the change of biomass stock that results from deforestation and afforestation processes, a simple model was developed based on the assumption that forest cover changes occur in accessible forest areas. In order to locate forest changes within the countries as precisely as possible, the dataset produced by the Forest Monitoring for Action (FORMA) program was used to weight the sub-national forest cover change distributions of the 27 countries covered by the program. The FORMA program reports monthly occurrences of forest clearings by subnational unit from 2006-2011 (Wheeler et al., 2011).

Hence, within each subnational unit, we assume the woody biomass produced from deforestation processes is spatially distributed as a fraction of the existing accessible stock, and the additional increment made available from afforestation processes is spatially distributed as a fraction of the existing accessible increment.[27]

[27] The clearing of existing forest produces a far greater amount of material per hectare, compared to afforestation that produces only the biomass increment of one year.

Only a fraction of the biomass supplied via deforestation or afforestation is actually utilized.[28] To account for this, we assume that only de-/afforestation occurring within accessible rural and urban areas, and within the woodshed zones, contribute to NRB values. The biomass released from de-/afforestation in uninhabited or sparsely populated areas (USPA) outside woodshed areas is assumed to be unlikely to be used as woodfuel.

In addition, part of the woody biomass from de-/afforestation is likely used as industrial roundwood and hence not available for energy uses. To account for biomass devoted to industrial roundwood, a factor of 0.7 is applied to determine the probable amount of woody biomass available for woodfuel production.

In the NRB calculation, the DEB from deforestation always contributes to NRB, while the DEB from afforestation (indeed very limited) is considered renewable and decreases any positive NRB.

In the estimation procedure, the DEB from deforestation (related to forest stock) and afforestation (related to the one-year increment) within the harvesting zone is assumed to be used first, while additional direct harvesting is done only to fill in for missing DEB quantities. In practice, two components are considered: (i) the woodfuels produced from deforested DEB, considered entirely as NRB, or from afforested DEB, considered entirely as RB, that are available within the probable harvesting area and (ii) the additional DEB from direct harvesting needed to meet the remaining portion of demand, which is estimated following the same steps described above. The total NRB value for a given sub-national unit is finally estimated by adding the two components.

[28] Indeed, woody biomass generated from large-scale deforestation in remote areas like the Amazon or Indonesia is usually burned on site after removal of few valuable timber species .

Appendix 8: Geodatabase of sub-national units

Geodatabase of sub-national units (GAUL2008): **sn1_02.mdb**

Attributes of Table/shapefile **g08_1**:

OBJECTID	Count	
sn_serie1	Num	New code of sub-national level 1 (4 digits: 2 for country [cty_serie_0] +2 for sn unit)
ADM1_NAME	Text	Name of sub-national unit (level 1)
cty_serie_0	Num	New code of national level 0 (two digits)
ADM0_NAME	Text	Name of Country (or name of disputed area)
ADM1_CODE	Num	Original GAUL2008 code of sub-national level 1
ADM0_CODE	Num	Original GAUL2008 code of national level 0
FAO_code	Num	Country code used in FAOstat
REGION	Text	Aggregation of countries from GAUL2008
fNRB_def_1	Num	fNRB (%of total harvesting) of the woody biomass from deforestation/afforestation processes occurring within urban and rural areas (>10 inh./km2) and within woodshed zones - "l" plantation MAI variant..
NRB_defaf_1	Num	NRB (kt od) of the woody biomass from deforestation/ afforestation processes occurring within urban and rural areas (>10 inh./km2) and within woodshed zones - "l" plantation MAI variant.
mfNRB_00_1	Num	Minimum fNRB (% of total harvesting) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming also the rational exploitation of entire commercial surplus - "l" plantation MAI variant
mfNRB_oth_1	Num	Minimum fNRB (% of total harvesting) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming rational exploitation of entire commercial surplus - "l" plantation MAI variant
mfNRB_tot_1	Num	Minimum fNRB (% of total harvesting) including deforestation/afforestation by-products and additional harvesting, assuming rational exploitation of entire commercial surplus - "l" plantation MAI variant
efNRB_00_1	Num	Expected fNRB (% of total harvesting) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant

efNRB_oth_l	Num	Expected fNRB (% of total harvesting) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant
efNRB_tot_l	Num	Expected fNRB (% of total harvesting) including deforestation/afforestation by-products and additional harvesting, assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant
m_NRB_00_l	Num	Minimum NRB (kt od) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming also the rational exploitation of entire commercial surplus - "l" plantation MAI variant
m_NRB_oth_l	Num	Minimum NRB (kt od) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming rational exploitation of entire commercial surplus - "l" plantation MAI variant
m_NRB_tot_l	Num	Minimum NRB (kt od) including deforestation/afforestation by-products and additional harvesting, assuming rational exploitation of entire commercial surplus - "l" plantation MAI variant
e_NRB_00_l	Num	Expected NRB (kt od) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant
e_NRB_oth_l	Num	Expected NRB (kt od) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant
e_NRB_tot_l	Num	Expected NRB (kt od) including deforestation/afforestation by-products and additional harvesting, assuming the "normal" exploitation of entire commercial surplus - "l" plantation MAI variant
fNRB_def_h	Num	fNRB (‰of total harvesting) of the woody biomass from deforestation/afforestation processes occurring within urban and rural areas (>10 inh./km2) and within woodshed zones - "h" plantation MAI variant..
NRB_defaf_h	Num	NRB (kt od) of the woody biomass from deforestation/ afforestation processes occurring within urban and rural areas (>10 inh./km2) and within woodshed zones - "h" plantation MAI variant.
mfNRB_00_h	Num	Minimum fNRB (% of total harvesting) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming also the rational exploitation of entire commercial surplus - "h" plantation MAI variant
mfNRB_oth_h	Num	Minimum fNRB (% of total harvesting) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming rational exploitation of entire commercial surplus - "h" plantation MAI variant
mfNRB_tot_h	Num	Minimum fNRB (% of total harvesting) including deforestation/afforestation by-products and additional harvesting, assuming rational exploitation of entire commercial surplus - "h" plantation MAI variant

efNRB_00_h	Num	Expected fNRB (% of total harvesting) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
efNRB_oth_h	Num	Expected fNRB (% of total harvesting) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
efNRB_tot_h	Num	Expected fNRB (% of total harvesting) including deforestation/afforestation by-products and additional harvesting, assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
m_NRB_00_h	Num	Minimum NRB (kt od) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming also the rational exploitation of entire commercial surplus - "h" plantation MAI variant
m_NRB_oth_h	Num	Minimum NRB (kt od) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming rational exploitation of entire commercial surplus - "l" plantation MAI variant
m_NRB_tot_h	Num	Minimum NRB (kt od) including deforestation/afforestation by-products and additional harvesting, assuming rational exploitation of entire commercial surplus - "h" plantation MAI variant
e_NRB_00_h	Num	Expected NRB (kt od) without consideration for deforestation/afforestation by-products, assuming that woodfuels come from direct harvesting. Assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
e_NRB_oth_h	Num	Expected NRB (kt od) of direct woodfuels harvesting that is additional to deforestation/afforestation by-products, assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
e_NRB_tot_h	Num	Expected NRB (kt od) including deforestation/afforestation by-products and additional harvesting, assuming the "normal" exploitation of entire commercial surplus - "h" plantation MAI variant
pix30as	Num	Number of 30 arc-sec cells
km2	Num	Area in km2 (derived from 30 arc-sec raster map)
treemsk_km2	Num	Area in km2 of Globcover classes with trees as pure or mixed with other land cover classes
Shape_Length	Num	
Shape_Area	Num	

Appendix 9: Range of fNRB values by sub-national units

Minimum fNRB (mfNRB) assumes the rational, or optimal exploitation of woody biomass resources.

Expected fNRB (efNRB) assumes current management practices.

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
		rec_dem_l_tot	mfNRB_00_l	efNRB_00_l	fNRB_def_l	mfNRB_oth_l	efNRB_oth_l	mfNRB_tot_l	efNRB_tot_l	c_dem_h_tot	mfNRB_00_h	efNRB_00_h	fNRB_def_h	mfNRB_oth_h	efNRB_oth_h	mfNRB_tot_h	efNRB_tot_h
Aksai Chin	not available	0	70.2	75.2	0.0	70.2	75.2	70.2	75.2	0	69.8	74.9	0.0	69.8	74.9	69.8	74.9
Aksai Chin Tot		**0**	**70.2**	**75.2**	**0.0**	**70.2**	**75.2**	**70.2**	**75.2**	**0**	**69.8**	**74.9**	**0.0**	**69.8**	**74.9**	**69.8**	**74.9**
Angola	Bengo	1,057	7.5	44.8	3.6	3.9	41.2	7.5	44.8	1,054	6.7	44.3	3.6	3.1	40.7	6.7	44.3
Angola	Benguela	435	5.2	35.5	4.3	0.9	31.2	5.2	35.5	435	4.9	35.3	4.3	0.6	31.0	4.9	35.3
Angola	Bie	809	4.3	31.8	8.9	0.0	22.9	8.9	31.8	809	4.1	31.6	8.9	0.0	22.7	8.9	31.6
Angola	Cabinda	103	4.0	30.4	9.1	0.0	21.3	9.1	30.4	103	4.0	30.4	9.1	0.0	21.3	9.1	30.4
Angola	Cuando Cubango	76	7.4	44.2	1.1	6.4	43.2	7.4	44.2	76	7.4	44.2	1.1	6.4	43.2	7.4	44.2
Angola	Cuanza Sul	728	4.7	33.5	5.7	0.0	27.8	5.7	33.5	728	4.3	33.2	5.7	0.0	27.5	5.7	33.2
Angola	Cunene	134	7.3	43.6	0.2	7.1	43.4	7.3	43.6	134	7.3	43.6	0.2	7.1	43.4	7.3	43.6
Angola	Huambo	1,530	3.4	28.3	2.5	1.0	25.9	3.4	28.3	1,535	3.0	28.0	2.4	0.5	25.5	3.0	28.0
Angola	Huila	481	5.5	36.3	2.7	2.7	33.6	5.5	36.3	482	5.4	36.3	2.7	2.7	33.6	5.4	36.3
Angola	Kuanza Norte	793	4.3	31.9	7.1	0.0	24.9	7.1	31.9	793	3.6	31.5	7.1	0.0	24.4	7.1	31.5
Angola	Luanda	223	3.7	29.4	0.3	3.4	29.1	3.7	29.4	223	3.7	29.4	0.3	3.4	29.1	3.7	29.4
Angola	Lunda Norte	192	6.6	40.9	4.5	2.1	36.4	6.6	40.9	192	6.6	40.9	4.5	2.1	36.4	6.6	40.9
Angola	Lunda Sul	83	7.1	42.7	4.1	3.0	38.6	7.1	42.7	83	7.0	42.7	4.1	3.0	38.6	7.0	42.7
Angola	Malanje	578	5.0	34.5	8.4	0.0	26.2	8.4	34.5	578	4.9	34.4	8.4	0.0	26.1	8.4	34.4
Angola	Moxico	195	6.9	41.9	3.9	3.0	38.1	6.9	41.9	195	6.9	41.9	3.9	3.0	38.1	6.9	41.9
Angola	Namibe	20	7.3	44.0	1.2	6.2	42.8	7.3	44.0	20	7.0	43.8	1.2	5.8	42.7	7.0	43.8
Angola	Uige	531	5.0	34.6	19.5	0.0	15.0	19.5	34.6	531	4.9	34.5	19.5	0.0	15.0	19.5	34.5
Angola	Zaire	342	7.5	44.6	2.3	5.2	42.3	7.5	44.6	341	6.8	44.3	2.3	4.5	42.0	6.8	44.3
Angola tot		8,310	**5.1**	**35.1**	**5.6**	**1.5**	**29.5**	**7.1**	**35.1**	**8,310**	**4.7**	**34.9**	**5.6**	**1.3**	**29.2**	**6.9**	**34.9**
Argentina	Buenos Aires	1,347	0.0	24.1	8.0	0.0	16.2	8.0	24.1	1,379	0.0	23.7	7.8	0.0	15.9	7.8	23.7
Argentina	Buenos Aires D.f.	5	0.0	12.1	0.6	0.0	11.5	0.6	12.1	5	0.0	12.4	0.6	0.0	11.8	0.6	12.4
Argentina	Catamarca	66	0.0	24.8	13.7	0.0	11.1	13.7	24.8	66	0.0	24.8	13.7	0.0	11.1	13.7	24.8
Argentina	Chaco	289	0.0	25.9	17.8	0.0	8.0	17.8	25.9	288	0.0	25.1	17.9	0.0	7.2	17.9	25.1
Argentina	Chubut	52	0.0	19.5	10.9	0.0	8.7	10.9	19.5	52	0.0	19.8	10.8	0.0	9.0	10.8	19.8
Argentina	Cordoba	1,525	0.0	30.9	4.3	0.0	26.6	4.3	30.9	1,506	0.0	29.2	4.3	0.0	24.9	4.3	29.2
Argentina	Corrientes	192	0.0	24.5	6.7	0.0	17.8	6.7	24.5	193	0.0	24.4	6.6	0.0	17.7	6.6	24.4
Argentina	Entre Rios	1,050	0.0	31.5	5.7	0.0	25.8	5.7	31.5	1,044	0.0	29.8	5.7	0.0	24.0	5.7	29.8
Argentina	Formosa	112	0.0	21.8	30.8	0.0	0.0	30.8	30.8	112	0.0	22.0	30.7	0.0	0.0	30.7	30.7
Argentina	Jujuy	94	0.0	17.8	31.4	0.0	0.0	31.4	31.4	95	0.0	18.1	31.1	0.0	0.0	31.1	31.1
Argentina	La Pampa	59	0.0	23.8	7.9	0.0	15.8	7.9	23.8	59	0.0	24.0	7.9	0.0	16.1	7.9	24.0
Argentina	La Rioja	114	0.0	31.6	0.8	0.0	30.8	0.8	31.6	112	0.0	30.4	0.8	0.0	29.6	0.8	30.4
Argentina	Mendoza	208	0.0	22.7	4.7	0.0	18.0	4.7	22.7	213	0.0	22.4	4.6	0.0	17.8	4.6	22.4
Argentina	Misiones	239	0.0	20.8	54.3	0.0	0.0	54.3	54.3	239	0.0	20.6	54.2	0.0	0.0	54.2	54.2
Argentina	Neuquen	67	0.0	22.9	6.6	0.0	16.3	6.6	22.9	67	0.0	23.1	6.6	0.0	16.6	6.6	23.1
Argentina	Rio Negro	96	0.0	18.8	8.0	0.0	10.8	8.0	18.8	97	0.0	19.0	7.9	0.0	11.1	7.9	19.0
Argentina	Salta	225	0.0	23.2	28.6	0.0	0.0	28.6	28.6	226	0.0	22.9	28.5	0.0	0.0	28.5	28.5
Argentina	San Juan	62	0.0	23.9	3.7	0.0	20.2	3.7	23.9	63	0.0	23.9	3.6	0.0	20.3	3.6	23.9
Argentina	San Luis	60	0.0	24.7	5.4	0.0	19.3	5.4	24.7	60	0.0	25.0	5.4	0.0	19.6	5.4	25.0
Argentina	Santa Cruz	43	0.0	21.0	8.1	0.0	12.9	8.1	21.0	43	0.0	21.3	8.1	0.0	13.2	8.1	21.3

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Argentina	Santa Fe	1,347	0.0	29.7	5.6	0.0	24.2	5.6	29.7	1,336	0.0	28.2	5.6	0.0	22.6	5.6	28.2
Argentina	Santiago Del Estero	469	0.0	28.6	12.1	0.0	16.5	12.1	28.6	465	0.0	27.1	12.1	0.0	15.0	12.1	27.1
Argentina	Tierra Del Fuego	18	0.0	15.1	24.4	0.0	0.0	24.4	24.4	19	0.0	15.4	24.3	0.0	0.0	24.3	24.3
Argentina	Tucuman	360	0.0	25.4	11.0	0.0	14.4	11.0	25.4	360	0.0	23.9	11.0	0.0	12.9	11.0	23.9
Argentina tot		8,099		**27.4**	**9.6**		**19.2**	**9.6**	**28.8**	**8,099**		**26.3**	**9.6**		**18.1**	**9.6**	**27.7**
Arunachal Prad.	not available	397	0.0	0.0	0.0	0.0	0.0	0.0	0.0	339	6.3	22.2	0.0	6.3	22.2	6.3	22.2
Arunachal Prad.	not available	32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26	5.0	18.8	0.0	5.0	18.8	5.0	18.8
Arunachal Prad. tot		429			**0.0**					**365**			**0.0**				
Bangladesh	Barisal	749	16.7	25.5	0.0	16.7	25.4	16.7	25.5	755	15.6	24.4	0.0	15.6	24.4	15.6	24.4
Bangladesh	Chittagong	9,785	69.2	72.6	0.4	68.9	72.2	69.2	72.6	9,507	65.7	69.5	0.4	65.3	69.1	65.7	69.5
Bangladesh	Dhaka	2,109	11.5	20.8	0.0	11.5	20.8	11.5	20.8	2,114	10.8	20.2	0.0	10.8	20.2	10.8	20.2
Bangladesh	Khulna	1,545	28.9	36.7	0.2	28.7	36.4	28.9	36.7	1,781	27.4	35.3	0.2	27.3	35.2	27.4	35.3
Bangladesh	Rajshahi	2,183	5.8	15.7	0.0	5.8	15.7	5.8	15.7	2,184	5.6	15.5	0.0	5.6	15.5	5.6	15.5
Bangladesh	Sylhet	1,212	39.5	45.9	0.1	39.4	45.8	39.5	45.9	1,242	37.2	43.8	0.1	37.1	43.7	37.2	43.8
Bangladesh tot		17,584	**46.6**	**52.3**	**0.2**	**46.4**	**52.1**	**46.6**	**52.3**	**17,584**	**43.6**	**49.6**	**0.2**	**43.4**	**49.4**	**43.6**	**49.6**
Belize	Belize	17	0.0	0.0	96.4	0.0	0.0	96.4	96.4	17	0.0	0.0	96.5	0.0	0.0	96.5	96.5
Belize	Cayo	18	0.7	28.1	100.0	0.0	0.0	100.0	100.0	18	0.7	28.1	100.0	0.0	0.0	100.0	100.0
Belize	Corozal	16	0.3	26.2	100.0	0.0	0.0	100.0	100.0	16	0.3	26.2	100.0	0.0	0.0	100.0	100.0
Belize	Orange Walk	10	0.9	28.8	100.0	0.0	0.0	100.0	100.0	10	0.9	28.8	100.0	0.0	0.0	100.0	100.0
Belize	Stann Creek	11	0.5	27.2	100.0	0.0	0.0	100.0	100.0	11	0.5	27.2	100.0	0.0	0.0	100.0	100.0
Belize	Toledo	9	2.4	34.9	100.0	0.0	0.0	100.0	100.0	9	2.4	34.9	100.0	0.0	0.0	100.0	100.0
Belize tot		81	**0.7**	**22.6**	**99.2**			**99.2**	**99.2**	**81**	**0.7**	**22.7**	**99.3**			**99.3**	**99.3**
Benin	Alibori	283	4.0	20.1	4.3	0.0	15.9	4.3	20.1	283	4.0	20.1	4.3	0.0	15.9	4.3	20.1
Benin	Atakora	389	3.3	19.2	9.8	0.0	9.4	9.8	19.2	389	2.8	18.9	9.9	0.0	9.0	9.9	18.9
Benin	Atlantique	243	3.7	19.2	29.5	0.0	0.0	29.5	29.5	245	3.7	19.2	29.2	0.0	0.0	29.2	29.2
Benin	Borgou	840	2.8	20.3	13.2	0.0	7.1	13.2	20.3	835	1.6	19.3	13.2	0.0	6.0	13.2	19.3
Benin	Collines	583	2.2	18.2	21.3	0.0	0.0	21.3	21.3	582	1.2	17.3	21.3	0.0	0.0	21.3	21.3
Benin	Couffo	174	3.6	19.1	18.4	0.0	0.7	18.4	19.1	175	3.5	19.0	18.3	0.0	0.8	18.3	19.0
Benin	Donga	399	3.6	22.8	15.9	0.0	6.9	15.9	22.8	397	2.3	21.8	16.0	0.0	5.8	16.0	21.8
Benin	Littoral	65	3.7	19.2	0.0	3.7	19.2	3.7	19.2	65	3.7	19.2	0.0	3.7	19.2	3.7	19.2
Benin	Mono	113	3.7	19.2	30.3	0.0	0.0	30.3	30.3	114	3.7	19.2	29.9	0.0	0.0	29.9	29.9
Benin	Oueme	108	3.7	19.2	23.2	0.0	0.0	23.2	23.2	109	3.7	19.2	23.1	0.0	0.0	23.1	23.1
Benin	Plateau	216	2.7	18.4	27.3	0.0	0.0	27.3	27.3	217	2.0	17.8	27.2	0.0	0.0	27.2	27.2
Benin	Zou	336	2.7	18.3	20.3	0.0	0.0	20.3	20.3	337	1.9	17.7	20.2	0.0	0.0	20.2	20.2
Benin tot		3,748	**3.1**	**19.6**	**17.0**	**0.1**	**4.9**	**17.1**	**21.9**	**3,748**	**2.4**	**19.0**	**17.0**	**0.1**	**4.5**	**17.1**	**21.5**
Bhutan	Bumthang	40	4.8	29.9	-0.5	4.3	29.4	4.3	29.4	40	4.8	29.9	-0.5	4.3	29.4	4.3	29.4
Bhutan	Chhukha	356	54.2	67.6	-0.2	53.9	67.4	53.9	67.4	356	53.7	67.3	-0.3	53.4	67.0	53.4	67.0
Bhutan	Dagana	166	25.8	44.6	-0.4	25.4	44.2	25.4	44.2	167	25.5	44.3	-0.4	25.1	44.0	25.1	44.0
Bhutan	Gasa	0	8.9	45.1	0.0	8.9	45.1	8.9	45.1	0	8.9	45.1	0.0	8.9	45.1	8.9	45.1
Bhutan	Ha	84	65.6	78.3	-0.2	65.4	78.1	65.4	78.1	84	65.1	78.0	-0.2	64.9	77.8	64.9	77.8
Bhutan	Lhuentse	82	9.8	34.2	-0.5	9.3	33.7	9.3	33.7	82	9.7	34.2	-0.5	9.2	33.6	9.2	33.6
Bhutan	Mongar	195	35.0	52.9	-0.4	34.6	52.5	34.6	52.5	195	34.6	52.6	-0.4	34.3	52.2	34.3	52.2
Bhutan	Paro	112	44.7	61.2	-0.3	44.4	60.9	44.4	60.9	112	44.3	60.9	-0.3	44.0	60.6	44.0	60.6
Bhutan	Pemagatshel	62	17.0	37.5	-0.5	16.4	37.0	16.4	37.0	62	16.8	37.4	-0.5	16.3	36.9	16.3	36.9
Bhutan	Punakha	49	23.1	42.5	-0.4	22.7	42.1	22.7	42.1	49	22.9	42.3	-0.4	22.5	41.9	22.5	41.9
Bhutan	Samdrup-Jonkha	259	52.1	67.0	-0.3	51.9	66.7	51.9	66.7	259	51.5	66.5	-0.3	51.2	66.3	51.2	66.3
Bhutan	Samtse	267	43.8	59.3	-0.3	43.5	59.0	43.5	59.0	268	43.2	58.8	-0.3	42.9	58.5	42.9	58.5
Bhutan	Sarpang	241	42.1	57.7	-0.3	41.8	57.4	41.8	57.4	241	41.6	57.3	-0.3	41.3	57.0	41.3	57.0
Bhutan	Thimphu	77	25.9	45.7	-0.4	25.5	45.3	25.5	45.3	77	25.6	45.5	-0.4	25.2	45.1	25.2	45.1
Bhutan	Trashi Yangtse	77	16.8	37.8	-0.4	16.4	37.4	16.4	37.4	77	16.7	37.7	-0.4	16.3	37.3	16.3	37.3
Bhutan	Trashigang	207	30.0	47.4	-0.4	29.7	47.0	29.7	47.0	207	29.7	47.2	-0.4	29.4	46.8	29.4	46.8
Bhutan	Trongsa	39	5.4	32.3	-0.5	5.0	31.8	5.0	31.8	39	5.4	32.3	-0.5	5.0	31.8	5.0	31.8
Bhutan	Tsirang	73	22.0	41.1	-0.5	21.5	40.6	21.5	40.6	73	21.9	41.0	-0.5	21.5	40.5	21.5	40.5
Bhutan	Wangdue-Phodrang	211	53.6	68.5	-0.2	53.4	68.2	53.4	68.2	210	53.2	68.2	-0.2	52.9	67.9	52.9	67.9

		Low plantation productivity variant								High plantation productivity variant							
			NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC						NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
		Wf harves-ting			NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting		Wf harves-ting			NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Bhutan	Zhemgang	179	43.9	60.3	-0.3	43.6	60.0	43.6	60.0	178	43.5	60.1	-0.3	43.2	59.7	43.2	59.7
Bhutan tot		2,777	**39.6**	**56.4**	**-0.3**	**39.3**	**56.0**	**39.3**	**56.0**	**2,777**	**39.2**	**56.0**	**-0.3**	**38.8**	**55.7**	**38.8**	**55.7**
Bolivia	Pando	15	3.8	31.6	50.9	0.0	0.0	50.9	50.9	15	3.8	31.6	50.9	0.0	0.0	50.9	50.9
Bolivia	Beni	79	0.0	22.8	91.2	0.0	0.0	91.2	91.2	79	0.0	22.8	91.2	0.0	0.0	91.2	91.2
Bolivia	Chuquisaca	114	2.9	28.4	0.1	2.8	28.3	2.9	28.4	114	2.9	28.4	0.1	2.8	28.3	2.9	28.4
Bolivia	Cochabamba	185	0.0	11.8	2.7	0.0	9.1	2.7	11.8	185	0.0	11.8	2.7	0.0	9.1	2.7	11.8
Bolivia	La Paz	389	0.0	0.0	0.8	0.0	0.0	0.8	0.8	389	0.0	0.0	0.8	0.0	0.0	0.8	0.8
Bolivia	Oruro	50	4.1	32.8	0.0	4.1	32.8	4.1	32.8	50	4.1	32.8	0.0	4.1	32.8	4.1	32.8
Bolivia	Potosi	132	2.4	26.9	0.0	2.4	26.9	2.4	26.9	132	2.4	26.9	0.0	2.4	26.9	2.4	26.9
Bolivia	Santa Cruz	511	0.0	0.0	57.0	0.0	0.0	57.0	57.0	511	0.0	0.0	57.0	0.0	0.0	57.0	57.0
Bolivia	Tarija	73	3.5	30.6	0.1	3.4	30.5	3.5	30.6	73	3.5	30.6	0.1	3.4	30.5	3.5	30.6
Bolivia tot		1,548	**0.8**	**9.8**	**24.5**	**0.7**	**8.0**	**25.2**	**32.5**	**1,548**	**0.8**	**9.8**	**24.5**	**0.7**	**8.0**	**25.2**	**32.5**
Botswana	Central	207	0.0	35.5	84.9	0.0	0.0	84.9	84.9	207	0.0	35.5	85.0	0.0	0.0	85.0	85.0
Botswana	Chobe	8	7.9	45.3	20.2	0.0	25.2	20.2	45.3	8	7.9	45.3	20.2	0.0	25.2	20.2	45.3
Botswana	Ghanzi	9	7.7	44.2	0.2	7.4	44.0	7.7	44.2	9	7.7	44.2	0.2	7.4	44.0	7.7	44.2
Botswana	Kgalagadi	12	6.3	38.9	0.0	6.3	38.9	6.3	38.9	12	6.4	38.9	0.0	6.4	38.9	6.4	38.9
Botswana	Kgatleng	79	0.0	0.0	100.0	0.0	0.0	100.0	100.0	79	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Botswana	Kweneng	98	0.0	9.1	100.0	0.0	0.0	100.0	100.0	98	0.0	9.0	100.0	0.0	0.0	100.0	100.0
Botswana	Ngamiland	37	8.4	47.4	2.3	6.2	45.1	8.4	47.4	37	8.4	47.4	2.3	6.2	45.1	8.4	47.4
Botswana	North East	59	0.0	0.0	100.0	0.0	0.0	100.0	100.0	59	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Botswana	South-East	59	0.0	0.0	93.7	0.0	0.0	93.7	93.7	59	0.0	0.0	93.5	0.0	0.0	93.5	93.5
Botswana	Southern	110	0.0	2.7	100.0	0.0	0.0	100.0	100.0	110	0.0	2.6	100.0	0.0	0.0	100.0	100.0
Botswana tot		677	**0.8**	**17.0**	**85.4**	**0.6**	**4.1**	**86.0**	**89.5**	**677**	**0.8**	**17.0**	**85.4**	**0.6**	**4.1**	**86.0**	**89.5**
Brazil	Acre	263	0.0	27.6	22.0	0.0	5.6	22.0	27.6	263	0.0	28.0	21.9	0.0	6.0	21.9	28.0
Brazil	Alagoas	1,363	0.0	12.0	0.0	0.0	12.0	0.0	12.0	1,420	0.0	11.5	0.0	0.0	11.5	0.0	11.5
Brazil	Amapa	66	0.0	21.5	4.8	0.0	16.8	4.8	21.5	66	0.0	22.0	4.7	0.0	17.2	4.7	22.0
Brazil	Amazonas	892	0.0	28.8	73.4	0.0	0.0	73.4	73.4	894	0.0	29.2	73.3	0.0	0.0	73.3	73.3
Brazil	Bahia	12,404	0.0	19.1	5.8	0.0	13.3	5.8	19.1	12,372	0.0	16.9	5.8	0.0	11.1	5.8	16.9
Brazil	Ceara	7,066	0.0	14.2	0.2	0.0	14.0	0.2	14.2	7,034	0.0	10.8	0.2	0.0	10.6	0.2	10.8
Brazil	Distrito Federal	24	0.0	14.7	0.0	0.0	14.6	0.0	14.7	24	0.0	15.1	0.0	0.0	15.1	0.0	15.1
Brazil	Espirito Santo	1,236	0.0	14.4	5.5	0.0	8.9	5.5	14.4	1,238	0.0	14.2	5.5	0.0	8.7	5.5	14.2
Brazil	Goias	1,533	0.0	25.4	0.3	0.0	25.1	0.3	25.4	1,537	0.0	25.4	0.3	0.0	25.1	0.3	25.4
Brazil	Maranhao	10,655	0.0	20.8	33.3	0.0	0.0	33.3	33.3	10,653	0.0	18.2	33.3	0.0	0.0	33.3	33.3
Brazil	Mato Grosso	913	0.0	27.7	100.0	0.0	0.0	100.0	100.0	915	0.0	28.0	100.0	0.0	0.0	100.0	100.0
Brazil	Mato Grosso Do Sul	692	0.0	28.3	0.3	0.0	28.0	0.3	28.3	694	0.0	28.7	0.3	0.0	28.4	0.3	28.7
Brazil	Minas Gerais	11,861	0.0	17.1	13.1	0.0	4.0	13.1	17.1	11,849	0.0	14.7	13.1	0.0	1.6	13.1	14.7
Brazil	Para	3,627	0.0	23.7	100.0	0.0	0.0	100.0	100.0	3,637	0.0	23.9	100.0	0.0	0.0	100.0	100.0
Brazil	Paraiba	2,633	0.0	14.9	0.0	0.0	14.9	0.0	14.9	2,702	0.0	14.6	0.0	0.0	14.5	0.0	14.6
Brazil	Parana	5,878	0.0	18.4	4.7	0.0	13.7	4.7	18.4	5,865	0.0	16.2	4.7	0.0	11.5	4.7	16.2
Brazil	Pernambuco	5,054	0.0	18.0	0.0	0.0	17.9	0.0	18.0	5,084	0.0	16.0	0.0	0.0	16.0	0.0	16.0
Brazil	Piaui	6,199	0.0	22.1	1.2	0.0	20.9	1.2	22.1	6,090	0.0	17.8	1.2	0.0	16.5	1.2	17.8
Brazil	Rio De Janeiro	1,359	0.0	10.6	0.5	0.0	10.1	0.5	10.6	1,349	0.0	6.5	0.5	0.0	6.0	0.5	6.5
Brazil	Rio Grande Do Norte	1,679	0.0	15.4	0.0	0.0	15.4	0.0	15.4	1,723	0.0	14.4	0.0	0.0	14.4	0.0	14.4
Brazil	Rio Grande Do Sul	6,563	0.0	18.8	0.3	0.0	18.4	0.3	18.8	6,576	0.0	16.5	0.3	0.0	16.2	0.3	16.5
Brazil	Rondonia	945	0.0	27.5	91.7	0.0	0.0	91.7	91.7	948	0.0	27.9	91.5	0.0	0.0	91.5	91.5
Brazil	Roraima	98	0.0	31.5	7.0	0.0	24.5	7.0	31.5	98	0.0	31.9	7.0	0.0	24.9	7.0	31.9
Brazil	Santa Catarina	3,911	0.0	15.3	2.7	0.0	12.6	2.7	15.3	3,912	0.0	12.7	2.7	0.0	10.0	2.7	12.7
Brazil	Sao Paulo	3,820	0.0	12.8	4.3	0.0	8.5	4.3	12.8	3,759	0.0	8.6	4.3	0.0	4.3	4.3	8.6
Brazil	Sergipe	1,048	0.0	11.2	0.1	0.0	11.1	0.1	11.2	1,076	0.0	9.1	0.1	0.0	9.0	0.1	9.1
Brazil	Tocantins	917	0.0	26.2	4.4	0.0	21.8	4.4	26.2	920	0.0	26.5	4.4	0.0	22.1	4.4	26.5
Brazil	Name Unknown	0	0.0	35.8	0.0	0.0	35.8	0.0	35.8	0	0.0	36.2	0.0	0.0	36.2	0.0	36.2
Brazil	Name Unknown	0	0.0	35.8	0.0	0.0	35.8	0.0	35.8	0	0.0	36.2	0.0	0.0	36.2	0.0	36.2
Brazil	Name Unknown	0	0.0	35.8	0.0	0.0	35.8	0.0	35.8	0	0.0	36.2	0.0	0.0	36.2	0.0	36.2
Brazil	Name Unknown	0	0.0	35.8	0.0	0.0	35.8	0.0	35.8	0	0.0	36.2	0.0	0.0	36.2	0.0	36.2
Brazil tot		92,698		**18.5**	**13.7**		**11.0**	**13.7**	**24.7**	**92,698**		**16.2**	**13.8**		**9.0**	**13.8**	**22.8**

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Brunei Daruss.	Belait	2	0.0	0.0	100.0	0.0	0.0	100.0	100.0	2	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Brunei Daruss.	Brunei and Muara	5	0.0	0.0	70.8	0.0	0.0	70.8	70.8	5	0.0	0.0	70.8	0.0	0.0	70.8	70.8
Brunei Daruss.	Temburong	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Brunei Daruss.	Tutong	2	0.0	0.0	100.0	0.0	0.0	100.0	100.0	2	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Brunei Daruss. tot		12			**87.2**			**87.2**	**87.2**	**12**			**87.2**			**87.2**	**87.2**
Burkina Faso	Boucle Du Mouhoun	682	8.0	29.0	27.6	0.0	1.4	27.6	29.0	693	8.5	29.4	27.1	0.0	2.3	27.1	29.4
Burkina Faso	Cascades	1,698	56.1	68.7	5.5	50.6	63.2	56.1	68.7	1,658	53.9	67.2	5.6	48.2	61.5	53.9	67.2
Burkina Faso	Centre	91	2.5	24.7	3.9	0.0	20.8	3.9	24.7	92	2.6	24.8	3.9	0.0	20.9	3.9	24.8
Burkina Faso	Centre-est	289	3.4	25.4	9.8	0.0	15.6	9.8	25.4	292	3.5	25.5	9.7	0.0	15.9	9.7	25.5
Burkina Faso	Centre-nord	334	2.5	24.7	23.1	0.0	1.6	23.1	24.7	337	2.6	24.8	22.9	0.0	1.9	22.9	24.8
Burkina Faso	Centre-ouest	679	29.5	46.1	10.6	19.0	35.6	29.5	46.1	692	28.9	45.6	10.4	18.5	35.3	28.9	45.6
Burkina Faso	Centre-sud	271	18.2	37.9	17.6	0.6	20.3	18.2	37.9	270	17.3	37.2	17.6	0.0	19.6	17.6	37.2
Burkina Faso	Est	575	20.8	40.3	16.4	4.4	23.9	20.8	40.3	579	20.3	39.9	16.3	4.0	23.6	20.3	39.9
Burkina Faso	Hauts-bassins	1,586	45.1	57.8	5.1	40.0	52.7	45.1	57.8	1,591	43.5	56.6	5.1	38.4	51.5	43.5	56.6
Burkina Faso	Nord	316	2.5	24.8	22.9	0.0	1.8	22.9	24.8	320	2.6	24.8	22.6	0.0	2.2	22.6	24.8
Burkina Faso	Plateau Central	160	2.5	24.7	6.8	0.0	18.0	6.8	24.7	161	2.6	24.8	6.7	0.0	18.1	6.7	24.8
Burkina Faso	Sahel	220	2.6	25.0	25.2	0.0	0.0	25.2	25.2	221	2.6	25.1	25.2	0.0	0.0	25.2	25.2
Burkina Faso	Sud-ouest	723	38.5	53.0	22.1	16.4	30.9	38.5	53.0	717	36.9	51.8	22.3	14.6	29.5	36.9	51.8
Burkina Faso tot		7,623	**31.6**	**48.1**	**12.9**	**23.2**	**35.2**	**36.1**	**48.1**	**7,623**	**30.3**	**47.1**	**12.9**	**21.9**	**34.2**	**34.8**	**47.1**
Burundi	Bubanza	71	3.6	18.6	10.2	0.0	8.4	10.2	18.6	88	17.6	30.4	8.2	9.4	22.2	17.6	30.4
Burundi	Bujumbura-Mairie	64	3.6	18.6	0.0	3.6	18.6	3.6	18.6	65	3.7	18.7	0.0	3.7	18.7	3.7	18.7
Burundi	Bujumbura-Rural	144	35.8	45.8	4.3	31.5	41.5	35.8	45.8	206	51.6	59.1	3.0	48.5	56.1	51.6	59.1
Burundi	Bururi	722	77.1	80.6	0.2	76.9	80.5	77.1	80.6	609	71.1	75.6	0.2	70.9	75.4	71.1	75.6
Burundi	Cankuzo	70	3.6	18.6	0.6	3.0	18.0	3.6	18.6	72	3.7	18.7	0.6	3.1	18.1	3.7	18.7
Burundi	Cibitoke	108	3.6	18.6	61.4	0.0	0.0	61.4	61.4	249	55.5	62.4	26.7	28.8	35.7	55.5	62.4
Burundi	Gitega	139	3.6	18.6	0.4	3.2	18.2	3.6	18.6	149	3.7	18.7	0.4	3.3	18.3	3.7	18.7
Burundi	Karuzi	95	3.6	18.6	0.5	3.2	18.1	3.6	18.6	103	3.7	18.7	0.4	3.3	18.3	3.7	18.7
Burundi	Kayanza	84	3.6	18.6	0.6	3.0	18.0	3.6	18.6	93	3.7	18.7	0.6	3.2	18.1	3.7	18.7
Burundi	Kirundo	115	3.6	18.6	0.5	3.2	18.1	3.6	18.6	127	3.7	18.7	0.4	3.3	18.3	3.7	18.7
Burundi	Makamba	526	79.3	82.5	0.2	79.1	82.3	79.3	82.5	592	80.5	83.5	0.1	80.3	83.4	80.5	83.5
Burundi	Muramvya	47	3.6	18.6	1.7	2.0	16.9	3.6	18.6	51	3.7	18.7	1.5	2.2	17.2	3.7	18.7
Burundi	Muyinga	114	3.6	18.6	0.5	3.1	18.1	3.6	18.6	124	3.7	18.7	0.5	3.2	18.2	3.7	18.7
Burundi	Mwaro	60	3.6	18.6	0.4	3.2	18.2	3.6	18.6	64	3.7	18.7	0.4	3.3	18.3	3.7	18.7
Burundi	Ngozi	107	3.6	18.6	0.6	3.1	18.0	3.6	18.6	118	3.7	18.7	0.5	3.2	18.2	3.7	18.7
Burundi	Rutana	615	85.1	87.4	0.1	85.0	87.4	85.1	87.4	368	74.3	78.3	0.1	74.2	78.2	74.3	78.3
Burundi	Ruyigi	113	3.6	18.6	0.5	3.1	18.1	3.6	18.6	116	3.7	18.7	0.5	3.2	18.2	3.7	18.7
Burundi tot		3,194	**49.8**	**57.6**	**2.8**	**49.2**	**56.3**	**51.9**	**59.1**	**3,194**	**46.4**	**54.8**	**2.8**	**43.7**	**52.0**	**46.4**	**54.8**
Cambodia	Banteay Meanchey	252	0.0	26.0	2.3	0.0	23.7	2.3	26.0	255	0.0	25.5	2.3	0.0	23.2	2.3	25.5
Cambodia	Battambang	474	0.0	21.5	96.4	0.0	0.0	96.4	96.4	474	0.0	20.3	96.4	0.0	0.0	96.4	96.4
Cambodia	Kampong Cham	662	0.0	23.4	15.3	0.0	8.1	15.3	23.4	666	0.0	22.5	15.2	0.0	7.3	15.2	22.5
Cambodia	Kampong Chhnang	348	0.0	21.7	0.9	0.0	20.8	0.9	21.7	347	0.0	20.5	0.9	0.0	19.6	0.9	20.5
Cambodia	Kampong Speu	399	0.0	21.1	6.2	0.0	14.9	6.2	21.1	397	0.0	19.6	6.2	0.0	13.3	6.2	19.6
Cambodia	Kampong Thom	692	0.0	23.2	28.7	0.0	0.0	28.7	28.7	692	0.0	21.5	28.7	0.0	0.0	28.7	28.7
Cambodia	Kampot	280	0.0	23.6	17.2	0.0	6.4	17.2	23.6	279	0.0	22.4	17.2	0.0	5.1	17.2	22.4
Cambodia	Kandal	258	1.6	27.3	1.3	0.4	26.0	1.6	27.3	259	1.2	27.0	1.3	0.0	25.7	1.3	27.0
Cambodia	Koh Kong	163	0.0	22.5	100.0	0.0	0.0	100.0	100.0	162	0.0	20.8	100.0	0.0	0.0	100.0	100.0
Cambodia	Kep	10	0.0	25.4	0.2	0.0	25.2	0.2	25.4	10	0.0	24.9	0.2	0.0	24.7	0.2	24.9
Cambodia	Kratie	178	0.8	27.4	5.4	0.0	22.0	5.4	27.4	179	0.2	26.9	5.3	0.0	21.6	5.3	26.9
Cambodia	Sihanoukville	123	0.0	19.1	34.7	0.0	0.0	34.7	34.7	123	0.0	17.3	34.9	0.0	0.0	34.9	34.9
Cambodia	Mondul Kiri	19	7.0	38.3	3.9	3.1	34.4	7.0	38.3	19	7.0	38.3	3.9	3.1	34.4	7.0	38.3
Cambodia	Oddar Meanchey	86	0.0	22.8	2.5	0.0	20.3	2.5	22.8	86	0.0	21.7	2.5	0.0	19.2	2.5	21.7
Cambodia	Pailin	35	0.0	18.9	13.8	0.0	5.1	13.8	18.9	35	0.0	16.9	13.8	0.0	3.1	13.8	16.9
Cambodia	Phnom Penh	94	4.8	29.6	0.0	4.8	29.6	4.8	29.6	94	4.8	29.6	0.0	4.8	29.6	4.8	29.6

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Cambodia	Preah Vihear	236	0.0	20.4	1.6	0.0	18.8	1.6	20.4	235	0.0	18.5	1.6	0.0	16.8	1.6	18.5
Cambodia	Prey Veng	216	4.6	29.4	0.0	4.5	29.4	4.6	29.4	216	4.5	29.4	0.0	4.5	29.4	4.5	29.4
Cambodia	Pursat	465	0.0	23.0	100.0	0.0	0.0	100.0	100.0	463	0.0	21.3	100.0	0.0	0.0	100.0	100.0
Cambodia	Ratanak Kiri	60	5.6	32.7	8.6	0.0	24.0	8.6	32.7	61	5.6	32.7	8.6	0.0	24.1	8.6	32.7
Cambodia	Siemreap	523	0.0	20.9	5.5	0.0	15.3	5.5	20.9	521	0.0	19.4	5.5	0.0	13.8	5.5	19.4
Cambodia	Stung Treng	49	5.9	34.1	4.2	1.7	29.9	5.9	34.1	49	5.9	34.1	4.2	1.7	29.9	5.9	34.1
Cambodia	Svay Rieng	178	2.6	28.0	0.2	2.5	27.8	2.6	28.0	181	2.3	27.7	0.2	2.1	27.6	2.3	27.7
Cambodia	Takeo	162	3.8	28.9	0.0	3.8	28.9	3.8	28.9	163	3.7	28.8	0.0	3.7	28.8	3.7	28.8
Cambodia	Nat. Admin. 1	0	9.8	49.6	0.0	9.8	49.6	9.8	49.6	0	9.8	49.6	0.0	9.8	49.6	9.8	49.6
Cambodia	Nat. Admin. 2	5	3.0	34.1	0.6	2.4	33.5	3.0	34.1	5	2.4	33.7	0.6	1.8	33.1	2.4	33.7
Cambodia tot		5,969	**0.6**	**23.7**	**26.3**	**0.5**	**12.4**	**26.8**	**38.7**	**5,969**	**0.6**	**22.6**	**26.3**	**0.4**	**11.8**	**26.7**	**38.1**
Cameroon	Adamaoua	472	4.2	22.9	51.7	0.0	0.0	51.7	51.7	473	4.2	22.9	51.7	0.0	0.0	51.7	51.7
Cameroon	Centre	1,912	0.0	0.0	100.0	0.0	0.0	100.0	100.0	1,908	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Cameroon	Est	405	4.9	24.6	100.0	0.0	0.0	100.0	100.0	406	4.9	24.6	100.0	0.0	0.0	100.0	100.0
Cameroon	Extreme-Nord	828	2.7	18.1	4.3	0.0	13.8	4.3	18.1	831	2.7	18.1	4.2	0.0	13.9	4.2	18.1
Cameroon	Littoral	1,401	0.0	0.0	100.0	0.0	0.0	100.0	100.0	1,397	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Cameroon	Nord	578	3.6	21.3	10.9	0.0	10.3	10.9	21.3	579	3.6	21.3	10.9	0.0	10.4	10.9	21.3
Cameroon	Nord-Ouest	921	0.0	14.6	58.7	0.0	0.0	58.7	58.7	923	0.0	14.5	58.6	0.0	0.0	58.6	58.6
Cameroon	Ouest	877	0.0	10.7	54.5	0.0	0.0	54.5	54.5	879	0.0	10.3	54.4	0.0	0.0	54.4	54.4
Cameroon	Sud	433	0.0	15.0	100.0	0.0	0.0	100.0	100.0	433	0.0	14.7	100.0	0.0	0.0	100.0	100.0
Cameroon	Sud-Ouest	1,018	0.0	3.0	100.0	0.0	0.0	100.0	100.0	1,017	0.0	2.3	100.0	0.0	0.0	100.0	100.0
Cameroon tot		8,846	**0.9**	**9.1**	**73.8**		**2.0**	**73.8**	**75.8**	**8,846**	**0.9**	**9.0**	**73.7**		**2.0**	**73.7**	**75.7**
Cent. Afr. Rep.	Bamingui-bangora	10	6.5	40.1	0.0	6.5	40.1	6.5	40.1	10	6.5	40.1	0.0	6.5	40.1	6.5	40.1
Cent. Afr. Rep.	Basse Kotto	100	2.8	27.0	22.4	0.0	4.6	22.4	27.0	100	2.8	27.0	22.4	0.0	4.6	22.4	27.0
Cent. Afr. Rep.	Haut-mboumou	21	4.7	33.7	15.7	0.0	18.0	15.7	33.7	21	4.7	33.7	15.7	0.0	18.0	15.7	33.7
Cent. Afr. Rep.	Haute-kotto	32	5.6	36.8	2.8	2.8	34.1	5.6	36.8	32	5.6	36.8	2.8	2.8	34.1	5.6	36.8
Cent. Afr. Rep.	Kemo	63	0.0	28.5	6.1	0.0	22.4	6.1	28.5	63	0.0	28.5	6.1	0.0	22.4	6.1	28.5
Cent. Afr. Rep.	Lobaye	175	0.0	15.9	29.8	0.0	0.0	29.8	29.8	175	0.0	15.9	29.8	0.0	0.0	29.8	29.8
Cent. Afr. Rep.	Mambere-kadei	131	1.5	28.7	16.6	0.0	12.1	16.6	28.7	131	1.5	28.7	16.6	0.0	12.1	16.6	28.7
Cent. Afr. Rep.	Mbomou	66	4.4	32.5	16.0	0.0	16.6	16.0	32.5	66	4.4	32.5	16.0	0.0	16.6	16.0	32.5
Cent. Afr. Rep.	Nana Grebizi	36	5.1	35.0	3.8	1.3	31.2	5.1	35.0	36	5.1	35.0	3.8	1.3	31.2	5.1	35.0
Cent. Afr. Rep.	Nana Mambere	80	3.8	30.6	7.8	0.0	22.8	7.8	30.6	80	3.8	30.6	7.8	0.0	22.8	7.8	30.6
Cent. Afr. Rep.	Ombella-mpoko	697	0.0	15.6	3.9	0.0	11.8	3.9	15.6	697	0.0	15.6	3.9	0.0	11.8	3.9	15.6
Cent. Afr. Rep.	Ouaka	96	4.8	34.1	10.4	0.0	23.7	10.4	34.1	96	4.8	34.1	10.4	0.0	23.7	10.4	34.1
Cent. Afr. Rep.	Ouham	120	4.3	32.4	4.9	0.0	27.5	4.9	32.4	120	4.3	32.4	4.9	0.0	27.5	4.9	32.4
Cent. Afr. Rep.	Ouham-pende	158	2.8	27.1	8.5	0.0	18.7	8.5	27.1	158	2.8	27.1	8.5	0.0	18.7	8.5	27.1
Cent. Afr. Rep.	Sangha Mbaere	43	3.2	28.5	100.0	0.0	0.0	100.0	100.0	43	3.2	28.5	100.0	0.0	0.0	100.0	100.0
Cent. Afr. Rep.	Vakaga	18	5.9	37.8	0.0	5.8	37.8	5.9	37.8	18	5.9	37.8	0.0	5.8	37.8	5.9	37.8
Cent. Afr. Rep.	Bangui	37	1.1	21.5	0.4	0.7	21.1	1.1	21.5	37	1.1	21.5	0.4	0.7	21.1	1.1	21.5
Cent. Afr. Rep. tot		1,882	**1.8**	**23.5**	**11.8**	**0.2**	**14.6**	**12.0**	**26.4**	**1,882**	**1.8**	**23.5**	**11.8**	**0.2**	**14.6**	**12.0**	**26.4**
Chad	Biltine	152	5.5	36.1	0.5	5.0	35.5	5.5	36.1	152	5.5	36.1	0.5	5.0	35.5	5.5	36.1
Chad	Guera	244	5.1	34.4	8.3	0.0	26.1	8.3	34.4	244	5.1	34.4	8.3	0.0	26.1	8.3	34.4
Chad	Lac	82	4.4	31.8	1.4	3.1	30.4	4.4	31.8	82	4.4	31.8	1.4	3.1	30.4	4.4	31.8
Chad	Logone Occidental	376	0.0	17.8	0.9	0.0	16.9	0.9	17.8	376	0.0	17.7	0.9	0.0	16.8	0.9	17.7
Chad	Salamat	129	7.3	43.4	6.7	0.6	36.7	7.3	43.4	129	7.3	43.4	6.7	0.6	36.7	7.3	43.4
Chad	Batha Est	71	7.1	42.6	0.9	6.3	41.8	7.1	42.6	71	7.1	42.6	0.9	6.3	41.8	7.1	42.6
Chad	Batha Ouest	152	5.1	34.7	4.2	0.9	30.4	5.1	34.7	152	5.1	34.7	4.2	0.9	30.4	5.1	34.7
Chad	Borkou	1	8.6	48.5	0.0	8.6	48.5	8.6	48.5	1	8.6	48.5	0.0	8.6	48.5	8.6	48.5
Chad	Ennedi	18	8.7	48.8	0.0	8.7	48.8	8.7	48.8	18	8.7	48.8	0.0	8.7	48.8	8.7	48.8
Chad	Tibesti	1	8.7	48.9	0.0	8.7	48.9	8.7	48.9	1	8.7	48.9	0.0	8.7	48.9	8.7	48.9
Chad	Baguirmi	495	0.0	20.3	2.5	0.0	17.7	2.5	20.3	495	0.0	20.1	2.5	0.0	17.6	2.5	20.1
Chad	Daraba	118	4.7	32.9	2.9	1.8	30.0	4.7	32.9	118	4.7	32.9	2.9	1.8	30.1	4.7	32.9
Chad	Hadjer Lamis	308	3.7	28.9	1.7	2.0	27.2	3.7	28.9	308	3.7	28.9	1.7	2.0	27.2	3.7	28.9
Chad	Barl El Gazal	45	8.3	47.4	0.1	8.2	47.3	8.3	47.4	45	8.3	47.4	0.1	8.2	47.3	8.3	47.4

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Chad	Kanem	197	4.3	31.4	0.5	3.9	30.9	4.3	31.4	197	4.3	31.4	0.5	3.9	30.9	4.3	31.4
Chad	Logone Oriental	402	0.0	20.9	4.9	0.0	16.0	4.9	20.9	402	0.0	20.8	4.9	0.0	15.9	4.9	20.8
Chad	Mont De Lam	147	0.0	14.2	11.3	0.0	2.9	11.3	14.2	146	0.0	14.1	11.3	0.0	2.8	11.3	14.1
Chad	Kabia	237	0.0	25.6	1.0	0.0	24.6	1.0	25.6	237	0.0	25.6	1.0	0.0	24.6	1.0	25.6
Chad	Mayo-Boneye	258	0.0	16.2	1.8	0.0	14.5	1.8	16.2	258	0.0	16.1	1.8	0.0	14.3	1.8	16.1
Chad	Mayo-Dala	317	0.0	15.7	4.7	0.0	11.0	4.7	15.7	317	0.0	15.7	4.7	0.0	10.9	4.7	15.7
Chad	Barh Koh	261	0.0	21.2	10.0	0.0	11.2	10.0	21.2	261	0.0	21.1	10.0	0.0	11.1	10.0	21.1
Chad	Lac Iro	122	0.0	24.4	5.3	0.0	19.2	5.3	24.4	122	0.0	24.3	5.3	0.0	19.0	5.3	24.3
Chad	Mandoul	530	0.0	8.8	5.5	0.0	3.3	5.5	8.8	530	0.0	8.7	5.5	0.0	3.2	5.5	8.7
Chad	Assongha	105	3.6	28.5	3.0	0.6	25.5	3.6	28.5	105	3.6	28.5	3.0	0.6	25.5	3.6	28.5
Chad	Ouaddai	143	7.2	42.8	1.8	5.4	41.0	7.2	42.8	143	7.2	42.8	1.8	5.4	41.0	7.2	42.8
Chad	Sila	133	5.3	35.3	5.8	0.0	29.6	5.8	35.3	133	5.3	35.3	5.8	0.0	29.6	5.8	35.3
Chad	Tandjile Est	243	0.0	15.3	2.2	0.0	13.0	2.2	15.3	243	0.0	15.1	2.2	0.0	12.9	2.2	15.1
Chad	Tandjile Ouest	193	0.0	22.7	0.9	0.0	21.8	0.9	22.7	193	0.0	22.6	0.9	0.0	21.7	0.9	22.6
Chad tot		5,481	**1.8**	**23.7**	**3.7**	**0.8**	**20.0**	**4.6**	**23.7**	**5,481**	**1.8**	**23.7**	**3.7**	**0.8**	**19.9**	**4.6**	**23.7**
Chile	Antofagasta (ii)	152	8.5	17.5	-0.3	8.2	17.3	8.2	17.3	95	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Chile	Araucania (ix)	1,011	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	1,926	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile	Atacama (iii)	158	0.0	0.0	-0.7	0.0	0.0	0.0	0.0	177	0.0	0.0	-0.6	0.0	0.0	0.0	0.0
Chile	Aysen Del Gen.d.c. (xi)	57	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	63	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile	Biobio (viii)	1,948	24.8	29.8	-0.2	24.5	29.5	24.5	29.5	2,720	0.0	7.9	-0.2	0.0	7.8	0.0	7.8
Chile	Coquimbo (iv)	511	7.8	16.6	-0.2	7.5	16.4	7.5	16.4	346	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Chile	Libertador (vi)	485	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	492	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile	Los Lagos (x)	925	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	1,088	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile	Magallanes (xii)	1,663	78.0	80.2	0.0	77.9	80.1	77.9	80.1	78	0.0	0.0	-0.8	0.0	0.0	0.0	0.0
Chile	Maule (vii)	743	0.0	4.7	-0.3	0.0	4.4	0.0	4.4	1,133	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile	Metropolitana (xiii)	472	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	434	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Chile	Ocean Islands	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chile	Tarapaca (i)	45	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	53	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Chile	Valparaiso (v)	1,102	21.9	26.1	-0.1	21.8	26.0	21.8	26.0	670	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Chile tot		9,278	**22.3**	**25.3**	**-0.2**	**22.2**	**25.2**	**22.2**	**25.2**	**9,278**		**2.3**	**-0.2**		**2.3**		**2.3**
China	Anhui Sheng	11,492	18.6	26.3	0.0	18.6	26.3	18.6	26.3	10,782	1.4	10.8	0.0	1.3	10.8	1.3	10.8
China	Beijing Shi	918	38.1	44.7	0.0	38.1	44.7	38.1	44.7	922	4.1	14.4	0.0	4.1	14.4	4.1	14.4
China	Chongqing Shi	9,428	14.6	22.6	0.0	14.5	22.6	14.5	22.6	10,592	1.3	10.7	0.0	1.3	10.6	1.3	10.6
China	Fujian Sheng	2,406	0.0	8.9	-4.0	0.0	4.9	0.0	4.9	2,450	0.2	9.7	-4.0	0.0	5.8	0.0	5.8
China	Gansu Sheng	4,326	3.9	13.1	0.0	3.9	13.1	3.9	13.1	4,629	0.4	10.0	0.0	0.4	10.0	0.4	10.0
China	Guangdong Sheng	7,648	5.7	14.7	-19.5	0.0	0.0	0.0	0.0	7,350	0.4	9.9	-20.3	0.0	0.0	0.0	0.0
China	Guangxi Zhuangzu Zizhiqu	26,095	20.2	27.7	-5.0	15.2	22.8	15.2	22.8	23,629	1.4	10.8	-5.5	0.0	5.3	0.0	5.3
China	Guizhou Sheng	19,786	15.1	23.1	0.0	15.1	23.1	15.1	23.1	21,798	1.4	10.8	0.0	1.4	10.8	1.4	10.8
China	Hainan Sheng	1,454	0.0	8.9	-0.1	0.0	8.8	0.0	8.8	1,502	0.3	9.8	-0.1	0.1	9.7	0.1	9.7
China	Hebei Sheng	6,056	9.9	18.5	0.0	9.9	18.4	9.9	18.4	6,102	0.9	10.3	0.0	0.8	10.3	0.8	10.3
China	Heilongjiang Sheng	8,583	0.0	9.3	0.0	0.0	9.3	0.0	9.3	9,887	0.4	10.1	0.0	0.4	10.0	0.4	10.0
China	Henan Sheng	8,150	14.1	22.2	0.0	14.0	22.2	14.0	22.2	8,765	1.3	10.8	0.0	1.3	10.8	1.3	10.8
China	Hong Kong	6	0.0	9.0	-0.4	0.0	8.6	0.0	8.6	6	0.3	9.8	-0.4	0.0	9.4	0.0	9.4
China	Hubei Sheng	15,809	21.5	29.0	0.0	21.5	29.0	21.5	29.0	14,815	1.7	11.2	0.0	1.7	11.2	1.7	11.2
China	Hunan Sheng	25,776	28.7	35.5	-0.1	28.6	35.4	28.6	35.4	18,390	2.0	11.3	-0.1	1.9	11.2	1.9	11.2
China	Jiangsu Sheng	3,807	3.7	12.8	0.0	3.7	12.8	3.7	12.8	3,938	0.5	10.0	0.0	0.5	10.0	0.5	10.0
China	Jiangxi Sheng	7,694	17.4	25.2	-0.4	17.0	24.9	17.0	24.9	6,764	1.4	10.8	-0.4	0.9	10.4	0.9	10.4
China	Jilin Sheng	6,311	0.0	9.0	0.0	0.0	9.0	0.0	9.0	6,944	0.3	9.8	0.0	0.2	9.8	0.2	9.8
China	Liaoning Sheng	5,805	0.0	9.0	0.0	0.0	9.0	0.0	9.0	6,880	0.3	9.8	0.0	0.2	9.7	0.2	9.7
China	Nei Mongol Zizhiqu	5,558	0.0	10.1	0.0	0.0	10.1	0.0	10.1	5,838	0.8	10.9	0.0	0.7	10.8	0.7	10.8
China	Ningxia Huizu Zizhiqu	658	0.0	9.0	0.0	0.0	9.0	0.0	9.0	737	0.3	9.8	0.0	0.2	9.8	0.2	9.8
China	Qinghai Sheng	398	0.0	10.1	-0.1	0.0	10.0	0.0	10.0	414	0.8	10.8	-0.1	0.7	10.8	0.7	10.8
China	Shaanxi Sheng	13,982	27.4	34.8	0.0	27.4	34.8	27.4	34.8	13,524	2.6	12.5	0.0	2.6	12.5	2.6	12.5

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
China	Shandong Sheng	6,211	2.7	11.9	0.0	2.7	11.9	2.7	11.9	6,942	0.5	10.0	0.0	0.5	10.0	0.5	10.0
China	Shanghai Shi	49	0.0	8.9	-0.1	0.0	8.8	0.0	8.8	53	0.2	9.7	-0.1	0.2	9.7	0.2	9.7
China	Shanxi Sheng	7,405	23.9	31.2	0.0	23.8	31.1	23.8	31.1	7,531	2.1	11.6	0.0	2.1	11.5	2.1	11.5
China	Sichuan Sheng	21,766	15.9	23.9	0.0	15.9	23.9	15.9	23.9	26,433	1.6	11.0	0.0	1.6	11.0	1.6	11.0
China	Taiwan Sheng	63	0.0	10.1	-0.8	0.0	9.3	0.0	9.3	63	0.8	10.9	-0.8	0.0	10.1	0.0	10.1
China	Tianjin Shi	433	11.2	19.6	0.0	11.2	19.6	11.2	19.6	508	1.3	10.7	0.0	1.3	10.7	1.3	10.7
China	Xinjiang Uygur Zizhiqu	2,106	0.0	10.0	0.0	0.0	10.0	0.0	10.0	2,165	0.7	10.8	0.0	0.7	10.8	0.7	10.8
China	Xizang Zizhiqu	245	1.9	14.3	0.0	1.9	14.2	1.9	14.2	248	2.7	15.0	0.0	2.6	15.0	2.6	15.0
China	Yunnan Sheng	9,404	6.8	15.7	-1.2	5.6	14.5	5.6	14.5	9,893	0.9	10.4	-1.1	0.0	9.2	0.0	9.2
China	Zhejiang Sheng	2,302	13.2	21.4	-0.3	12.9	21.1	12.9	21.1	1,634	0.4	9.9	-0.4	0.0	9.5	0.0	9.5
China tot		242,127	**15.3**	**23.3**	**-1.3**	**14.5**	**22.2**	**14.5**	**22.2**	**242,127**	**1.3**	**10.8**	**-1.3**	**1.1**	**9.8**	**1.1**	**9.8**
China/India	not available	1	10.0	32.0	0.0	10.0	32.0	10.0	32.0	1	10.0	32.0	0.0	10.0	32.0	10.0	32.0
China/India tot		1			**0.0**					**1**			**0.0**				
Colombia	Amazonas	14	4.2	39.6	45.2	0.0	0.0	45.2	45.2	14	4.3	39.6	45.2	0.0	0.0	45.2	45.2
Colombia	Antioquia	865	6.5	31.0	39.2	0.0	0.0	39.2	39.2	864	5.4	30.2	39.2	0.0	0.0	39.2	39.2
Colombia	Arauca	62	2.4	32.3	25.6	0.0	6.7	25.6	32.3	62	2.5	32.3	25.6	0.0	6.7	25.6	32.3
Colombia	Atlantico	108	2.7	27.2	3.6	0.0	23.6	3.6	27.2	108	2.4	27.0	3.5	0.0	23.5	3.5	27.0
Colombia	Bolivar	286	1.4	27.1	26.8	0.0	0.3	26.8	27.1	286	1.4	27.1	26.8	0.0	0.4	26.8	27.1
Colombia	Boyaca	290	2.1	27.1	30.7	0.0	0.0	30.7	30.7	290	1.9	27.0	30.7	0.0	0.0	30.7	30.7
Colombia	Buenaventura	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Colombia	Caldas	163	0.8	25.8	38.3	0.0	0.0	38.3	38.3	164	0.9	25.8	38.2	0.0	0.0	38.2	38.2
Colombia	Caqueta	126	2.1	30.7	32.0	0.0	0.0	32.0	32.0	126	2.1	30.7	32.0	0.0	0.0	32.0	32.0
Colombia	Casanare	85	3.1	34.8	18.7	0.0	16.1	18.7	34.8	85	3.1	34.9	18.7	0.0	16.2	18.7	34.9
Colombia	Cauca	386	3.3	28.2	30.6	0.0	0.0	30.6	30.6	387	2.9	27.9	30.6	0.0	0.0	30.6	30.6
Colombia	Cesar	171	1.2	27.1	20.8	0.0	6.3	20.8	27.1	172	1.2	27.1	20.8	0.0	6.4	20.8	27.1
Colombia	Choco	114	2.5	32.3	68.9	0.0	0.0	68.9	68.9	114	2.5	32.4	68.9	0.0	0.0	68.9	68.9
Colombia	Cordoba	279	0.9	26.2	21.0	0.0	5.2	21.0	26.2	279	1.0	26.3	21.0	0.0	5.3	21.0	26.3
Colombia	Cundinamarca	1,184	13.2	35.2	10.4	2.8	24.7	13.2	35.2	1,179	10.7	33.2	10.5	0.2	22.8	10.7	33.2
Colombia	Guainia	11	4.5	40.8	21.8	0.0	19.0	21.8	40.8	11	4.6	40.8	21.8	0.0	19.0	21.8	40.8
Colombia	Guajira	89	2.1	30.8	17.6	0.0	13.1	17.6	30.8	89	2.1	30.8	17.6	0.0	13.2	17.6	30.8
Colombia	Guaviare	29	3.1	35.1	33.8	0.0	1.3	33.8	35.1	29	3.2	35.1	33.8	0.0	1.3	33.8	35.1
Colombia	Huila	186	1.2	27.2	24.1	0.0	3.1	24.1	27.2	186	1.2	27.2	24.1	0.0	3.1	24.1	27.2
Colombia	Magdalena	200	1.0	26.5	15.1	0.0	11.4	15.1	26.5	200	1.0	26.5	15.1	0.0	11.4	15.1	26.5
Colombia	Meta	128	3.8	34.5	23.2	0.0	11.3	23.2	34.5	128	3.6	34.4	23.2	0.0	11.2	23.2	34.4
Colombia	Narino	389	1.0	26.5	35.5	0.0	0.0	35.5	35.5	389	1.0	26.5	35.5	0.0	0.0	35.5	35.5
Colombia	Norte De Santander	165	1.7	28.1	52.1	0.0	0.0	52.1	52.1	165	1.6	28.1	52.0	0.0	0.0	52.0	52.0
Colombia	Putumayo	89	2.2	31.2	37.7	0.0	0.0	37.7	37.7	89	2.2	31.2	37.7	0.0	0.0	37.7	37.7
Colombia	Quindio	43	0.8	25.7	13.6	0.0	12.2	13.6	25.7	43	0.9	25.8	13.5	0.0	12.2	13.5	25.8
Colombia	Risaralda	91	0.8	25.8	32.1	0.0	0.0	32.1	32.1	92	0.9	25.8	31.9	0.0	0.0	31.9	31.9
Colombia	San Andres Y Providencia	10	0.8	25.5	0.6	0.2	24.9	0.8	25.5	10	0.8	25.5	0.6	0.2	24.9	0.8	25.5
Colombia	Santander	285	1.2	27.3	52.2	0.0	0.0	52.2	52.2	285	1.2	27.4	52.1	0.0	0.0	52.1	52.1
Colombia	Sucre	159	0.9	26.2	11.8	0.0	14.4	11.8	26.2	160	1.0	26.2	11.8	0.0	14.4	11.8	26.2
Colombia	Tolima	246	2.9	28.2	24.9	0.0	3.3	24.9	28.2	247	2.6	28.0	24.9	0.0	3.1	24.9	28.0
Colombia	Valle Del Cauca	389	6.8	30.7	14.5	0.0	16.2	14.5	30.7	389	5.6	29.8	14.5	0.0	15.3	14.5	29.8
Colombia	Vaupes	8	4.5	40.8	44.4	0.0	0.0	44.4	44.4	8	4.6	40.8	44.4	0.0	0.0	44.4	44.4
Colombia	Vichada	27	4.9	42.1	9.6	0.0	32.5	9.6	42.1	27	4.9	42.1	9.6	0.0	32.5	9.6	42.1
Colombia tot		6,676	**4.8**	**29.9**	**26.7**	**0.5**	**7.9**	**27.2**	**34.6**	**6,676**	**4.0**	**29.4**	**26.7**	**0.0**	**7.5**	**26.7**	**34.2**
Congo	Bouenza	234	0.0	15.8	0.3	0.0	15.6	0.3	15.8	234	0.0	15.9	0.3	0.0	15.6	0.3	15.9
Congo	Cuvette	112	0.0	24.2	38.8	0.0	0.0	38.8	38.8	112	0.0	24.3	38.8	0.0	0.0	38.8	38.8
Congo	Cuvette Ovest	43	0.0	24.0	0.5	0.0	23.5	0.5	24.0	43	0.0	24.1	0.5	0.0	23.6	0.5	24.1
Congo	Kouilou	236	0.0	0.0	0.3	0.0	0.0	0.3	0.3	237	0.0	0.0	0.3	0.0	0.0	0.3	0.3
Congo	Lekoumou	82	0.0	23.2	0.8	0.0	22.4	0.8	23.2	82	0.0	23.2	0.8	0.0	22.5	0.8	23.2
Congo	Likouala	52	0.0	21.6	15.3	0.0	6.4	15.3	21.6	52	0.0	21.6	15.2	0.0	6.4	15.2	21.6

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Congo	Niari	159	0.0	18.6	0.8	0.0	17.8	0.8	18.6	160	0.0	18.6	0.8	0.0	17.8	0.8	18.6
Congo	Plateaux	164	0.0	23.3	17.7	0.0	5.6	17.7	23.3	164	0.0	23.3	17.7	0.0	5.6	17.7	23.3
Congo	Pool	909	0.0	0.0	0.1	0.0	0.0	0.1	0.1	908	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Congo	Sangha	52	0.0	20.3	7.7	0.0	12.6	7.7	20.3	52	0.0	20.3	7.7	0.0	12.7	7.7	20.3
Congo tot		2,043		**9.0**	**4.3**		**5.5**	**4.3**	**9.8**	**2,043**		**9.0**	**4.3**		**5.5**	**4.3**	**9.9**
Costa Rica	Alajuela	535	1.0	23.6	-0.6	0.4	23.0	0.4	23.0	527	0.0	10.8	-0.6	0.0	10.2	0.0	10.2
Costa Rica	Cartago	155	0.0	22.4	-0.6	0.0	21.9	0.0	21.9	163	0.0	14.5	-0.5	0.0	14.0	0.0	14.0
Costa Rica	Guanacaste	255	0.0	21.5	-0.8	0.0	20.6	0.0	20.6	259	0.0	22.2	-0.8	0.0	21.4	0.0	21.4
Costa Rica	Heredia	157	3.0	25.2	-0.6	2.4	24.6	2.4	24.6	143	0.0	3.7	-0.7	0.0	3.0	0.0	3.0
Costa Rica	Limon	234	0.0	21.8	-0.9	0.0	20.9	0.0	20.9	242	0.0	20.0	-0.9	0.0	19.1	0.0	19.1
Costa Rica	Puntarenas	372	0.0	22.3	-0.8	0.0	21.5	0.0	21.5	374	0.0	18.2	-0.8	0.0	17.4	0.0	17.4
Costa Rica	San Jose	312	0.7	23.1	-0.6	0.2	22.6	0.2	22.6	312	0.0	11.3	-0.6	0.0	10.8	0.0	10.8
Costa Rica tot		2,020	**0.6**	**22.8**	**-0.7**	**0.3**	**22.1**	**0.3**	**22.1**	**2,020**		**14.6**	**-0.7**		**13.9**		**13.9**
Côte d'Ivoire	Agneby	726	0.0	10.2	0.4	0.0	9.8	0.4	10.2	718	0.0	4.1	0.4	0.0	3.7	0.4	4.1
Côte d'Ivoire	Bas Sassandra	885	1.2	21.9	0.7	0.5	21.2	1.2	21.9	895	0.1	21.1	0.7	0.0	20.4	0.7	21.1
Côte d'Ivoire	Denguele	190	5.0	28.5	0.6	4.4	27.9	5.0	28.5	190	5.1	28.5	0.6	4.5	27.9	5.1	28.5
Côte d'Ivoire	Lacs	592	0.0	7.8	0.3	0.0	7.5	0.3	7.8	577	0.0	1.5	0.3	0.0	1.2	0.3	1.5
Côte d'Ivoire	Lagunes	1,235	0.0	13.8	0.3	0.0	13.5	0.3	13.8	1,231	0.0	9.9	0.3	0.0	9.6	0.3	9.9
Côte d'Ivoire	Marahoue	452	0.0	18.1	0.3	0.0	17.8	0.3	18.1	457	0.0	15.9	0.3	0.0	15.5	0.3	15.9
Côte d'Ivoire	Moyen Comoe	325	0.0	17.7	0.6	0.0	17.1	0.6	17.7	325	0.0	15.3	0.6	0.0	14.7	0.6	15.3
Côte d'Ivoire	N'zi Comoe	911	0.0	10.9	0.6	0.0	10.4	0.6	10.9	896	0.0	5.9	0.6	0.0	5.3	0.6	5.9
Côte d'Ivoire	Savanes	640	3.9	24.8	0.2	3.8	24.6	3.9	24.8	642	4.0	24.8	0.1	3.8	24.6	4.0	24.8
Côte d'Ivoire	Sud Bandama	571	0.0	15.5	0.5	0.0	14.9	0.5	15.5	576	0.0	12.2	0.5	0.0	11.6	0.5	12.2
Côte d'Ivoire	Sud Comoe	447	0.0	15.0	0.6	0.0	14.4	0.6	15.0	448	0.0	11.6	0.6	0.0	11.0	0.6	11.6
Côte d'Ivoire	Vallee Du Bandama	797	0.0	15.1	0.2	0.0	14.9	0.2	15.1	782	0.0	12.0	0.2	0.0	11.8	0.2	12.0
Côte d'Ivoire	Zanzan	601	3.9	24.6	0.6	3.3	24.0	3.9	24.6	602	3.9	24.7	0.6	3.3	24.0	3.9	24.7
Côte d'Ivoire	18 Montagnes	615	2.7	23.0	1.1	1.6	22.0	2.7	23.0	622	2.3	22.7	1.1	1.2	21.7	2.3	22.7
Côte d'Ivoire	Moyen-Cavally	392	3.8	24.2	0.8	3.0	23.4	3.8	24.2	398	3.8	24.2	0.8	3.0	23.4	3.8	24.2
Côte d'Ivoire	Haut-sassandra	697	0.7	21.4	0.4	0.3	20.9	0.7	21.4	710	0.0	20.3	0.4	0.0	19.8	0.4	20.3
Côte d'Ivoire	Fromager	439	0.0	15.3	0.4	0.0	14.9	0.4	15.3	447	0.0	11.8	0.4	0.0	11.4	0.4	11.8
Côte d'Ivoire	Bafing	129	4.0	24.8	1.0	3.0	23.8	4.0	24.8	129	4.0	24.9	1.0	3.0	23.9	4.0	24.9
Côte d'Ivoire	Worodougou	339	3.6	25.3	0.5	3.1	24.8	3.6	25.3	339	3.5	25.2	0.5	3.0	24.7	3.5	25.2
Côte d'Ivoire tot		10,984	**1.1**	**17.6**	**0.5**	**0.9**	**17.1**	**1.4**	**17.6**	**10,984**	**1.0**	**15.0**	**0.5**	**0.8**	**14.6**	**1.3**	**15.0**
Cuba	Camaguey	109	0.3	4.9	-4.0	0.0	0.9	0.0	0.9	109	0.5	5.1	-4.0	0.0	1.1	0.0	1.1
Cuba	Ciego De Avila	64	0.2	4.8	-2.3	0.0	2.5	0.0	2.5	64	0.4	4.9	-2.3	0.0	2.7	0.0	2.7
Cuba	Cienfuegos	47	0.1	4.6	-1.8	0.0	2.8	0.0	2.8	48	0.3	4.8	-1.8	0.0	3.0	0.0	3.0
Cuba	Ciudad De La Habana	47	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	48	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Cuba	Granma	112	0.1	4.6	-1.4	0.0	3.2	0.0	3.2	112	0.3	4.8	-1.4	0.0	3.4	0.0	3.4
Cuba	Guantanamo	65	0.3	4.9	-2.0	0.0	2.9	0.0	2.9	65	0.5	5.1	-2.0	0.0	3.1	0.0	3.1
Cuba	Holguin	135	0.1	4.6	-1.9	0.0	2.8	0.0	2.8	135	0.3	4.8	-1.9	0.0	3.0	0.0	3.0
Cuba	Isla De La Juventud	14	0.5	5.2	-3.0	0.0	2.2	0.0	2.2	14	0.6	5.4	-3.0	0.0	2.4	0.0	2.4
Cuba	La Habana	173	0.0	0.0	-0.8	0.0	0.0	0.0	0.0	167	0.0	0.0	-0.8	0.0	0.0	0.0	0.0
Cuba	Las Tunas	81	0.1	4.6	-2.2	0.0	2.4	0.0	2.4	82	0.3	4.8	-2.1	0.0	2.6	0.0	2.6
Cuba	Matanzas	84	0.2	4.7	-2.5	0.0	2.3	0.0	2.3	84	0.4	4.9	-2.4	0.0	2.5	0.0	2.5
Cuba	Pinar Del Rio	116	0.0	3.3	-2.5	0.0	0.8	0.0	0.8	117	0.0	2.5	-2.5	0.0	0.0	0.0	0.0
Cuba	Sancti Spiritus	84	0.1	4.6	-1.5	0.0	3.2	0.0	3.2	84	0.3	4.8	-1.5	0.0	3.3	0.0	3.3
Cuba	Santiago De Cuba	92	0.1	4.7	-1.8	0.0	2.9	0.0	2.9	93	0.3	4.9	-1.8	0.0	3.1	0.0	3.1
Cuba	Villa Clara	113	0.1	4.6	-1.8	0.0	2.8	0.0	2.8	113	0.3	4.8	-1.8	0.0	3.0	0.0	3.0
Cuba tot		1,335	**0.1**	**3.8**	**-1.9**		**2.0**		**2.0**	**1,335**	**0.3**	**3.9**	**-1.9**		**2.1**		**2.1**
D. R. of Congo	Bandundu	6,173	0.0	25.4	26.3	0.0	0.0	26.3	26.3	6,174	0.0	25.3	26.3	0.0	0.0	26.3	26.3
D. R. of Congo	Bas-Congo	3,667	0.0	12.8	6.8	0.0	6.1	6.8	12.8	3,667	0.0	12.8	6.8	0.0	6.0	6.8	12.8
D. R. of Congo	Equateur	5,563	4.9	31.5	50.2	0.0	0.0	50.2	50.2	5,563	4.9	31.5	50.2	0.0	0.0	50.2	50.2
D. R. of Congo	Kasai-Occidental	5,096	0.0	13.6	23.8	0.0	0.0	23.8	23.8	5,096	0.0	13.6	23.8	0.0	0.0	23.8	23.8
D. R. of Congo	Kasai-Oriental	5,298	0.0	10.9	17.2	0.0	0.0	17.2	17.2	5,297	0.0	10.8	17.2	0.0	0.0	17.2	17.2

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
D. R. of Congo	Katanga	8,985	0.0	13.8	9.2	0.0	4.7	9.2	13.8	8,983	0.0	13.8	9.2	0.0	4.6	9.2	13.8
D. R. of Congo	Kinshasa	837	0.0	20.1	3.2	0.0	16.9	3.2	20.1	837	0.0	20.1	3.2	0.0	16.9	3.2	20.1
D. R. of Congo	Maniema	3,074	0.0	7.1	24.7	0.0	0.0	24.7	24.7	3,073	0.0	7.0	24.7	0.0	0.0	24.7	24.7
D. R. of Congo	Nord-Kivu	4,288	0.0	5.8	15.6	0.0	0.0	15.6	15.6	4,289	0.0	5.7	15.6	0.0	0.0	15.6	15.6
D. R. of Congo	Province Orientale	6,830	0.0	21.0	34.4	0.0	0.0	34.4	34.4	6,830	0.0	21.0	34.4	0.0	0.0	34.4	34.4
D. R. of Congo	Sud-Kivu	2,720	0.0	15.2	16.2	0.0	0.0	16.2	16.2	2,722	0.0	15.2	16.2	0.0	0.0	16.2	16.2
D. R. of Congo tot		52,531	**0.5**	**16.7**	**22.6**		**1.5**	**22.6**	**24.0**	**52,531**	**0.5**	**16.7**	**22.6**		**1.5**	**22.6**	**24.0**
Dominican Rep.	Azua	79	5.5	31.1	0.0	5.5	31.1	5.5	31.1	79	5.5	31.1	0.0	5.5	31.1	5.5	31.1
Dominican Rep.	Baoruco	31	5.1	30.6	0.0	5.1	30.6	5.1	30.6	31	5.1	30.6	0.0	5.1	30.6	5.1	30.6
Dominican Rep.	Barahona	42	5.3	30.9	0.0	5.3	30.9	5.3	30.9	42	5.3	30.9	0.0	5.3	30.9	5.3	30.9
Dominican Rep.	Dajabon	41	5.0	30.1	0.0	5.0	30.1	5.0	30.1	41	5.0	30.1	0.0	5.0	30.1	5.0	30.1
Dominican Rep.	Santo Domingo	136	7.6	32.4	0.0	7.6	32.4	7.6	32.4	136	7.6	32.4	0.0	7.6	32.4	7.6	32.4
Dominican Rep.	Duarte	237	7.9	33.1	0.0	7.9	33.1	7.9	33.1	237	7.9	33.1	0.0	7.9	33.1	7.9	33.1
Dominican Rep.	El Seibo	65	6.2	32.3	0.0	6.2	32.3	6.2	32.3	65	6.2	32.3	0.0	6.2	32.3	6.2	32.3
Dominican Rep.	Espaillat	108	7.5	32.0	0.0	7.5	32.0	7.5	32.0	108	7.5	32.0	0.0	7.5	32.0	7.5	32.0
Dominican Rep.	Independencia	29	5.2	31.0	0.0	5.2	31.0	5.2	31.0	29	5.2	31.0	0.0	5.2	31.0	5.2	31.0
Dominican Rep.	La Altagracia	82	5.0	30.2	0.0	5.0	30.2	5.0	30.2	82	5.0	30.2	0.0	5.0	30.2	5.0	30.2
Dominican Rep.	Elias Pina	40	5.1	30.6	0.0	5.1	30.6	5.1	30.6	40	5.1	30.6	0.0	5.1	30.6	5.1	30.6
Dominican Rep.	La Romana	24	5.0	30.0	0.0	5.0	30.0	5.0	30.0	24	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Dominican Rep.	La Vega	242	8.2	33.6	0.0	8.2	33.6	8.2	33.6	242	8.2	33.6	0.0	8.2	33.6	8.2	33.6
Dominican Rep.	Maria Trinidad Sanches	135	7.3	32.0	0.0	7.3	32.0	7.3	32.0	135	7.3	32.0	0.0	7.3	32.0	7.3	32.0
Dominican Rep.	Monte Cristi	73	5.8	30.6	0.0	5.8	30.6	5.8	30.6	73	5.8	30.6	0.0	5.8	30.6	5.8	30.6
Dominican Rep.	Pedernales	11	6.2	35.0	0.0	6.2	35.0	6.2	35.0	11	6.2	35.0	0.0	6.2	35.0	6.2	35.0
Dominican Rep.	Peravia	50	6.8	32.4	0.0	6.8	32.4	6.8	32.4	50	6.8	32.4	0.0	6.8	32.4	6.8	32.4
Dominican Rep.	Puerto Plata	205	8.5	35.4	0.0	8.5	35.4	8.5	35.4	205	8.5	35.4	0.0	8.5	35.4	8.5	35.4
Dominican Rep.	Salcedo	69	7.4	31.8	0.0	7.4	31.8	7.4	31.8	69	7.4	31.8	0.0	7.4	31.8	7.4	31.8
Dominican Rep.	Samana	60	5.8	30.6	0.0	5.8	30.6	5.8	30.6	60	5.8	30.6	0.0	5.8	30.6	5.8	30.6
Dominican Rep.	San Cristobal	205	7.4	31.8	0.0	7.4	31.8	7.4	31.8	205	7.4	31.8	0.0	7.4	31.8	7.4	31.8
Dominican Rep.	San Juan	96	5.1	30.5	0.0	5.1	30.5	5.1	30.5	96	5.1	30.5	0.0	5.1	30.5	5.1	30.5
Dominican Rep.	San Pedro de Macoris	92	6.5	31.1	0.0	6.5	31.1	6.5	31.1	92	6.5	31.1	0.0	6.5	31.1	6.5	31.1
Dominican Rep.	Sanchez Ramirez	153	7.5	31.8	0.0	7.5	31.8	7.5	31.8	153	7.5	31.8	0.0	7.5	31.8	7.5	31.8
Dominican Rep.	Santiago	214	9.3	37.2	0.0	9.3	37.2	9.3	37.2	214	9.3	37.2	0.0	9.3	37.2	9.3	37.2
Dominican Rep.	Santiago Rodriguez	66	7.9	34.3	0.0	7.9	34.3	7.9	34.3	66	7.9	34.3	0.0	7.9	34.3	7.9	34.3
Dominican Rep.	Valverde	68	6.8	31.5	0.0	6.8	31.5	6.8	31.5	68	6.8	31.5	0.0	6.8	31.5	6.8	31.5
Dominican Rep.	Hato Mayor	102	8.6	35.3	0.0	8.6	35.3	8.6	35.3	102	8.6	35.3	0.0	8.6	35.3	8.6	35.3
Dominican Rep.	Monsenor Nouel	144	9.5	37.8	0.0	9.5	37.8	9.5	37.8	144	9.4	37.8	0.0	9.4	37.8	9.4	37.8
Dominican Rep.	Monte Plata	376	8.3	33.1	0.0	8.3	33.1	8.3	33.1	376	8.3	33.1	0.0	8.3	33.1	8.3	33.1
Dominican Rep.	San José de Ocoa	78	8.9	34.2	0.0	8.9	34.2	8.9	34.2	78	8.9	34.2	0.0	8.9	34.2	8.9	34.2
Dominican Rep.	Distrito Nacional	4	5.0	30.0	0.0	5.0	30.0	5.0	30.0	4	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Dominican Rep. tot		3,358	**7.5**	**33.0**	**0.0**	**7.5**	**33.0**	**7.5**	**33.0**	**3,358**	**7.5**	**33.0**	**0.0**	**7.5**	**33.0**	**7.5**	**33.0**
Ecuador	Azuay	111	0.0	22.6	100.0	0.0	0.0	100.0	100.0	111	0.0	22.7	100.0	0.0	0.0	100.0	100.0
Ecuador	Bolivar	75	0.0	22.2	100.0	0.0	0.0	100.0	100.0	75	0.0	22.3	100.0	0.0	0.0	100.0	100.0
Ecuador	Canar	79	8.7	30.7	100.0	0.0	0.0	100.0	100.0	78	5.8	28.5	100.0	0.0	0.0	100.0	100.0
Ecuador	Carchi	51	0.0	23.0	100.0	0.0	0.0	100.0	100.0	52	0.0	23.1	100.0	0.0	0.0	100.0	100.0
Ecuador	Chimborazo	86	0.0	22.3	100.0	0.0	0.0	100.0	100.0	87	0.0	22.4	100.0	0.0	0.0	100.0	100.0
Ecuador	Cotopaxi	89	0.0	23.6	100.0	0.0	0.0	100.0	100.0	90	0.0	23.4	100.0	0.0	0.0	100.0	100.0
Ecuador	El Oro	129	0.0	22.2	100.0	0.0	0.0	100.0	100.0	130	0.0	22.3	100.0	0.0	0.0	100.0	100.0
Ecuador	Esmeraldas	115	0.0	25.4	100.0	0.0	0.0	100.0	100.0	115	0.0	25.6	100.0	0.0	0.0	100.0	100.0
Ecuador	Galapagos	6	0.3	34.5	0.0	0.3	34.5	0.3	34.5	6	0.5	34.6	0.0	0.5	34.6	0.5	34.6
Ecuador	Guayas	864	15.4	35.9	100.0	0.0	0.0	100.0	100.0	857	11.1	32.6	100.0	0.0	0.0	100.0	100.0
Ecuador	Imbabura	74	0.0	24.0	100.0	0.0	0.0	100.0	100.0	75	0.0	23.9	100.0	0.0	0.0	100.0	100.0
Ecuador	Loja	145	0.0	23.0	100.0	0.0	0.0	100.0	100.0	145	0.0	23.2	100.0	0.0	0.0	100.0	100.0
Ecuador	Los Rios	275	2.3	25.6	100.0	0.0	0.0	100.0	100.0	276	1.2	24.8	100.0	0.0	0.0	100.0	100.0

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Ecuador	Manabi	378	0.0	22.1	100.0	0.0	0.0	100.0	100.0	379	0.0	22.3	100.0	0.0	0.0	100.0	100.0
Ecuador	Morona Santiago	57	0.0	29.0	100.0	0.0	0.0	100.0	100.0	57	0.0	29.2	100.0	0.0	0.0	100.0	100.0
Ecuador	Napo	15	0.0	26.4	100.0	0.0	0.0	100.0	100.0	15	0.0	26.6	100.0	0.0	0.0	100.0	100.0
Ecuador	Orellana	14	0.0	28.0	100.0	0.0	0.0	100.0	100.0	14	0.0	28.2	100.0	0.0	0.0	100.0	100.0
Ecuador	Pastaza	12	0.0	31.3	100.0	0.0	0.0	100.0	100.0	12	0.0	31.4	100.0	0.0	0.0	100.0	100.0
Ecuador	Pichincha	288	8.5	31.9	100.0	0.0	0.0	100.0	100.0	289	5.9	30.1	100.0	0.0	0.0	100.0	100.0
Ecuador	Sucumbios	36	0.0	30.4	100.0	0.0	0.0	100.0	100.0	36	0.0	30.6	100.0	0.0	0.0	100.0	100.0
Ecuador	Tungurahua	63	0.0	22.1	59.9	0.0	0.0	59.9	59.9	64	0.0	22.2	59.0	0.0	0.0	59.0	59.0
Ecuador	Zamora Chinchipe	16	0.0	30.1	100.0	0.0	0.0	100.0	100.0	16	0.0	30.2	100.0	0.0	0.0	100.0	100.0
Ecuador	Zona No Delimtda	37	0.0	22.4	100.0	0.0	0.0	100.0	100.0	37	0.0	22.4	100.0	0.0	0.0	100.0	100.0
Ecuador tot		3,018	**5.7**	**28.2**	**99.0**	**0.0**	**0.1**	**99.0**	**99.0**	**3,018**	**4.0**	**27.0**	**98.9**	**0.0**	**0.1**	**98.9**	**99.0**
El Salvador	Ahuachapan	149	21.6	40.9	14.3	7.3	26.6	21.6	40.9	148	18.8	38.8	14.4	4.4	24.5	18.8	38.8
El Salvador	Cabanas	125	22.4	40.9	7.7	14.7	33.2	22.4	40.9	125	19.5	38.7	7.8	11.7	30.9	19.5	38.7
El Salvador	Chalatenango	233	24.5	42.5	9.7	14.8	32.9	24.5	42.5	230	21.2	40.1	9.8	11.4	30.3	21.2	40.1
El Salvador	Cuscatlan	79	16.9	36.8	9.6	7.3	27.2	16.9	36.8	80	14.6	35.2	9.6	5.1	25.6	14.6	35.2
El Salvador	La Libertad	220	20.0	39.4	12.0	8.0	27.3	20.0	39.4	219	17.3	37.3	12.1	5.2	25.2	17.3	37.3
El Salvador	La Paz	114	11.5	32.9	10.5	0.9	22.3	11.5	32.9	115	10.0	31.8	10.4	0.0	21.4	10.4	31.8
El Salvador	La Union	148	7.7	29.7	7.8	0.0	21.9	7.8	29.7	151	7.2	29.4	7.6	0.0	21.7	7.6	29.4
El Salvador	Morazan	150	18.4	37.8	9.7	8.7	28.2	18.4	37.8	151	16.1	36.1	9.6	6.5	26.5	16.1	36.1
El Salvador	San Miguel	209	16.4	36.3	9.9	6.4	26.4	16.4	36.3	211	14.4	34.8	9.9	4.5	24.9	14.4	34.8
El Salvador	San Salvador	86	5.3	27.9	10.5	0.0	17.4	10.5	27.9	88	4.7	27.5	10.3	0.0	17.2	10.3	27.5
El Salvador	San Vicente	125	22.4	41.4	9.1	13.3	32.3	22.4	41.4	125	19.6	39.3	9.1	10.5	30.3	19.6	39.3
El Salvador	Santa Ana	206	19.6	40.1	11.0	8.7	29.2	19.6	40.1	205	17.0	38.2	11.1	5.9	27.1	17.0	38.2
El Salvador	Sonsonate	147	15.6	35.8	12.7	2.9	23.0	15.6	35.8	147	13.5	34.2	12.7	0.7	21.5	13.5	34.2
El Salvador	Usulutan	235	22.0	41.2	11.1	10.9	30.1	22.0	41.2	234	19.1	39.1	11.2	7.9	27.9	19.1	39.1
El Salvador tot		2,227	**18.3**	**38.1**	**10.5**	**8.0**	**27.6**	**18.5**	**38.1**	**2,227**	**15.9**	**36.3**	**10.5**	**5.7**	**25.8**	**16.2**	**36.3**
Equat. Guinea	Annobon	2	0.0	13.5	5.5	0.0	8.0	5.5	13.5	2	0.0	13.5	5.5	0.0	8.0	5.5	13.5
Equat. Guinea	Bioko Norte	19	0.0	0.0	53.3	0.0	0.0	53.3	53.3	19	0.0	0.0	53.3	0.0	0.0	53.3	53.3
Equat. Guinea	Bioko Sur	11	0.0	0.0	100.0	0.0	0.0	100.0	100.0	11	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Equat. Guinea	Centro Sur	48	0.0	20.7	100.0	0.0	0.0	100.0	100.0	48	0.0	20.7	100.0	0.0	0.0	100.0	100.0
Equat. Guinea	Kientem	58	0.0	13.6	100.0	0.0	0.0	100.0	100.0	58	0.0	13.6	100.0	0.0	0.0	100.0	100.0
Equat. Guinea	Litoral	61	0.0	0.0	92.7	0.0	0.0	92.7	92.7	61	0.0	0.0	92.8	0.0	0.0	92.8	92.8
Equat. Guinea	Welenzas	49	0.0	17.4	100.0	0.0	0.0	100.0	100.0	49	0.0	17.4	100.0	0.0	0.0	100.0	100.0
Equat. Guinea tot		247		**10.7**	**94.0**		**0.0**	**94.0**	**94.0**	**247**		**10.7**	**94.0**		**0.0**	**94.0**	**94.0**
Eritrea	Anseba	140	11.7	35.6	1.0	10.7	34.6	11.7	35.6	140	10.8	34.9	1.0	9.8	33.9	10.8	34.9
Eritrea	Archipelagos	4	5.6	31.7	0.0	5.6	31.7	5.6	31.7	4	5.6	31.7	0.0	5.6	31.7	5.6	31.7
Eritrea	Debub	592	59.8	70.1	1.3	58.5	68.8	59.8	70.1	603	59.7	70.0	1.3	58.4	68.7	59.7	70.0
Eritrea	Debubawi Keih Bahri	18	7.1	37.7	0.1	7.1	37.6	7.1	37.7	18	7.1	37.7	0.1	7.1	37.6	7.1	37.7
Eritrea	Gash Barka	725	66.5	75.6	1.5	65.1	74.1	66.5	75.6	715	65.7	75.0	1.5	64.2	73.5	65.7	75.0
Eritrea	Maekel	31	5.0	29.2	1.6	3.3	27.6	5.0	29.2	32	8.2	31.6	1.6	6.6	30.1	8.2	31.6
Eritrea	Semenawi Keih Bahri	298	55.6	67.5	0.8	54.8	66.6	55.6	67.5	295	54.4	66.6	0.8	53.6	65.8	54.4	66.6
Eritrea tot		1,807	**56.5**	**68.1**	**1.3**	**55.3**	**66.8**	**56.5**	**68.1**	**1,807**	**55.9**	**67.6**	**1.3**	**54.6**	**66.4**	**55.9**	**67.6**
Ethiopia	Addis Ababa	28	4.0	27.9	1.2	2.8	26.7	4.0	27.9	28	4.0	27.9	1.2	2.8	26.8	4.0	27.9
Ethiopia	Afar	673	17.0	39.8	1.9	15.1	37.9	17.0	39.8	679	16.8	39.7	1.9	14.9	37.7	16.8	39.7
Ethiopia	Amhara	8,742	23.2	42.4	1.8	21.4	40.6	23.2	42.4	8,845	22.9	42.2	1.8	21.1	40.4	22.9	42.2
Ethiopia	Benishangul Gumuz	3,975	75.4	82.7	0.9	74.4	81.7	75.4	82.7	3,850	74.3	81.9	1.0	73.3	80.9	74.3	81.9
Ethiopia	Dire Dawa	27	4.0	27.9	1.1	2.9	26.8	4.0	27.9	28	4.0	27.9	1.1	2.9	26.9	4.0	27.9
Ethiopia	Gambella	1,738	79.6	86.9	1.6	78.0	85.3	79.6	86.9	1,676	78.6	86.2	1.6	76.9	84.6	78.6	86.2
Ethiopia	Harari	15	4.0	27.9	0.2	3.7	27.7	4.0	27.9	16	4.0	27.9	0.2	3.8	27.7	4.0	27.9
Ethiopia	SNNP	7,714	37.3	53.2	2.4	35.0	50.9	37.3	53.2	7,800	36.8	52.8	2.4	34.5	50.5	36.8	52.8
Ethiopia	Tigray	2,728	42.0	56.7	1.6	40.4	55.1	42.0	56.7	2,752	41.4	56.2	1.6	39.7	54.6	41.4	56.2
Ethiopia	Oromia	31,872	56.9	67.9	1.6	55.3	66.4	56.9	67.9	31,829	56.0	67.3	1.6	54.4	65.7	56.0	67.3
Ethiopia	Somali	2,966	13.1	38.8	2.5	10.6	36.3	13.1	38.8	2,975	12.9	38.6	2.5	10.4	36.2	12.9	38.6
Ethiopia tot		60,478	**48.1**	**61.6**	**1.7**	**46.3**	**59.9**	**48.1**	**61.6**	**60,478**	**47.2**	**60.9**	**1.7**	**45.4**	**59.2**	**47.2**	**60.9**

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
French Guiana	Cayenne	45	0.0	0.0	11.1	0.0	0.0	11.1	11.1	45	0.0	0.0	11.1	0.0	0.0	11.1	11.1
French Guiana	Saint-laurent-du-maroni	21	0.0	13.7	28.2	0.0	0.0	28.2	28.2	21	0.0	13.7	28.2	0.0	0.0	28.2	28.2
French Guiana tot		66		**4.3**	**16.5**			**16.5**	**16.5**	**66**		**4.4**	**16.5**			**16.5**	**16.5**
Gabon	Estuaire	166	0.0	0.0	0.0	0.0	0.0	0.0	0.0	166	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Haut-Ogooue	68	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Moyen-Ogooue	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Ngounie	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Nyanga	63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Ogooue-Ivindo	49	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Ogooue-Iolo	46	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Ogooue-Maritime	28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon	Woleu-Ntem	81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gabon tot		635			**0.0**					**635**			**0.0**				
Gambia	Banjul	1	2.4	23.4	-0.2	2.2	23.2	2.2	23.2	1	2.4	23.4	-0.2	2.2	23.2	2.2	23.2
Gambia	Central River	122	15.5	33.7	-0.6	15.0	33.2	15.0	33.2	123	15.3	33.6	-0.6	14.8	33.0	14.8	33.0
Gambia	Kombo Saint Mary	9	2.4	23.4	-0.2	2.2	23.2	2.2	23.2	9	2.4	23.4	-0.2	2.3	23.3	2.3	23.3
Gambia	Lower River	159	50.3	61.5	-0.3	50.1	61.2	50.1	61.2	156	48.8	60.3	-0.3	48.6	60.1	48.6	60.1
Gambia	North Bank	92	10.7	30.1	-0.5	10.2	29.6	10.2	29.6	92	10.4	29.8	-0.5	9.9	29.3	9.9	29.3
Gambia	Upper River	90	3.1	23.9	-0.5	2.5	23.4	2.5	23.4	91	3.2	24.1	-0.5	2.7	23.5	2.7	23.5
Gambia	Western	173	31.4	46.2	-0.3	31.1	45.9	31.1	45.9	175	30.9	45.8	-0.3	30.6	45.5	30.6	45.5
Gambia tot		647	**25.7**	**41.9**	**-0.4**	**25.3**	**41.5**	**25.3**	**41.5**	**647**	**25.0**	**41.3**	**-0.4**	**24.6**	**40.9**	**24.6**	**40.9**
Ghana	Ashanti	2,235	9.0	28.3	21.8	0.0	6.5	21.8	28.3	2,309	7.1	26.9	21.1	0.0	5.7	21.1	26.9
Ghana	Brong Ahafo	2,623	10.1	29.5	15.9	0.0	13.6	15.9	29.5	2,663	7.9	27.7	15.6	0.0	12.1	15.6	27.7
Ghana	Central	884	7.2	26.8	21.5	0.0	5.4	21.5	26.8	926	6.0	25.9	20.5	0.0	5.4	20.5	25.9
Ghana	Eastern	1,494	7.1	26.6	20.8	0.0	5.9	20.8	26.6	1,549	6.0	25.7	20.1	0.0	5.7	20.1	25.7
Ghana	Greater Accra	143	4.1	24.2	6.4	0.0	17.8	6.4	24.2	147	4.1	24.2	6.2	0.0	18.0	6.2	24.2
Ghana	Northern	2,462	10.0	31.1	7.6	2.4	23.5	10.0	31.1	2,415	7.9	29.3	7.7	0.1	21.6	7.9	29.3
Ghana	Upper East	353	4.3	24.3	4.3	0.0	20.0	4.3	24.3	358	4.2	24.1	4.3	0.0	19.8	4.3	24.1
Ghana	Upper West	818	10.5	31.4	7.1	3.4	24.3	10.5	31.4	545	5.8	26.5	10.6	0.0	15.9	10.6	26.5
Ghana	Volta	1,309	6.8	26.3	13.3	0.0	12.9	13.3	26.3	1,334	5.8	25.4	13.1	0.0	12.4	13.1	25.4
Ghana	Western	3,144	12.4	32.3	30.4	0.0	1.9	30.4	32.3	3,217	9.4	30.0	29.7	0.0	0.3	29.7	30.0
Ghana tot		15,465	**9.5**	**29.4**	**18.1**	**0.6**	**11.3**	**18.7**	**29.4**	**15,465**	**7.4**	**27.7**	**18.1**	**0.0**	**9.5**	**18.1**	**27.7**
Guatemala	Guatemala	281	6.9	30.1	24.9	0.0	5.2	24.9	30.1	290	5.1	28.7	24.1	0.0	4.6	24.1	28.7
Guatemala	El Progreso	183	10.1	33.5	25.2	0.0	8.3	25.2	33.5	185	6.0	30.5	25.0	0.0	5.5	25.0	30.5
Guatemala	Sacatepequez	76	5.6	29.1	29.4	0.0	0.0	29.4	29.4	78	4.7	28.5	28.3	0.0	0.2	28.3	28.5
Guatemala	Chimaltenango	327	7.7	30.7	31.5	0.0	0.0	31.5	31.5	335	5.2	28.8	30.7	0.0	0.0	30.7	30.7
Guatemala	Escuintla	449	8.2	31.8	19.0	0.0	12.9	19.0	31.8	457	5.5	29.9	18.6	0.0	11.3	18.6	29.9
Guatemala	Santa Rosa	420	10.2	33.6	26.8	0.0	6.8	26.8	33.6	425	6.1	30.5	26.5	0.0	4.1	26.5	30.5
Guatemala	Solola	199	5.5	29.1	29.4	0.0	0.0	29.4	29.4	206	4.7	28.5	28.4	0.0	0.1	28.4	28.5
Guatemala	Totonicapan	162	5.2	28.9	21.0	0.0	7.8	21.0	28.9	169	4.7	28.5	20.2	0.0	8.2	20.2	28.5
Guatemala	Quetzaltenango	292	6.0	29.4	25.3	0.0	4.1	25.3	29.4	303	4.8	28.6	24.4	0.0	4.2	24.4	28.6
Guatemala	Suchitepequez	272	6.5	29.8	22.3	0.0	7.5	22.3	29.8	281	4.9	28.6	21.6	0.0	7.0	21.6	28.6
Guatemala	Retalhulehu	130	7.3	31.2	17.5	0.0	13.8	17.5	31.2	133	5.3	29.8	17.1	0.0	12.7	17.1	29.8
Guatemala	San Marcos	559	5.4	28.9	27.0	0.0	1.9	27.0	28.9	580	4.7	28.5	26.1	0.0	2.4	26.1	28.5
Guatemala	Huehuetenango	1,093	10.6	34.0	29.7	0.0	4.3	29.7	34.0	1,094	6.2	30.7	29.7	0.0	1.1	29.7	30.7
Guatemala	Quiche	1,088	13.2	38.1	32.1	0.0	6.0	32.1	38.1	1,070	7.3	33.9	32.6	0.0	1.3	32.6	33.9
Guatemala	Baja Verapaz	379	13.0	35.7	30.0	0.0	5.7	30.0	35.7	375	6.7	31.0	30.3	0.0	0.7	30.3	31.0
Guatemala	Alta Verapaz	1,843	14.0	37.5	33.8	0.0	3.7	33.8	37.5	1,809	7.2	32.6	34.5	0.0	0.0	34.5	34.5
Guatemala	Peten	710	12.9	38.5	33.6	0.0	4.9	33.6	38.5	694	7.4	34.7	34.4	0.0	0.2	34.4	34.7
Guatemala	Izabal	967	17.3	42.0	32.0	0.0	10.0	32.0	42.0	926	8.5	35.8	33.4	0.0	2.5	33.4	35.8
Guatemala	Zacapa	283	12.1	36.5	30.7	0.0	5.8	30.7	36.5	282	6.9	32.8	30.8	0.0	1.9	30.8	32.8
Guatemala	Chiquimula	304	8.4	32.2	23.1	0.0	9.0	23.1	32.2	311	5.6	30.1	22.6	0.0	7.5	22.6	30.1
Guatemala	Jalapa	247	8.2	31.4	23.7	0.0	7.7	23.7	31.4	253	5.4	29.3	23.2	0.0	6.1	23.2	29.3
Guatemala	Jutiapa	276	6.1	29.8	15.0	0.0	14.8	15.0	29.8	285	4.9	28.9	14.5	0.0	14.4	14.5	28.9

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Guatemala tot		10,541	**11.0**	**34.9**	**29.0**		**6.0**	**29.0**	**34.9**	**10,541**	**6.4**	**31.5**	**29.0**		**2.9**	**29.0**	**31.9**
Guinea	Boke	1,369	0.0	14.9	0.6	0.0	14.3	0.6	14.9	1,300	2.8	27.5	0.6	2.2	26.9	2.8	27.5
Guinea	Conakry	210	3.1	27.6	0.1	3.0	27.4	3.1	27.6	213	4.1	28.3	0.1	4.0	28.2	4.1	28.3
Guinea	Faranah	566	4.9	30.9	0.7	4.2	30.2	4.9	30.9	566	4.9	30.9	0.7	4.2	30.2	4.9	30.9
Guinea	Kankan	1,123	4.7	30.6	0.4	4.3	30.2	4.7	30.6	1,123	4.8	30.7	0.4	4.5	30.3	4.8	30.7
Guinea	Kindia	2,058	0.0	12.0	6.3	0.0	5.7	6.3	12.0	2,191	2.2	26.8	5.9	0.0	20.9	5.9	26.8
Guinea	Labe	811	1.7	26.6	0.2	1.5	26.4	1.7	26.6	785	4.2	28.4	0.2	4.0	28.3	4.2	28.4
Guinea	Mamou	892	0.0	19.2	0.4	0.0	18.8	0.4	19.2	847	3.3	27.6	0.4	2.9	27.2	3.3	27.6
Guinea	N'Zerekore	1,316	3.7	28.1	59.0	0.0	0.0	59.0	59.0	1,318	4.2	28.5	58.9	0.0	0.0	58.9	58.9
Guinea tot		8,344	**1.8**	**21.4**	**11.1**	**1.1**	**15.1**	**12.2**	**26.2**	**8,344**	**3.5**	**28.3**	**11.1**	**2.0**	**22.0**	**13.1**	**33.1**
Guinea-Bissau	Bafata	259	3.0	26.9	5.4	0.0	21.5	5.4	26.9	259	2.8	26.8	5.5	0.0	21.4	5.5	26.8
Guinea-Bissau	Biombo	55	4.0	27.3	3.9	0.1	23.4	4.0	27.3	55	4.0	27.3	3.9	0.1	23.4	4.0	27.3
Guinea-Bissau	Bolama/bijagos	28	5.3	32.0	12.2	0.0	19.8	12.2	32.0	28	5.3	32.0	12.2	0.0	19.8	12.2	32.0
Guinea-Bissau	Cacheu	337	2.7	27.6	5.8	0.0	21.8	5.8	27.6	338	2.4	27.4	5.8	0.0	21.6	5.8	27.4
Guinea-Bissau	Gabu	199	4.8	30.3	3.5	1.3	26.8	4.8	30.3	199	4.8	30.3	3.5	1.3	26.8	4.8	30.3
Guinea-Bissau	Oio	452	2.2	27.0	4.5	0.0	22.6	4.5	27.0	451	1.8	26.8	4.5	0.0	22.3	4.5	26.8
Guinea-Bissau	Quinara	63	4.7	29.8	18.9	0.0	11.0	18.9	29.8	63	4.7	29.8	18.9	0.0	11.0	18.9	29.8
Guinea-Bissau	Sector Autonomo De Bissau	15	4.0	27.3	0.8	3.2	26.4	4.0	27.3	15	4.0	27.3	0.8	3.2	26.4	4.0	27.3
Guinea-Bissau	Tombali	107	4.4	28.9	14.6	0.0	14.3	14.6	28.9	107	4.4	28.9	14.6	0.0	14.3	14.6	28.9
Guinea-Bissau tot		1,515	**3.2**	**27.9**	**6.2**	**0.2**	**21.7**	**6.4**	**27.9**	**1,515**	**3.0**	**27.8**	**6.2**	**0.2**	**21.6**	**6.4**	**27.8**
Guyana	Barima Waini (region N°1)	19	1.9	26.0	0.0	1.9	26.0	1.9	26.0	19	1.9	26.0	0.0	1.9	26.0	1.9	26.0
Guyana	Cuyuni/mazaruni (region N°7)	37	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guyana	Demerara Mahaica (region N°4)	101	0.0	0.0	0.0	0.0	0.0	0.0	0.0	101	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guyana	East Berbice/ corentyne (reg 6)	51	0.0	7.9	0.0	0.0	7.9	0.0	7.9	51	0.0	7.9	0.0	0.0	7.9	0.0	7.9
Guyana	Essequibo Isl./ west Demerara (reg 3)	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guyana	Mahaica Berbice (region N°5)	85	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guyana	Pomeroon/supe naam (region N°2	33	0.0	16.4	0.0	0.0	16.4	0.0	16.4	33	0.0	16.4	0.0	0.0	16.4	0.0	16.4
Guyana	Potaro/siparuni (region N°8)	8	2.5	27.6	0.0	2.5	27.6	2.5	27.6	8	2.5	27.6	0.0	2.5	27.6	2.5	27.6
Guyana	Upper Demerara/ berbice (reg 10)	51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	51	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guyana	Upp. Takutu/ Upp. Essequibo (reg 9)	19	2.8	28.7	0.0	2.8	28.7	2.8	28.7	19	2.8	28.7	0.0	2.8	28.7	2.8	28.7
Guyana tot		559	**0.2**	**3.9**	**0.0**	**0.2**	**3.9**	**0.2**	**3.9**	**559**	**0.2**	**3.9**	**0.0**	**0.2**	**3.9**	**0.2**	**3.9**
Haiti	L'Artibonite	461	46.5	56.5	0.4	46.1	56.1	46.5	56.5	463	44.8	55.2	0.4	44.4	54.8	44.8	55.2
Haiti	Centre	440	55.3	63.7	0.4	54.9	63.2	55.3	63.7	453	55.0	63.5	0.4	54.6	63.0	55.0	63.5
Haiti	Nord	416	58.1	66.0	0.8	57.4	65.2	58.1	66.0	414	56.4	64.5	0.8	55.6	63.8	56.4	64.5
Haiti	Nord-Est	531	77.2	81.4	0.4	76.7	81.0	77.2	81.4	515	75.6	80.2	0.4	75.2	79.7	75.6	80.2
Haiti	Nord-Ouest	220	41.4	52.4	0.8	40.7	51.7	41.4	52.4	228	41.6	52.5	0.7	40.9	51.8	41.6	52.5
Haiti	Ouest	488	43.5	54.1	0.5	43.1	53.7	43.5	54.1	485	41.6	52.5	0.5	41.1	52.1	41.6	52.5
Haiti	Sud	559	68.9	74.7	0.4	68.6	74.4	68.9	74.7	549	67.1	73.3	0.4	66.8	72.9	67.1	73.3
Haiti	Sud-Est	278	52.3	61.3	0.5	51.8	60.8	52.3	61.3	277	50.7	59.9	0.5	50.2	59.4	50.7	59.9
Haiti	Grand'Anse	726	74.6	79.4	0.5	74.1	78.8	74.6	79.4	722	73.4	78.4	0.5	72.8	77.8	73.4	78.4
Haiti	Nippes	153	39.6	50.9	1.1	38.6	49.9	39.6	50.9	167	42.8	53.5	1.0	41.8	52.5	42.8	53.5
Haiti tot		4,272	**59.6**	**67.2**	**0.5**	**59.1**	**66.6**	**59.6**	**67.2**	**4,272**	**58.2**	**66.0**	**0.5**	**57.7**	**65.5**	**58.2**	**66.0**
Honduras	Atlantida	210	0.0	17.7	78.7	0.0	0.0	78.7	78.7	210	0.0	17.7	78.7	0.0	0.0	78.7	78.7
Honduras	Choluteca	265	1.0	21.8	21.0	0.0	0.8	21.0	21.8	265	1.0	21.8	21.0	0.0	0.8	21.0	21.8
Honduras	Colon	203	4.2	24.7	79.0	0.0	0.0	79.0	79.0	203	4.2	24.7	79.0	0.0	0.0	79.0	79.0
Honduras	Comayagua	421	0.0	16.8	48.6	0.0	0.0	48.6	48.6	421	0.0	16.8	48.6	0.0	0.0	48.6	48.6
Honduras	Copan	255	3.9	23.8	77.7	0.0	0.0	77.7	77.7	255	3.9	23.8	77.6	0.0	0.0	77.6	77.6
Honduras	Cortes	384	0.0	17.7	57.7	0.0	0.0	57.7	57.7	384	0.0	17.7	57.7	0.0	0.0	57.7	57.7
Honduras	Francisco Morazan	751	0.0	14.3	52.2	0.0	0.0	52.2	52.2	751	0.0	14.3	52.2	0.0	0.0	52.2	52.2

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Honduras	Gracias A Dios	68	6.7	33.1	100.0	0.0	0.0	100.0	100.0	68	6.7	33.1	100.0	0.0	0.0	100.0	100.0
Honduras	Intibuca	251	0.0	19.0	70.5	0.0	0.0	70.5	70.5	251	0.0	19.0	70.5	0.0	0.0	70.5	70.5
Honduras	Islas De Bahia	15	3.9	23.8	21.7	0.0	2.1	21.7	23.8	15	3.9	23.8	21.7	0.0	2.1	21.7	23.8
Honduras	La Paz	182	0.0	18.7	60.0	0.0	0.0	60.0	60.0	182	0.0	18.7	60.0	0.0	0.0	60.0	60.0
Honduras	Lempira	285	3.3	23.3	77.8	0.0	0.0	77.8	77.8	285	3.3	23.3	77.8	0.0	0.0	77.8	77.8
Honduras	Name Unknown	0	9.0	40.7	0.0	9.0	40.7	9.0	40.7	0	9.0	40.7	0.0	9.0	40.7	9.0	40.7
Honduras	Ocotepeque	100	3.9	23.8	95.1	0.0	0.0	95.1	95.1	100	3.9	23.8	95.1	0.0	0.0	95.1	95.1
Honduras	Olancho	454	2.9	24.2	88.0	0.0	0.0	88.0	88.0	454	2.9	24.2	88.0	0.0	0.0	88.0	88.0
Honduras	Paraiso	316	0.0	20.8	54.4	0.0	0.0	54.4	54.4	316	0.0	20.8	54.4	0.0	0.0	54.4	54.4
Honduras	Santa Barbara	467	0.0	18.7	73.6	0.0	0.0	73.6	73.6	467	0.0	18.7	73.6	0.0	0.0	73.6	73.6
Honduras	Valle	119	1.8	22.1	25.1	0.0	0.0	25.1	25.1	119	1.8	22.1	25.0	0.0	0.0	25.0	25.0
Honduras	Yoro	351	0.0	21.8	64.6	0.0	0.0	64.6	64.6	351	0.0	21.8	64.6	0.0	0.0	64.6	64.6
Honduras tot		5,097	**1.1**	**19.9**	**63.6**	**0.0**	**0.0**	**63.6**	**63.7**	**5,097**	**1.1**	**19.9**	**63.6**	**0.0**	**0.0**	**63.6**	**63.7**
Ilemi triangle	not available	7	9.4	39.5	0.0	9.4	39.5	9.4	39.5	7	9.4	39.5	0.0	9.4	39.5	9.4	39.5
Ilemi triangle tot		7			**0.0**					**7**			**0.0**				
India	Andaman and Nicobar	344	17.4	29.2	-0.5	16.8	28.7	16.8	28.7	80	3.7	17.6	-2.3	1.4	15.3	1.4	15.3
India	Andhra Pradesh	17,820	10.7	23.5	-0.1	10.7	23.5	10.7	23.5	19,678	10.5	23.3	-0.1	10.4	23.2	10.4	23.2
India	Assam	9,148	13.3	26.4	-0.3	13.1	26.1	13.1	26.1	4,587	4.1	17.8	-0.5	3.5	17.2	3.5	17.2
India	Delhi	27	3.6	17.3	0.0	3.5	17.3	3.5	17.3	27	3.6	17.3	0.0	3.6	17.3	3.6	17.3
India	Goa	573	18.9	30.7	0.0	18.9	30.7	18.9	30.7	636	17.0	29.1	0.0	17.0	29.1	17.0	29.1
India	Gujarat	6,406	6.3	19.7	0.0	6.3	19.7	6.3	19.7	6,181	5.0	18.6	0.0	5.0	18.5	5.0	18.5
India	Haryana	1,708	5.5	19.0	0.0	5.5	19.0	5.5	19.0	1,713	5.2	18.7	0.0	5.2	18.7	5.2	18.7
India	Himachal Pradesh	2,762	10.6	23.4	0.0	10.6	23.3	10.6	23.3	2,352	7.2	20.5	0.0	7.2	20.4	7.2	20.4
India	Karnataka	15,078	9.8	22.8	0.0	9.8	22.8	9.8	22.8	17,604	9.8	22.8	0.0	9.8	22.8	9.8	22.8
India	Kerala	6,917	9.2	22.1	0.0	9.1	22.1	9.1	22.1	8,634	9.3	22.2	0.0	9.2	22.2	9.2	22.2
India	Lakshadweep	0	3.6	17.5	0.0	3.6	17.4	3.6	17.4	0	3.7	17.5	0.0	3.6	17.4	3.6	17.4
India	Maharashtra	21,944	11.6	24.2	0.0	11.5	24.2	11.5	24.2	26,161	11.6	24.3	0.0	11.6	24.2	11.6	24.2
India	Manipur	3,300	20.5	33.0	-0.6	19.9	32.4	19.9	32.4	330	3.7	17.6	-5.5	0.0	12.1	0.0	12.1
India	Meghalaya	3,804	18.5	30.8	-0.2	18.3	30.6	18.3	30.6	721	3.7	17.5	-1.1	2.5	16.4	2.5	16.4
India	Mizoram	2,909	18.9	30.7	-2.5	16.4	28.1	16.4	28.1	437	3.6	17.5	-16.9	0.0	0.6	0.0	0.6
India	Nagaland	3,361	16.9	28.9	-0.3	16.6	28.6	16.6	28.6	883	3.6	17.4	-1.1	2.5	16.3	2.5	16.3
India	Orissa	16,534	13.6	26.2	-0.5	13.1	25.7	13.1	25.7	18,377	12.7	25.4	-0.5	12.2	24.9	12.2	24.9
India	Punjab	2,159	5.5	19.0	0.0	5.5	19.0	5.5	19.0	2,142	5.1	18.6	0.0	5.1	18.6	5.1	18.6
India	Rajasthan	8,208	4.2	17.9	0.0	4.2	17.9	4.2	17.9	8,460	3.8	17.6	0.0	3.8	17.5	3.8	17.5
India	Sikkim	375	16.0	28.0	0.0	15.9	28.0	15.9	28.0	346	13.8	26.1	0.0	13.7	26.1	13.7	26.1
India	Tamil Nadu	9,350	9.7	22.7	0.0	9.7	22.7	9.7	22.7	10,226	9.5	22.6	0.0	9.5	22.5	9.5	22.5
India	Tripura	1,708	13.3	25.7	0.0	13.3	25.7	13.3	25.7	824	3.6	17.3	-0.1	3.5	17.3	3.5	17.3
India	West Bengal	6,038	5.6	19.1	-0.1	5.5	19.0	5.5	19.0	6,567	5.3	18.8	-0.1	5.3	18.8	5.3	18.8
India	Arunachal Pradesh	1,127	16.9	29.3	-0.1	16.8	29.3	16.8	29.3	316	3.8	17.9	-0.3	3.5	17.6	3.5	17.6
India	Bihar	5,092	5.0	18.5	-0.2	4.8	18.3	4.8	18.3	5,184	5.0	18.5	-0.2	4.7	18.3	4.7	18.3
India	Chandigarh	5	3.7	17.4	0.0	3.7	17.4	3.7	17.4	5	3.8	17.5	0.0	3.8	17.5	3.8	17.5
India	Chhattisgarh	11,095	16.8	29.2	0.0	16.8	29.1	16.8	29.1	11,907	15.3	27.8	0.0	15.2	27.7	15.2	27.7
India	Dadra and Nagar Haveli	60	18.2	29.9	0.0	18.2	29.8	18.2	29.8	47	15.4	27.5	0.0	15.4	27.5	15.4	27.5
India	Daman and Diu	19	14.8	27.0	0.0	14.8	26.9	14.8	26.9	7	3.6	17.3	-0.1	3.5	17.2	3.5	17.2
India	Jharkhand	7,374	11.3	24.0	0.0	11.3	23.9	11.3	23.9	8,454	11.1	23.9	0.0	11.1	23.8	11.1	23.8
India	Madhya Pradesh	18,629	12.0	24.6	0.0	11.9	24.6	11.9	24.6	21,367	11.7	24.4	0.0	11.7	24.4	11.7	24.4
India	Puducherry	42	4.0	17.7	0.0	4.0	17.7	4.0	17.7	45	4.4	18.0	0.0	4.3	18.0	4.3	18.0
India	Uttar Pradesh	12,425	5.1	18.6	0.0	5.1	18.6	5.1	18.6	12,662	5.1	18.6	0.0	5.1	18.6	5.1	18.6
India	Uttarakhand	3,955	13.3	25.8	0.0	13.3	25.8	13.3	25.8	3,335	10.4	23.3	0.0	10.4	23.3	10.4	23.3
India tot		200,298	**11.0**	**23.9**	**-0.1**	**10.9**	**23.7**	**10.9**	**23.7**	**200,298**	**9.6**	**22.6**	**-0.1**	**9.5**	**22.5**	**9.5**	**22.5**
Indonesia	Nangroe Aceh Darussalam	3,331	24.1	45.4	7.9	16.2	37.5	24.1	45.4	3,753	27.5	47.8	7.0	20.5	40.8	27.5	47.8
Indonesia	Bali	823	14.5	34.9	0.0	14.4	34.9	14.5	34.9	882	15.7	35.5	0.0	15.7	35.5	15.7	35.5
Indonesia	Bengkulu	2,189	22.7	41.9	2.1	20.6	39.8	22.7	41.9	2,533	26.5	44.8	1.8	24.7	43.0	26.5	44.8

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Indonesia	Daerah Istimewa Yogyakarta	380	1.5	24.5	0.0	1.5	24.5	1.5	24.5	422	2.5	25.3	0.0	2.5	25.3	2.5	25.3
Indonesia	Dki Jakarta	19	0.0	21.9	0.0	0.0	21.9	0.0	21.9	19	0.0	21.8	0.0	0.0	21.8	0.0	21.8
Indonesia	Jambi	4,899	27.3	47.3	6.2	21.1	41.1	27.3	47.3	5,705	31.2	50.1	5.3	25.9	44.8	31.2	50.1
Indonesia	Jawa Tengah	4,281	6.0	28.0	0.1	5.8	27.9	6.0	28.0	4,910	8.4	29.9	0.1	8.3	29.8	8.4	29.9
Indonesia	Jawa Timur	4,840	7.1	29.2	0.1	7.0	29.1	7.1	29.2	5,462	9.1	30.8	0.1	9.0	30.7	9.1	30.8
Indonesia	Kalimantan Barat	4,496	17.7	39.5	44.2	0.0	0.0	44.2	44.2	2,748	4.3	27.9	72.4	0.0	0.0	72.4	72.4
Indonesia	Kalimantan Selatan	4,628	26.5	45.8	5.7	20.8	40.1	26.5	45.8	1,911	10.2	31.8	13.8	0.0	18.0	13.8	31.8
Indonesia	Kalimantan Tengah	2,176	16.5	38.7	100.0	0.0	0.0	100.0	100.0	1,215	0.0	25.1	100.0	0.0	0.0	100.0	100.0
Indonesia	Kalimantan Timur	1,233	29.6	53.5	37.4	0.0	16.1	37.4	53.5	320	0.3	27.9	100.0	0.0	0.0	100.0	100.0
Indonesia	Lampung	3,223	9.9	32.1	1.0	8.9	31.1	9.9	32.1	3,742	12.6	34.1	0.9	11.7	33.2	12.6	34.1
Indonesia	Nusatenggara Barat	1,527	10.4	32.2	0.0	10.4	32.2	10.4	32.2	1,254	2.8	25.9	0.0	2.8	25.9	2.8	25.9
Indonesia	Nusatenggara Timur	3,593	3.0	25.8	0.0	3.0	25.8	3.0	25.8	3,305	0.0	22.2	0.0	0.0	22.2	0.0	22.2
Indonesia	Sulawesi Tengah	3,229	22.0	44.9	3.6	18.4	41.4	22.0	44.9	3,356	24.2	46.6	3.4	20.7	43.1	24.2	46.6
Indonesia	Sulawesi Tenggara	3,872	28.3	49.9	2.5	25.8	47.4	28.3	49.9	1,099	0.0	23.7	8.7	0.0	14.9	8.7	23.7
Indonesia	Sumatera Barat	5,605	24.8	44.2	5.4	19.4	38.8	24.8	44.2	6,623	28.6	47.1	4.6	24.0	42.5	28.6	47.1
Indonesia	Sumatera Utara	8,441	26.3	45.5	11.4	14.9	34.0	26.3	45.5	9,607	29.8	48.1	10.0	19.7	38.1	29.8	48.1
Indonesia	Bangka Belitung	353	0.0	22.1	7.4	0.0	14.8	7.4	22.1	354	0.0	22.1	7.3	0.0	14.8	7.3	22.1
Indonesia	Banten	1,341	19.9	38.9	0.1	19.8	38.8	19.9	38.9	1,588	23.7	41.8	0.1	23.7	41.8	23.7	41.8
Indonesia	Gorontalo	1,041	25.0	45.9	0.5	24.5	45.4	25.0	45.9	592	14.6	36.1	0.8	13.8	35.3	14.6	36.1
Indonesia	Papua Barat	217	0.0	29.3	1.5	0.0	27.8	1.5	29.3	219	0.0	29.2	1.5	0.0	27.7	1.5	29.2
Indonesia	Jawa Barat	5,247	11.9	32.6	0.7	11.2	31.9	11.9	32.6	6,136	15.2	35.2	0.6	14.7	34.6	15.2	35.2
Indonesia	Kepulauan-riau	123	0.0	22.0	0.1	0.0	22.0	0.1	22.0	124	0.0	22.0	0.1	0.0	21.9	0.1	22.0
Indonesia	Maluku	515	1.7	26.7	0.7	1.0	26.1	1.7	26.7	493	0.0	25.2	0.7	0.0	24.5	0.7	25.2
Indonesia	Maluku Utara	712	5.0	29.1	0.2	4.8	28.9	5.0	29.1	612	0.0	23.8	0.2	0.0	23.6	0.2	23.8
Indonesia	Papua	958	0.0	28.7	5.2	0.0	23.5	5.2	28.7	970	0.0	28.3	5.1	0.0	23.2	5.1	28.3
Indonesia	Riau	7,747	30.1	49.8	56.6	0.0	0.0	56.6	56.6	9,086	34.0	52.6	48.3	0.0	4.3	48.3	52.6
Indonesia	Sulawesi Barat	1,833	25.1	44.8	0.5	24.7	44.3	25.1	44.8	2,150	29.0	47.6	0.4	28.6	47.2	29.0	47.6
Indonesia	Sulawesi Selatan	5,387	22.2	43.0	0.7	21.5	42.2	22.2	43.0	6,127	25.4	45.3	0.6	24.8	44.6	25.4	45.3
Indonesia	Sulawesi Utara	1,806	21.3	41.3	0.1	21.2	41.2	21.3	41.3	882	3.0	25.9	0.2	2.8	25.7	3.0	25.9
Indonesia	Sumatera Selatan	9,823	26.5	44.9	13.6	12.9	31.3	26.5	44.9	11,690	30.6	48.0	11.4	19.2	36.6	30.6	48.0
Indonesia tot		99,890	**20.3**	**41.0**	**12.9**	**12.6**	**30.1**	**25.5**	**43.1**	**99,890**	**21.2**	**41.2**	**11.8**	**14.3**	**31.8**	**26.2**	**43.6**
Jamaica	Clarendon	100	0.0	18.5	2.0	0.0	16.5	2.0	18.5	100	0.0	16.4	2.0	0.0	14.4	2.0	16.4
Jamaica	Hanover	47	0.0	20.2	2.8	0.0	17.4	2.8	20.2	47	0.0	18.4	2.8	0.0	15.6	2.8	18.4
Jamaica	Manchester	94	0.0	19.4	2.1	0.0	17.3	2.1	19.4	94	0.0	17.5	2.1	0.0	15.4	2.1	17.5
Jamaica	Portland	61	0.0	18.2	4.6	0.0	13.6	4.6	18.2	61	0.0	16.0	4.7	0.0	11.3	4.7	16.0
Jamaica	Saint Andrew And Kingston	57	0.0	23.3	1.5	0.0	21.8	1.5	23.3	57	0.0	22.3	1.5	0.0	20.8	1.5	22.3
Jamaica	Saint Ann	137	0.0	19.3	2.2	0.0	17.1	2.2	19.3	138	0.0	17.4	2.2	0.0	15.2	2.2	17.4
Jamaica	Saint Catherine	126	0.0	20.0	2.1	0.0	17.9	2.1	20.0	126	0.0	18.0	2.1	0.0	15.9	2.1	18.0
Jamaica	Saint Elizabeth	106	0.0	19.0	1.8	0.0	17.2	1.8	19.0	106	0.0	17.0	1.8	0.0	15.1	1.8	17.0
Jamaica	Saint James	77	0.0	19.2	2.3	0.0	16.9	2.3	19.2	77	0.0	17.3	2.3	0.0	15.0	2.3	17.3
Jamaica	Saint Mary	85	0.0	18.8	2.2	0.0	16.5	2.2	18.8	85	0.0	16.7	2.2	0.0	14.4	2.2	16.7
Jamaica	Saint Thomas	78	0.0	19.6	2.5	0.0	17.1	2.5	19.6	78	0.0	17.5	2.5	0.0	15.1	2.5	17.5
Jamaica	Trelawny	75	0.0	18.9	3.5	0.0	15.5	3.5	18.9	74	0.0	16.7	3.5	0.0	13.2	3.5	16.7
Jamaica	Westmoreland	73	0.0	19.8	2.1	0.0	17.6	2.1	19.8	73	0.0	18.0	2.1	0.0	15.9	2.1	18.0
Jamaica tot		1,115		**19.4**	**2.4**		**17.1**	**2.4**	**19.4**	**1,115**		**17.5**	**2.4**		**15.1**	**2.4**	**17.5**
Jammu Kashmir	not available	664	1.8	16.0	-0.2	1.6	15.8	1.6	15.8	392	5.0	18.8	-0.3	4.7	18.5	4.7	18.5
Jammu Kashmir	not available	134	5.7	20.6	-0.2	5.5	20.4	5.5	20.4	137	5.7	20.6	-0.2	5.5	20.4	5.5	20.4
Jammu Kashmir	not available	14	7.0	24.0	-0.1	6.9	24.0	6.9	24.0	14	6.9	23.9	-0.1	6.9	23.8	6.9	23.8
Jammu Kashmir	not available	15	5.8	21.0	-0.1	5.7	20.8	5.7	20.8	15	5.8	20.9	-0.1	5.7	20.8	5.7	20.8
Jammu Kashmir	not available	63	3.9	17.8	-0.2	3.7	17.6	3.7	17.6	55	5.0	18.8	-0.2	4.8	18.6	4.8	18.6
Jammu Kashmir	not available	121	3.3	17.3	-0.2	3.1	17.1	3.1	17.1	97	5.0	18.8	-0.2	4.8	18.6	4.8	18.6
Jammu Kashmir	not available	38	4.2	18.0	-0.2	4.0	17.9	4.0	17.9	34	5.0	18.8	-0.2	4.8	18.6	4.8	18.6
Jammu Kashmir	not available	110	3.7	17.7	-0.5	3.2	17.2	3.2	17.2	90	5.1	18.9	-0.6	4.5	18.3	4.5	18.3

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Jammu Kashmir	not available	36	2.2	16.4	-0.2	2.1	16.3	2.1	16.3	23	5.0	18.8	-0.2	4.8	18.5	4.8	18.5
Jammu Kashmir	not available	252	3.6	17.6	-0.1	3.5	17.4	3.5	17.4	210	5.0	18.8	-0.2	4.8	18.6	4.8	18.6
Jammu Kashmir	not available	166	1.7	15.9	-0.2	1.5	15.7	1.5	15.7	92	5.0	18.8	-0.3	4.7	18.5	4.7	18.5
Jammu Kashmir	not available	988	1.0	15.4	-0.2	0.8	15.2	0.8	15.2	465	5.0	18.8	-0.4	4.6	18.3	4.6	18.3
Jammu Kashmir tot		2,600	**2.2**	**16.4**	**-0.2**	**2.0**	**16.2**	**2.0**	**16.2**	**1,626**	**5.1**	**19.0**	**-0.3**	**4.8**	**18.7**	**4.8**	**18.7**
Kenya	Central	1,301	34.5	47.7	0.7	33.8	47.0	34.5	47.7	1,318	33.8	47.1	0.7	33.1	46.4	33.8	47.1
Kenya	Coast	3,189	61.1	69.5	0.1	61.0	69.4	61.1	69.5	3,215	60.4	68.9	0.1	60.4	68.9	60.4	68.9
Kenya	Eastern	5,284	56.6	65.7	0.1	56.5	65.6	56.6	65.7	5,217	55.5	64.9	0.1	55.4	64.7	55.5	64.9
Kenya	Nairobi	28	3.7	22.7	0.0	3.7	22.7	3.7	22.7	28	3.7	22.7	0.0	3.7	22.7	3.7	22.7
Kenya	North Eastern	1,188	51.1	64.1	0.1	51.1	64.1	51.1	64.1	1,180	50.3	63.5	0.1	50.2	63.5	50.3	63.5
Kenya	Nyanza	922	8.8	26.8	0.1	8.8	26.7	8.8	26.8	942	8.9	26.8	0.1	8.8	26.8	8.9	26.8
Kenya	Rift Valley	10,525	60.1	68.4	5.8	54.3	62.6	60.1	68.4	10,523	59.2	67.7	5.8	53.4	61.9	59.2	67.7
Kenya	Western	717	20.7	36.5	0.2	20.5	36.3	20.7	36.5	732	20.1	36.1	0.2	19.9	35.9	20.1	36.1
Kenya tot		23,154	**54.2**	**63.9**	**2.7**	**51.5**	**61.1**	**54.2**	**63.9**	**23,154**	**53.3**	**63.1**	**2.7**	**50.6**	**60.4**	**53.3**	**63.1**
Lao P. D. R.	Attapu	72	5.2	31.9	0.3	4.9	31.6	5.2	31.9	72	5.2	31.9	0.3	4.9	31.6	5.2	31.9
Lao P. D. R.	Bokeo	96	5.1	31.8	13.9	0.0	18.0	13.9	31.8	96	5.2	31.8	13.8	0.0	18.1	13.8	31.8
Lao P. D. R.	Bolikhamxai	110	0.0	17.2	62.4	0.0	0.0	62.4	62.4	111	0.0	14.9	61.9	0.0	0.0	61.9	61.9
Lao P. D. R.	Champasak	354	0.0	23.9	0.9	0.0	23.0	0.9	23.9	355	0.0	23.2	0.9	0.0	22.3	0.9	23.2
Lao P. D. R.	Houaphan	179	5.4	32.7	15.7	0.0	17.0	15.7	32.7	179	5.4	32.7	15.7	0.0	17.0	15.7	32.7
Lao P. D. R.	Khammouan	202	0.0	15.6	75.1	0.0	0.0	75.1	75.1	203	0.0	13.6	74.7	0.0	0.0	74.7	74.7
Lao P. D. R.	Louangphabang	522	0.0	0.0	9.1	0.0	0.0	9.1	9.1	514	0.0	0.0	9.2	0.0	0.0	9.2	9.2
Lao P. D. R.	Louang-Namtha	86	5.6	33.8	42.0	0.0	0.0	42.0	42.0	86	5.6	33.7	41.8	0.0	0.0	41.8	41.8
Lao P. D. R.	Oudomxai	138	0.0	28.0	25.1	0.0	2.8	25.1	28.0	137	0.0	27.5	25.2	0.0	2.3	25.2	27.5
Lao P. D. R.	Phongsali	114	6.0	35.2	26.1	0.0	9.1	26.1	35.2	114	6.0	35.2	26.1	0.0	9.1	26.1	35.2
Lao P. D. R.	Salavan	184	4.8	30.5	0.2	4.7	30.4	4.8	30.5	185	4.8	30.6	0.2	4.7	30.4	4.8	30.6
Lao P. D. R.	Savannakhet	485	0.0	22.3	15.9	0.0	6.3	15.9	22.3	486	0.0	21.4	15.9	0.0	5.5	15.9	21.4
Lao P. D. R.	Xaignabouli	195	1.1	29.0	9.6	0.0	19.3	9.6	29.0	196	0.7	28.6	9.6	0.0	19.0	9.6	28.6
Lao P. D. R.	Xekong	40	6.0	35.2	5.0	0.9	30.1	6.0	35.2	40	6.0	35.2	5.0	1.0	30.2	6.0	35.2
Lao P. D. R.	Vientiane capital	234	0.0	11.7	1.7	0.0	10.0	1.7	11.7	239	0.0	9.4	1.7	0.0	7.7	1.7	9.4
Lao P. D. R.	Vientiane	443	0.0	0.0	22.0	0.0	0.0	22.0	22.0	439	0.0	0.0	22.3	0.0	0.0	22.3	22.3
Lao P. D. R.	Xiangkhouang	160	5.1	31.6	2.3	2.8	29.3	5.1	31.6	161	5.1	31.6	2.3	2.8	29.3	5.1	31.6
Lao P. D. R. tot		3,613	**1.4**	**18.5**	**17.1**	**0.5**	**10.3**	**17.5**	**27.4**	**3,613**	**1.4**	**18.0**	**17.1**	**0.5**	**10.0**	**17.5**	**27.1**
Lesotho	Berea	88	30.8	44.9	0.0	30.8	44.8	30.8	44.8	89	29.9	44.1	0.0	29.9	44.1	29.9	44.1
Lesotho	Butha Buthe	95	45.0	56.2	0.0	45.0	56.2	45.0	56.2	95	43.7	55.1	0.0	43.7	55.1	43.7	55.1
Lesotho	Leribe	135	41.8	53.6	0.0	41.8	53.6	41.8	53.6	137	40.3	52.5	0.0	40.3	52.5	40.3	52.5
Lesotho	Mafeteng	75	31.0	45.1	0.0	31.0	45.0	31.0	45.0	76	30.8	44.8	0.0	30.8	44.8	30.8	44.8
Lesotho	Maseru	361	54.9	64.2	0.0	54.9	64.2	54.9	64.2	357	53.1	62.7	0.0	53.1	62.7	53.1	62.7
Lesotho	Mohale's Hoek	65	12.9	30.6	0.0	12.9	30.6	12.9	30.6	67	13.6	31.2	0.0	13.6	31.2	13.6	31.2
Lesotho	Mokhotlong	64	30.0	44.8	0.0	30.0	44.7	30.0	44.7	63	28.9	43.8	0.0	28.8	43.8	28.8	43.8
Lesotho	Qacha's Nek	38	15.3	32.9	0.0	15.2	32.8	15.2	32.8	38	15.2	32.8	0.0	15.2	32.8	15.2	32.8
Lesotho	Quthing	59	17.8	34.5	0.0	17.8	34.5	17.8	34.5	60	17.5	34.3	0.0	17.5	34.2	17.5	34.2
Lesotho	Thaba Tseka	149	47.1	57.8	0.0	47.0	57.8	47.0	57.8	146	45.3	56.5	0.0	45.3	56.5	45.3	56.5
Lesotho tot		1,129	**40.9**	**53.0**	**0.0**	**40.9**	**53.0**	**40.9**	**53.0**	**1,129**	**39.5**	**51.9**	**0.0**	**39.5**	**51.9**	**39.5**	**51.9**
Liberia	Bomi	278	0.0	15.4	12.7	0.0	2.7	12.7	15.4	278	0.0	15.1	12.7	0.0	2.4	12.7	15.1
Liberia	Bong	521	0.0	20.2	20.6	0.0	0.0	20.6	20.6	520	0.0	20.0	20.6	0.0	0.0	20.6	20.6
Liberia	Gbarpolu	368	0.0	21.1	26.5	0.0	0.0	26.5	26.5	368	0.0	20.7	26.5	0.0	0.0	26.5	26.5
Liberia	Grand Bassa	423	0.0	18.7	30.5	0.0	0.0	30.5	30.5	423	0.0	18.5	30.5	0.0	0.0	30.5	30.5
Liberia	Grand Cape Mount	459	0.0	14.6	17.4	0.0	0.0	17.4	17.4	458	0.0	14.2	17.4	0.0	0.0	17.4	17.4
Liberia	Grand Gedeh	70	6.4	37.0	30.1	0.0	6.9	30.1	37.0	70	6.4	37.0	30.1	0.0	6.9	30.1	37.0
Liberia	Grand Kru	45	5.7	34.5	43.7	0.0	0.0	43.7	43.7	45	5.7	34.5	43.7	0.0	0.0	43.7	43.7
Liberia	Lofa	377	4.2	28.6	50.3	0.0	0.0	50.3	50.3	377	4.2	28.6	50.3	0.0	0.0	50.3	50.3
Liberia	Margibi	257	0.0	23.9	10.4	0.0	13.6	10.4	23.9	257	0.0	23.8	10.3	0.0	13.5	10.3	23.8
Liberia	Maryland	100	4.1	28.4	22.3	0.0	6.1	22.3	28.4	100	4.1	28.4	22.3	0.0	6.1	22.3	28.4
Liberia	Montserrado	259	1.3	25.4	6.7	0.0	18.7	6.7	25.4	260	1.2	25.4	6.7	0.0	18.6	6.7	25.4
Liberia	Nimba	459	4.1	28.4	21.8	0.0	6.5	21.8	28.4	460	4.1	28.4	21.8	0.0	6.6	21.8	28.4

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Liberia	Rivercess	58	6.2	36.3	40.2	0.0	0.0	40.2	40.2	58	6.2	36.3	40.2	0.0	0.0	40.2	40.2
Liberia	River Ghee	57	6.6	38.0	40.4	0.0	0.0	40.4	40.4	57	6.6	38.0	40.4	0.0	0.0	40.4	40.4
Liberia	Sinoe	109	5.7	34.3	56.6	0.0	0.0	56.6	56.6	109	5.7	34.3	56.6	0.0	0.0	56.6	56.6
Liberia tot		3,840	**1.6**	**23.1**	**24.8**		**3.4**	**24.8**	**28.3**	**3,840**	**1.6**	**22.9**	**24.8**		**3.4**	**24.8**	**28.2**
Madagascar	Alaotra Mangoro	1,575	0.0	26.3	18.4	0.0	7.9	18.4	26.3	1,558	0.0	22.8	18.6	0.0	4.2	18.6	22.8
Madagascar	Amoron'i Mania	714	0.0	26.0	6.9	0.0	19.1	6.9	26.0	710	0.0	23.3	6.9	0.0	16.4	6.9	23.3
Madagascar	Analamanga	970	0.0	26.0	6.2	0.0	19.7	6.2	26.0	967	0.0	23.4	6.3	0.0	17.1	6.3	23.4
Madagascar	Analanjirofo	645	2.1	27.5	73.1	0.0	0.0	73.1	73.1	646	0.8	26.5	73.0	0.0	0.0	73.0	73.0
Madagascar	Androy	242	5.0	29.7	0.4	4.6	29.3	5.0	29.7	242	5.0	29.7	0.4	4.6	29.3	5.0	29.7
Madagascar	Anosy	278	5.5	31.8	20.6	0.0	11.2	20.6	31.8	279	5.5	31.8	20.6	0.0	11.2	20.6	31.8
Madagascar	Atsimo Andrefana	504	5.7	32.6	1.5	4.2	31.1	5.7	32.6	504	5.7	32.6	1.5	4.2	31.1	5.7	32.6
Madagascar	Atsimo Atsinanana	327	5.0	29.8	51.0	0.0	0.0	51.0	51.0	328	4.9	29.8	50.9	0.0	0.0	50.9	50.9
Madagascar	Atsinanana	988	0.0	24.4	36.7	0.0	0.0	36.7	36.7	983	0.0	21.4	36.9	0.0	0.0	36.9	36.9
Madagascar	Betsiboka	223	0.7	33.4	2.2	0.0	31.2	2.2	33.4	221	0.0	31.6	2.3	0.0	29.3	2.3	31.6
Madagascar	Boeny	215	5.8	32.9	12.6	0.0	20.3	12.6	32.9	215	5.8	32.9	12.6	0.0	20.3	12.6	32.9
Madagascar	Bongolava	371	0.0	25.7	0.5	0.0	25.2	0.5	25.7	369	0.0	23.2	0.5	0.0	22.6	0.5	23.2
Madagascar	Diana	251	5.1	30.3	36.5	0.0	0.0	36.5	36.5	252	5.1	30.3	36.3	0.0	0.0	36.3	36.3
Madagascar	Haute Matsiatra	630	0.5	26.5	9.6	0.0	17.0	9.6	26.5	637	0.0	25.0	9.5	0.0	15.5	9.5	25.0
Madagascar	Ihorombe	101	7.0	38.3	2.3	4.8	36.0	7.0	38.3	101	7.0	38.2	2.3	4.7	36.0	7.0	38.2
Madagascar	Itasy	331	2.2	27.0	0.9	1.3	26.1	2.2	27.0	340	0.7	25.9	0.9	0.0	25.0	0.9	25.9
Madagascar	Melaky	95	8.5	43.7	7.8	0.8	35.9	8.5	43.7	95	8.6	43.7	7.8	0.8	35.9	8.6	43.7
Madagascar	Menabe	203	6.8	37.0	9.6	0.0	27.4	9.6	37.0	203	6.8	37.0	9.6	0.0	27.4	9.6	37.0
Madagascar	Sava	379	5.0	30.0	56.4	0.0	0.0	56.4	56.4	381	5.0	30.0	56.1	0.0	0.0	56.1	56.1
Madagascar	Sofia	490	5.3	31.1	32.5	0.0	0.0	32.5	32.5	491	5.3	31.1	32.4	0.0	0.0	32.4	32.4
Madagascar	Vakinankaratra	885	0.5	26.1	2.6	0.0	23.5	2.6	26.1	895	0.0	24.6	2.5	0.0	22.1	2.5	24.6
Madagascar	Vatovavy Fitovinany	1,234	0.0	23.6	28.3	0.0	0.0	28.3	28.3	1,235	0.0	20.9	28.3	0.0	0.0	28.3	28.3
Madagascar tot		11,652	**1.7**	**27.5**	**20.9**	**0.4**	**12.4**	**21.2**	**33.3**	**11,652**	**1.5**	**25.7**	**20.9**	**0.3**	**11.2**	**21.2**	**32.1**
Malawi	Central Region	1,575	14.1	33.4	23.5	0.0	9.9	23.5	33.4	1,641	8.4	29.1	22.5	0.0	6.5	22.5	29.1
Malawi	Northern Region	1,640	40.4	54.1	34.5	5.9	19.7	40.4	54.1	1,495	21.4	39.6	37.8	0.0	1.8	37.8	39.6
Malawi	Southern Region	1,725	19.0	37.3	30.6	0.0	6.8	30.6	37.3	1,805	10.4	30.8	29.2	0.0	1.6	29.2	30.8
Malawi	Nat. Admin.	62	1.2	23.8	1.0	0.2	22.8	1.2	23.8	62	1.6	24.3	1.0	0.6	23.3	1.6	24.3
Malawi tot		5,003	**24.2**	**41.4**	**29.3**	**1.9**	**12.2**	**31.2**	**41.4**	**5,003**	**12.9**	**32.8**	**29.3**	**0.0**	**3.5**	**29.3**	**32.8**
Malaysia	Johor	315	0.0	0.0	52.1	0.0	0.0	52.1	52.1	307	0.0	0.0	53.5	0.0	0.0	53.5	53.5
Malaysia	Kedah	282	0.0	0.0	2.7	0.0	0.0	2.7	2.7	248	0.0	0.0	3.0	0.0	0.0	3.0	3.0
Malaysia	Kelantan	285	0.0	0.0	24.0	0.0	0.0	24.0	24.0	281	0.0	0.0	24.3	0.0	0.0	24.3	24.3
Malaysia	Kuala Lumpur	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	Melaka	86	0.0	0.0	0.3	0.0	0.0	0.3	0.3	69	0.0	0.0	0.4	0.0	0.0	0.4	0.4
Malaysia	Negeri Sembilan	183	0.0	0.0	6.8	0.0	0.0	6.8	6.8	136	0.0	0.0	9.1	0.0	0.0	9.1	9.1
Malaysia	Pahang	334	0.0	0.0	100.0	0.0	0.0	100.0	100.0	302	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Malaysia	Perak	368	0.0	0.0	27.7	0.0	0.0	27.7	27.7	317	0.0	0.0	32.1	0.0	0.0	32.1	32.1
Malaysia	Perlis	42	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	Pulau Pinang	49	0.0	0.0	0.1	0.0	0.0	0.1	0.1	47	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Malaysia	Sabah	521	0.0	0.0	90.4	0.0	0.0	90.4	90.4	536	0.0	0.0	87.9	0.0	0.0	87.9	87.9
Malaysia	Sarawak	348	0.0	0.0	100.0	0.0	0.0	100.0	100.0	353	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Malaysia	Selangor	374	0.0	0.0	6.9	0.0	0.0	6.9	6.9	549	0.0	0.0	4.7	0.0	0.0	4.7	4.7
Malaysia	Terengganu	117	0.0	0.0	18.3	0.0	0.0	18.3	18.3	118	0.0	0.0	18.1	0.0	0.0	18.1	18.1
Malaysia	Labuan	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaysia tot		3,317			**46.9**			**46.9**	**46.9**	**3,317**			**46.1**			**46.1**	**46.1**
Mali	Bamako	35	3.5	27.3	0.7	2.9	26.6	3.5	27.3	35	3.6	27.3	0.7	2.9	26.6	3.6	27.3
Mali	Gao	52	6.5	38.7	3.8	2.7	34.9	6.5	38.7	52	6.5	38.7	3.8	2.7	34.9	6.5	38.7
Mali	Kayes	524	5.0	33.5	20.3	0.0	13.2	20.3	33.5	522	3.6	32.6	20.4	0.0	12.2	20.4	32.6
Mali	Kidal	4	7.7	43.5	0.0	7.7	43.5	7.7	43.5	4	7.7	43.4	0.0	7.7	43.4	7.7	43.4
Mali	Koulikoro	1,068	3.4	28.7	7.4	0.0	21.3	7.4	28.7	1,066	0.0	25.9	7.4	0.0	18.5	7.4	25.9
Mali	Mopti	407	4.1	29.3	16.1	0.0	13.2	16.1	29.3	408	4.1	29.3	16.0	0.0	13.3	16.0	29.3

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Mali	Segou	445	3.8	28.2	7.0	0.0	21.2	7.0	28.2	447	3.8	28.2	7.0	0.0	21.2	7.0	28.2
Mali	Sikasso	587	3.6	27.8	10.2	0.0	17.6	10.2	27.8	587	2.9	27.2	10.2	0.0	17.1	10.2	27.2
Mali	Tombouctou	120	5.3	33.9	1.9	3.4	32.0	5.3	33.9	120	5.3	33.9	1.9	3.4	32.0	5.3	33.9
Mali tot		3,243	**4.0**	**29.6**	**10.7**	**0.2**	**19.0**	**10.9**	**29.6**	**3,243**	**2.5**	**28.5**	**10.7**	**0.2**	**17.8**	**10.9**	**28.5**
Mauritania	Adrar	0	9.9	46.5	0.0	9.9	46.5	9.9	46.5	0	9.9	46.5	0.0	9.9	46.5	9.9	46.5
Mauritania	Assaba	67	7.5	37.3	9.3	0.0	28.0	9.3	37.3	67	7.5	37.3	9.3	0.0	28.0	9.3	37.3
Mauritania	Brakna	69	6.4	33.1	0.8	5.6	32.4	6.4	33.1	69	6.4	33.1	0.8	5.6	32.4	6.4	33.1
Mauritania	Dakhlet Nouadhibou	1	5.1	28.5	0.0	5.1	28.5	5.1	28.5	1	5.1	28.5	0.0	5.1	28.5	5.1	28.5
Mauritania	Gorgol	76	5.2	28.7	3.8	1.4	25.0	5.2	28.7	77	5.2	28.7	3.8	1.4	25.0	5.2	28.7
Mauritania	Guidimaka	61	5.1	28.3	7.7	0.0	20.6	7.7	28.3	61	5.1	28.3	7.7	0.0	20.6	7.7	28.3
Mauritania	Hodh Ech Chargui	88	8.8	42.1	2.6	6.2	39.5	8.8	42.1	88	8.8	42.1	2.6	6.2	39.5	8.8	42.1
Mauritania	Hodh El Gharbi	73	7.6	37.9	6.8	0.9	31.1	7.6	37.9	73	7.6	37.9	6.8	0.9	31.1	7.6	37.9
Mauritania	Inchiri	0	9.0	43.1	0.0	9.0	43.1	9.0	43.1	0	9.0	43.1	0.0	9.0	43.1	9.0	43.1
Mauritania	Nouakchott	1	6.4	33.1	0.0	6.4	33.1	6.4	33.1	1	6.4	33.1	0.0	6.4	33.1	6.4	33.1
Mauritania	Tagant	14	8.4	40.8	1.3	7.1	39.5	8.4	40.8	14	8.4	40.8	1.3	7.1	39.5	8.4	40.8
Mauritania	Tiris Zemmour	0	9.2	43.7	0.0	9.2	43.7	9.2	43.7	0	9.2	43.7	0.0	9.2	43.7	9.2	43.7
Mauritania	Trarza	71	6.3	32.8	2.2	4.0	30.5	6.3	32.8	71	6.3	32.8	2.2	4.1	30.5	6.3	32.8
Mauritania tot		521	**6.8**	**34.8**	**4.5**	**2.9**	**30.3**	**7.4**	**34.8**	**522**	**6.8**	**34.8**	**4.5**	**2.9**	**30.3**	**7.3**	**34.8**
Mexico	Aguascalientes	18	1.7	25.6	0.2	1.5	25.4	1.7	25.6	18	1.9	25.8	0.2	1.7	25.6	1.9	25.8
Mexico	Baja California	74	1.9	26.0	0.1	1.8	25.9	1.9	26.0	75	1.7	25.9	0.1	1.6	25.8	1.7	25.9
Mexico	Baja California Sur	17	2.3	27.9	0.0	2.3	27.9	2.3	27.9	17	2.5	28.1	0.0	2.4	28.0	2.5	28.1
Mexico	Campeche	149	2.9	30.0	33.0	0.0	0.0	33.0	33.0	149	3.0	30.2	32.8	0.0	0.0	32.8	32.8
Mexico	Chiapas	1,542	1.9	26.4	0.5	1.4	25.9	1.9	26.4	1,560	2.1	26.5	0.5	1.6	26.0	2.1	26.5
Mexico	Chihuahua	278	4.1	33.7	0.3	3.8	33.4	4.1	33.7	276	3.1	33.1	0.3	2.8	32.7	3.1	33.1
Mexico	Coahuila	116	2.7	28.4	0.1	2.6	28.3	2.7	28.4	116	1.8	27.8	0.1	1.8	27.7	1.8	27.8
Mexico	Colima	55	2.0	26.5	0.7	1.3	25.9	2.0	26.5	56	2.1	26.6	0.6	1.5	26.0	2.1	26.6
Mexico	Distrito Federal	95	5.1	30.3	0.1	4.9	30.1	5.1	30.3	94	0.0	24.2	0.1	0.0	24.1	0.1	24.2
Mexico	Durango	177	3.5	32.4	0.4	3.1	32.0	3.5	32.4	178	3.6	32.5	0.4	3.2	32.1	3.6	32.5
Mexico	Guanajuato	442	3.4	27.0	0.2	3.2	26.7	3.4	27.0	443	0.0	22.9	0.2	0.0	22.7	0.2	22.9
Mexico	Guerrero	1,360	3.7	28.2	0.4	3.3	27.8	3.7	28.2	1,351	0.0	24.6	0.4	0.0	24.2	0.4	24.6
Mexico	Hidalgo	1,237	4.8	28.2	0.2	4.6	28.0	4.8	28.2	1,212	0.0	21.0	0.2	0.0	20.7	0.2	21.0
Mexico	Jalisco	452	3.9	28.0	0.6	3.3	27.3	3.9	28.0	445	0.0	23.5	0.6	0.0	22.8	0.6	23.5
Mexico	Mexico	1,654	5.2	28.4	0.2	5.0	28.2	5.2	28.4	1,607	0.0	20.2	0.2	0.0	20.0	0.2	20.2
Mexico	Michoacan	788	2.7	27.3	0.6	2.1	26.7	2.7	27.3	789	0.7	25.9	0.6	0.1	25.2	0.7	25.9
Mexico	Morelos	247	4.4	27.8	0.1	4.3	27.7	4.4	27.8	249	0.0	21.4	0.1	0.0	21.3	0.1	21.4
Mexico	Nayarit	112	2.2	27.6	0.8	1.4	26.7	2.2	27.6	113	2.4	27.7	0.8	1.6	26.9	2.4	27.7
Mexico	Nuevo Leon	234	5.8	32.5	0.2	5.6	32.3	5.8	32.5	231	0.0	26.0	0.2	0.0	25.9	0.2	26.0
Mexico	Oaxaca	1,459	2.0	26.6	0.6	1.4	26.0	2.0	26.6	1,469	2.1	26.7	0.6	1.4	26.1	2.1	26.7
Mexico	Puebla	1,739	4.1	28.2	0.2	3.9	28.0	4.1	28.2	1,743	0.0	23.1	0.2	0.0	22.9	0.2	23.1
Mexico	Queretaro	278	5.0	28.4	0.2	4.7	28.2	5.0	28.4	268	0.0	20.9	0.2	0.0	20.7	0.2	20.9
Mexico	Quintana Roo	125	2.7	29.1	100.0	0.0	0.0	100.0	100.0	126	2.7	29.2	100.0	0.0	0.0	100.0	100.0
Mexico	San Luis Potosi	507	2.7	28.6	0.5	2.2	28.1	2.7	28.6	510	1.9	28.0	0.5	1.4	27.5	1.9	28.0
Mexico	Sinaloa	273	2.2	27.3	0.2	1.9	27.0	2.2	27.3	275	2.3	27.4	0.2	2.0	27.1	2.3	27.4
Mexico	Sonora	160	2.8	29.6	0.1	2.7	29.5	2.8	29.6	161	2.8	29.7	0.1	2.7	29.6	2.8	29.7
Mexico	Tabasco	422	1.8	26.0	3.6	0.0	22.4	3.6	26.0	425	2.0	26.1	3.6	0.0	22.6	3.6	26.1
Mexico	Tamaulipas	171	3.3	29.5	0.6	2.7	29.0	3.3	29.5	173	1.3	28.1	0.5	0.8	27.6	1.3	28.1
Mexico	Tlaxcala	197	4.2	27.4	0.1	4.1	27.3	4.2	27.4	198	0.0	21.3	0.1	0.0	21.2	0.1	21.3
Mexico	Veracruz	2,621	3.3	27.1	0.2	3.1	26.9	3.3	27.1	2,663	0.0	23.5	0.2	0.0	23.3	0.2	23.5
Mexico	Yucatan	708	3.0	28.6	7.4	0.0	21.2	7.4	28.6	711	1.1	27.1	7.3	0.0	19.8	7.3	27.1
Mexico	Zacatecas	143	2.6	28.9	0.2	2.4	28.7	2.6	28.9	143	2.7	29.1	0.2	2.5	28.9	2.7	29.1
Mexico tot		17,848	**3.4**	**27.9**	**1.7**	**2.9**	**26.7**	**4.6**	**28.4**	**17,848**	**0.8**	**24.6**	**1.7**	**0.5**	**23.4**	**2.2**	**25.1**
Mozambique	Cabo Delgado	791	4.4	30.9	17.9	0.0	12.9	17.9	30.9	791	4.4	30.9	17.9	0.0	12.9	17.9	30.9
Mozambique	Gaza	1,593	25.1	46.4	4.1	21.0	42.3	25.1	46.4	1,593	24.8	46.2	4.1	20.7	42.1	24.8	46.2
Mozambique	Inhambane	1,277	18.8	41.6	13.7	5.0	27.9	18.8	41.6	1,276	18.5	41.5	13.7	4.8	27.8	18.5	41.5
Mozambique	Manica	1,231	22.7	44.5	11.2	11.5	33.2	22.7	44.5	1,229	22.4	44.3	11.2	11.2	33.0	22.4	44.3

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Mozambique	Maputo	1,804	32.5	54.8	4.1	28.4	50.7	32.5	54.8	1,802	32.1	54.5	4.1	28.0	50.4	32.1	54.5
Mozambique	Maputo (city)	66	4.9	29.1	0.6	4.3	28.5	4.9	29.1	66	4.9	29.0	0.6	4.3	28.5	4.9	29.0
Mozambique	Nampula	1,963	7.9	31.5	16.3	0.0	15.1	16.3	31.5	1,965	7.9	31.4	16.3	0.0	15.1	16.3	31.4
Mozambique	Niassa	485	5.1	33.6	22.4	0.0	11.2	22.4	33.6	485	5.1	33.6	22.4	0.0	11.2	22.4	33.6
Mozambique	Sofala	1,288	22.0	43.8	14.4	7.5	29.3	22.0	43.8	1,287	21.7	43.6	14.5	7.3	29.1	21.7	43.6
Mozambique	Tete	739	4.7	32.2	12.4	0.0	19.7	12.4	32.2	740	4.7	32.2	12.4	0.0	19.7	12.4	32.2
Mozambique	Zambezia	1,854	4.6	29.3	26.6	0.0	2.7	26.6	29.3	1,856	4.6	29.3	26.6	0.0	2.7	26.6	29.3
Mozambique	Nat. Administration	0	7.7	44.2	1.7	6.0	42.4	7.7	44.2	0	7.7	44.2	1.7	6.0	42.4	7.7	44.2
Mozambique tot		13,092	**16.2**	**39.7**	**13.7**	**8.8**	**26.0**	**22.5**	**39.7**	**13,092**	**16.1**	**39.6**	**13.7**	**8.6**	**25.8**	**22.3**	**39.6**
Myanmar	Rakhine	913	4.2	4.7	100.0	0.0	0.0	100.0	100.0	926	2.5	3.0	100.0	0.0	0.0	100.0	100.0
Myanmar	Chin	241	4.2	4.8	31.7	0.0	0.0	31.7	31.7	241	4.2	4.8	31.7	0.0	0.0	31.7	31.7
Myanmar	Ayeyawaddy	2,054	4.2	4.7	0.8	3.3	3.9	4.2	4.7	2,072	2.1	2.7	0.8	1.3	1.8	2.1	2.7
Myanmar	Kachin	454	4.0	4.5	13.8	0.0	0.0	13.8	13.8	459	4.0	4.6	13.7	0.0	0.0	13.7	13.7
Myanmar	Kayin	1,190	4.8	5.4	4.5	0.3	0.9	4.8	5.4	1,194	0.6	1.2	4.5	0.0	0.0	4.5	4.5
Myanmar	Kayar	115	3.6	4.2	0.1	3.6	4.1	3.6	4.2	117	3.6	4.1	0.1	3.5	4.0	3.6	4.1
Myanmar	Magway	2,957	4.1	4.6	0.1	4.0	4.5	4.1	4.6	2,925	0.0	0.4	0.1	0.0	0.3	0.1	0.4
Myanmar	Mandalay	2,983	5.2	5.8	0.1	5.1	5.7	5.2	5.8	2,959	0.8	1.4	0.1	0.6	1.3	0.8	1.4
Myanmar	Mon	603	3.4	3.9	0.8	2.7	3.2	3.4	3.9	624	1.6	2.1	0.7	0.9	1.4	1.6	2.1
Myanmar	Sagaing	2,132	3.6	4.1	1.3	2.3	2.8	3.6	4.1	2,143	1.8	2.4	1.3	0.5	1.0	1.8	2.4
Myanmar	Taninthayi	383	3.4	3.9	9.0	0.0	0.0	9.0	9.0	387	3.4	3.9	8.9	0.0	0.0	8.9	8.9
Myanmar	Yangon	682	4.2	4.8	0.0	4.2	4.7	4.2	4.8	688	2.0	2.6	0.0	2.0	2.6	2.0	2.6
Myanmar	Bago (E)	2,634	6.7	7.4	1.3	5.5	6.1	6.7	7.4	2,593	0.9	1.7	1.3	0.0	0.4	1.3	1.7
Myanmar	Bago (W)	1,398	5.0	5.6	0.1	4.9	5.5	5.0	5.6	1,371	0.7	1.3	0.1	0.6	1.3	0.7	1.3
Myanmar	Shan (E)	259	3.8	4.4	14.5	0.0	0.0	14.5	14.5	262	3.7	4.3	14.3	0.0	0.0	14.3	14.3
Myanmar	Shan (N)	1,834	5.0	5.6	5.6	0.0	0.1	5.6	5.6	1,850	0.6	1.2	5.5	0.0	0.0	5.5	5.5
Myanmar	Shan (S)	2,030	5.1	5.7	4.3	0.8	1.4	5.1	5.7	2,049	1.2	1.8	4.3	0.0	0.0	4.3	4.3
Myanmar tot		22,862	**4.7**	**5.3**	**6.4**	**2.9**	**3.4**	**9.3**	**9.8**	**22,862**	**1.2**	**1.8**	**6.4**	**0.4**	**0.7**	**6.8**	**7.2**
Namibia	Caprivi	14	7.3	36.7	83.1	0.0	0.0	83.1	83.1	14	7.3	36.7	83.1	0.0	0.0	83.1	83.1
Namibia	Erongo	6	7.5	37.4	5.2	2.3	32.2	7.5	37.4	6	7.5	37.4	5.2	2.3	32.2	7.5	37.4
Namibia	Hardap	8	7.6	37.9	6.3	1.4	31.6	7.6	37.9	8	7.6	37.9	6.3	1.4	31.6	7.6	37.9
Namibia	Karas	11	7.9	38.8	0.1	7.8	38.7	7.9	38.8	11	7.9	38.8	0.1	7.8	38.7	7.9	38.8
Namibia	Kavango	32	8.4	40.7	14.0	0.0	26.7	14.0	40.7	32	8.4	40.7	14.0	0.0	26.7	14.0	40.7
Namibia	Khomas	6	6.9	35.2	18.0	0.0	17.2	18.0	35.2	6	6.9	35.2	18.0	0.0	17.2	18.0	35.2
Namibia	Kunene	10	8.6	41.4	4.1	4.5	37.3	8.6	41.4	10	8.6	41.4	4.1	4.5	37.3	8.6	41.4
Namibia	Ohangwena	37	5.7	30.5	9.7	0.0	20.7	9.7	30.5	37	5.7	30.5	9.7	0.0	20.7	9.7	30.5
Namibia	Omaheke	12	8.5	41.2	3.8	4.7	37.4	8.5	41.2	12	8.5	41.2	3.8	4.7	37.4	8.5	41.2
Namibia	Omusati	43	5.5	29.9	0.2	5.3	29.6	5.5	29.9	43	5.5	29.9	0.2	5.3	29.6	5.5	29.9
Namibia	Oshana	14	5.5	29.9	0.0	5.5	29.9	5.5	29.9	14	5.5	29.9	0.0	5.5	29.9	5.5	29.9
Namibia	Oshikoto	26	6.9	35.0	7.2	0.0	27.8	7.2	35.0	26	6.9	35.0	7.2	0.0	27.8	7.2	35.0
Namibia	Otjozondjupa	67	69.8	79.5	13.5	56.3	65.9	69.8	79.5	67	69.8	79.5	13.5	56.3	65.9	69.8	79.5
Namibia tot		286	**21.5**	**45.3**	**11.8**	**15.0**	**35.8**	**26.7**	**47.6**	**286**	**21.5**	**45.3**	**11.8**	**15.0**	**35.8**	**26.7**	**47.6**
Nepal	Central	3,770	40.0	49.2	0.0	40.0	49.2	40.0	49.2	3,768	39.1	48.5	0.0	39.1	48.5	39.1	48.5
Nepal	Eastern	3,557	39.8	49.1	0.0	39.8	49.1	39.8	49.1	3,564	39.0	48.4	0.0	39.0	48.4	39.0	48.4
Nepal	Far Western	3,086	49.3	57.7	0.0	49.3	57.7	49.3	57.7	3,067	48.1	56.7	0.0	48.1	56.7	48.1	56.7
Nepal	Mid Western	4,666	48.8	57.0	0.0	48.8	57.0	48.8	57.0	4,671	47.8	56.2	0.0	47.8	56.2	47.8	56.2
Nepal	Western	3,622	41.7	50.8	0.0	41.7	50.8	41.7	50.8	3,629	40.8	50.0	0.0	40.8	50.0	40.8	50.0
Nepal tot		18,700	**44.0**	**52.8**	**0.0**	**44.0**	**52.8**	**44.0**	**52.8**	**18,700**	**43.1**	**52.0**	**0.0**	**43.1**	**52.0**	**43.1**	**52.0**
Nicaragua	Atlantico Norte	151	6.2	34.9	100.0	0.0	0.0	100.0	100.0	151	6.2	34.9	100.0	0.0	0.0	100.0	100.0
Nicaragua	Atlantico Sur	178	6.3	35.2	100.0	0.0	0.0	100.0	100.0	178	6.3	35.2	100.0	0.0	0.0	100.0	100.0
Nicaragua	Boaco	107	6.9	31.5	49.6	0.0	0.0	49.6	49.6	106	6.2	31.0	49.8	0.0	0.0	49.8	49.8
Nicaragua	Carazo	105	14.7	36.4	15.8	0.0	20.6	15.8	36.4	105	11.4	34.0	15.8	0.0	18.2	15.8	34.0
Nicaragua	Chinandega	175	4.8	29.4	34.3	0.0	0.0	34.3	34.3	176	4.8	29.4	34.1	0.0	0.0	34.1	34.1
Nicaragua	Chontales	109	5.1	30.5	59.9	0.0	0.0	59.9	59.9	109	5.1	30.5	59.8	0.0	0.0	59.8	59.8
Nicaragua	Esteli	82	4.8	29.3	34.0	0.0	0.0	34.0	34.0	82	4.8	29.3	33.9	0.0	0.0	33.9	33.9
Nicaragua	Granada	64	15.1	37.6	18.6	0.0	19.0	18.6	37.6	63	11.7	35.1	18.7	0.0	16.4	18.7	35.1

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Nicaragua	Jinotega	199	5.1	30.4	88.0	0.0	0.0	88.0	88.0	200	5.1	30.4	87.5	0.0	0.0	87.5	87.5
Nicaragua	Leon	135	5.6	29.8	28.9	0.0	0.9	28.9	29.8	135	5.4	29.6	28.8	0.0	0.8	28.8	29.6
Nicaragua	Madriz	81	4.7	29.0	42.7	0.0	0.0	42.7	42.7	82	4.7	29.0	42.5	0.0	0.0	42.5	42.5
Nicaragua	Managua	244	16.1	38.1	16.7	0.0	21.4	16.7	38.1	239	12.3	35.3	17.0	0.0	18.3	17.0	35.3
Nicaragua	Masaya	44	9.9	32.8	22.7	0.0	10.1	22.7	32.8	44	8.2	31.6	22.5	0.0	9.1	22.5	31.6
Nicaragua	Matagalpa	276	4.9	29.4	63.8	0.0	0.0	63.8	63.8	276	4.8	29.4	63.7	0.0	0.0	63.7	63.7
Nicaragua	Nueva Segovia	106	4.8	29.5	60.2	0.0	0.0	60.2	60.2	107	4.8	29.5	59.9	0.0	0.0	59.9	59.9
Nicaragua	Rio San Juan	63	5.5	31.9	100.0	0.0	0.0	100.0	100.0	63	5.5	31.9	100.0	0.0	0.0	100.0	100.0
Nicaragua	Rivas	85	6.3	30.6	23.9	0.0	6.7	23.9	30.6	85	5.8	30.2	23.8	0.0	6.4	23.8	30.2
Nicaragua tot		2,201	**7.4**	**32.2**	**53.8**		**4.4**	**53.8**	**58.2**	**2,201**	**6.6**	**31.6**	**53.8**		**3.8**	**53.8**	**57.6**
Niger	Agadez	51	6.5	39.0	10.6	0.0	28.3	10.6	39.0	51	6.5	39.0	10.6	0.0	28.4	10.6	39.0
Niger	Diffa	108	2.8	25.9	0.7	2.0	25.2	2.8	25.9	108	2.8	26.0	0.7	2.1	25.2	2.8	26.0
Niger	Dosso	419	1.7	22.1	3.9	0.0	18.2	3.9	22.1	426	1.7	22.2	3.8	0.0	18.3	3.8	22.2
Niger	Maradi	443	1.7	22.1	0.4	1.3	21.8	1.7	22.1	445	1.7	22.2	0.4	1.3	21.8	1.7	22.2
Niger	Niamey	18	1.7	22.1	0.5	1.2	21.7	1.7	22.1	18	1.7	22.2	0.5	1.2	21.7	1.7	22.2
Niger	Tahoua	422	2.1	23.6	1.7	0.3	21.8	2.1	23.6	431	2.1	23.6	1.7	0.4	21.9	2.1	23.6
Niger	Tillaberi	486	1.9	23.0	2.9	0.0	20.2	2.9	23.0	489	2.0	23.1	2.9	0.0	20.2	2.9	23.1
Niger	Zinder	456	2.3	24.3	0.4	1.9	23.9	2.3	24.3	457	2.3	24.3	0.4	1.9	23.9	2.3	24.3
Niger tot		2,404	**2.1**	**23.5**	**2.0**	**0.8**	**21.5**	**2.7**	**23.5**	**2,425**	**2.1**	**23.5**	**2.0**	**0.8**	**21.6**	**2.7**	**23.5**
Nigeria	Adamawa	787	2.1	16.9	12.6	0.0	4.2	12.6	16.9	790	2.2	16.9	12.6	0.0	4.3	12.6	16.9
Nigeria	Akwa Ibom	713	3.8	18.4	80.1	0.0	0.0	80.1	80.1	722	2.9	17.7	79.1	0.0	0.0	79.1	79.1
Nigeria	Anambra	481	3.5	18.1	24.4	0.0	0.0	24.4	24.4	482	2.7	17.4	24.4	0.0	0.0	24.4	24.4
Nigeria	Benue	1,601	4.2	18.6	14.2	0.0	4.5	14.2	18.6	1,596	3.0	17.6	14.2	0.0	3.4	14.2	17.6
Nigeria	Borno	954	2.1	16.9	30.3	0.0	0.0	30.3	30.3	956	2.2	17.0	30.2	0.0	0.0	30.2	30.2
Nigeria	Cross River	1,632	6.5	20.8	100.0	0.0	0.0	100.0	100.0	1,624	4.0	18.7	100.0	0.0	0.0	100.0	100.0
Nigeria	Delta	1,775	6.5	20.8	100.0	0.0	0.0	100.0	100.0	1,772	4.0	18.7	100.0	0.0	0.0	100.0	100.0
Nigeria	Edo	1,826	7.1	21.4	77.8	0.0	0.0	77.8	77.8	1,813	4.2	19.0	78.3	0.0	0.0	78.3	78.3
Nigeria	FCT, Abuja	440	7.0	21.0	13.5	0.0	7.5	13.5	21.0	436	4.1	18.5	13.6	0.0	5.0	13.6	18.5
Nigeria	Imo	540	3.4	18.0	63.3	0.0	0.0	63.3	63.3	548	2.7	17.3	62.4	0.0	0.0	62.4	62.4
Nigeria	Jigawa	454	2.1	16.9	8.5	0.0	8.4	8.5	16.9	459	2.2	16.9	8.4	0.0	8.5	8.4	16.9
Nigeria	Kaduna	1,610	4.5	18.9	10.9	0.0	8.0	10.9	18.9	1,622	3.1	17.7	10.8	0.0	6.9	10.8	17.7
Nigeria	Kano	462	2.1	16.9	5.4	0.0	11.4	5.4	16.9	466	2.2	16.9	5.4	0.0	11.5	5.4	16.9
Nigeria	Katsina	501	2.1	16.9	8.8	0.0	8.1	8.8	16.9	509	2.2	16.9	8.7	0.0	8.2	8.7	16.9
Nigeria	Kebbi	684	2.3	17.0	3.9	0.0	13.1	3.9	17.0	689	2.2	17.0	3.8	0.0	13.1	3.8	17.0
Nigeria	Kogi	2,374	6.9	20.9	31.2	0.0	0.0	31.2	31.2	2,333	4.0	18.5	31.7	0.0	0.0	31.7	31.7
Nigeria	Kwara	1,632	7.3	21.7	32.1	0.0	0.0	32.1	32.1	1,606	4.4	19.2	32.6	0.0	0.0	32.6	32.6
Nigeria	Lagos	384	4.2	18.7	69.1	0.0	0.0	69.1	69.1	385	3.0	17.7	68.9	0.0	0.0	68.9	68.9
Nigeria	Niger	2,243	5.8	20.0	12.9	0.0	7.2	12.9	20.0	2,251	3.6	18.2	12.8	0.0	5.4	12.8	18.2
Nigeria	Ogun	1,302	6.0	20.9	88.9	0.0	0.0	88.9	88.9	1,312	3.9	19.1	88.2	0.0	0.0	88.2	88.2
Nigeria	Osun	992	5.7	20.1	97.6	0.0	0.0	97.6	97.6	997	3.6	18.3	97.1	0.0	0.0	97.1	97.1
Nigeria	Oyo	1,821	6.0	20.2	38.7	0.0	0.0	38.7	38.7	1,806	3.7	18.2	39.0	0.0	0.0	39.0	39.0
Nigeria	Taraba	836	2.9	17.6	97.6	0.0	0.0	97.6	97.6	836	2.5	17.3	97.6	0.0	0.0	97.6	97.6
Nigeria	Yobe	565	2.2	16.9	15.1	0.0	1.8	15.1	16.9	567	2.2	17.0	15.0	0.0	1.9	15.0	17.0
Nigeria	Abia	432	4.1	18.6	82.4	0.0	0.0	82.4	82.4	438	3.0	17.6	81.4	0.0	0.0	81.4	81.4
Nigeria	Bauchi	1,118	3.5	18.0	5.6	0.0	12.4	5.6	18.0	1,131	2.7	17.4	5.6	0.0	11.8	5.6	17.4
Nigeria	Bayelsa	1,320	7.6	21.9	100.0	0.0	0.0	100.0	100.0	1,306	4.5	19.3	100.0	0.0	0.0	100.0	100.0
Nigeria	Ebonyi	565	3.2	17.8	14.1	0.0	3.7	14.1	17.8	567	2.6	17.3	14.0	0.0	3.2	14.0	17.3
Nigeria	Ekiti	596	4.5	18.8	96.6	0.0	0.0	96.6	96.6	602	3.1	17.7	95.7	0.0	0.0	95.7	95.7
Nigeria	Enugu	786	4.3	18.8	30.8	0.0	0.0	30.8	30.8	785	3.0	17.6	30.8	0.0	0.0	30.8	30.8
Nigeria	Gombe	503	3.1	17.7	1.8	1.3	15.9	3.1	17.7	507	2.5	17.2	1.8	0.8	15.5	2.5	17.2
Nigeria	Nassarawa	1,169	5.7	19.9	10.2	0.0	9.7	10.2	19.9	1,164	3.6	18.2	10.3	0.0	7.9	10.3	18.2
Nigeria	Ondo	1,648	6.4	21.1	100.0	0.0	0.0	100.0	100.0	1,649	4.0	19.2	100.0	0.0	0.0	100.0	100.0
Nigeria	Plateau	711	2.6	17.3	7.2	0.0	10.1	7.2	17.3	719	2.4	17.1	7.1	0.0	10.0	7.1	17.1
Nigeria	Rivers	1,356	5.9	20.1	100.0	0.0	0.0	100.0	100.0	1,354	3.6	18.2	100.0	0.0	0.0	100.0	100.0
Nigeria	Sokoto	470	2.1	16.9	8.7	0.0	8.2	8.7	16.9	474	2.2	16.9	8.6	0.0	8.3	8.6	16.9

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Nigeria	Zamfara	816	2.8	17.4	4.9	0.0	12.5	4.9	17.4	826	2.4	17.1	4.9	0.0	12.3	4.9	17.1
Nigeria tot		38,098	**5.1**	**19.5**	**48.0**	**0.0**	**3.2**	**48.0**	**51.2**	**38,098**	**3.4**	**18.1**	**47.9**	**0.0**	**2.9**	**48.0**	**50.9**
Pakistan	Balochistan	726	1.5	23.5	19.7	0.0	3.7	19.7	23.5	753	1.6	23.5	19.0	0.0	4.5	19.0	23.5
Pakistan	Fata	554	35.5	48.5	20.1	15.3	28.3	35.5	48.5	661	43.7	55.0	16.9	26.8	38.1	43.7	55.0
Pakistan	Islamabad	516	92.6	94.1	2.4	90.2	91.7	92.6	94.1	493	91.8	93.5	2.5	89.3	91.0	91.8	93.5
Pakistan	Nwfp	23,410	93.0	94.4	4.1	89.0	90.4	93.0	94.4	23,868	92.7	94.2	4.0	88.7	90.2	92.7	94.2
Pakistan	Punjab	11,927	69.1	75.3	2.1	67.0	73.3	69.1	75.3	11,289	66.6	73.4	2.2	64.5	71.2	66.6	73.4
Pakistan	Sind	1,411	1.3	21.3	12.4	0.0	8.9	12.4	21.3	1,480	3.0	22.7	11.8	0.0	10.9	11.8	22.7
Pakistan tot		38,544	**79.7**	**83.8**	**4.3**	**76.2**	**79.6**	**80.5**	**83.8**	**38,544**	**79.0**	**83.3**	**4.3**	**75.4**	**79.0**	**79.7**	**83.3**
Panama	Bocas Del Toro	46	3.9	32.6	100.0	0.0	0.0	100.0	100.0	46	3.6	32.3	100.0	0.0	0.0	100.0	100.0
Panama	Chiriqui	138	2.6	27.6	62.6	0.0	0.0	62.6	62.6	138	2.3	27.3	62.6	0.0	0.0	62.6	62.6
Panama	Cocle	65	2.9	28.6	19.9	0.0	8.7	19.9	28.6	66	2.6	28.3	19.7	0.0	8.5	19.7	28.3
Panama	Colon	53	0.0	17.5	88.4	0.0	0.0	88.4	88.4	42	3.3	30.8	100.0	0.0	0.0	100.0	100.0
Panama	Comarca De San Blas	15	3.2	30.0	49.9	0.0	0.0	49.9	49.9	15	2.9	29.7	49.9	0.0	0.0	49.9	49.9
Panama	Darien	27	5.2	37.6	54.8	0.0	0.0	54.8	54.8	27	4.9	37.3	54.8	0.0	0.0	54.8	54.8
Panama	Herrera	40	2.6	27.4	24.4	0.0	2.9	24.4	27.4	40	2.3	27.1	24.4	0.0	2.7	24.4	27.1
Panama	Los Santos	40	2.9	28.8	19.2	0.0	9.6	19.2	28.8	40	2.6	28.5	19.2	0.0	9.3	19.2	28.5
Panama	Panama	156	0.0	8.8	31.6	0.0	0.0	31.6	31.6	167	15.9	38.8	29.5	0.0	9.3	29.5	38.8
Panama	Veraguas	116	3.0	28.9	41.9	0.0	0.0	41.9	41.9	116	2.7	28.6	41.9	0.0	0.0	41.9	41.9
Panama tot		696	**2.1**	**23.7**	**47.4**		**1.5**	**47.4**	**48.9**	**696**	**5.9**	**31.4**	**46.6**		**3.7**	**46.6**	**50.3**
Papua N. G.	Central	915	38.0	55.0	1.7	36.3	53.3	38.0	55.0	904	36.3	53.8	1.7	34.6	52.1	36.3	53.8
Papua N. G.	Chimbu	163	0.0	20.3	14.7	0.0	5.5	14.7	20.3	164	0.0	20.3	14.6	0.0	5.7	14.6	20.3
Papua N. G.	East New Britain	106	0.0	21.2	29.4	0.0	0.0	29.4	29.4	107	0.0	21.2	29.2	0.0	0.0	29.2	29.2
Papua N. G.	East Sepik	233	0.0	25.7	6.5	0.0	19.1	6.5	25.7	233	0.0	25.7	6.5	0.0	19.2	6.5	25.7
Papua N. G.	Eastern Highlands	248	0.0	20.0	5.6	0.0	14.4	5.6	20.0	250	0.0	20.1	5.6	0.0	14.5	5.6	20.1
Papua N. G.	Enga	206	0.0	20.5	2.3	0.0	18.2	2.3	20.5	206	0.0	20.6	2.3	0.0	18.3	2.3	20.6
Papua N. G.	Gulf	60	0.0	28.3	100.0	0.0	0.0	100.0	100.0	60	0.0	28.4	100.0	0.0	0.0	100.0	100.0
Papua N. G.	Madang	229	0.0	23.8	57.3	0.0	0.0	57.3	57.3	229	0.0	23.9	57.2	0.0	0.0	57.2	57.2
Papua N. G.	Manus	18	0.0	23.7	1.9	0.0	21.9	1.9	23.7	18	0.0	23.8	1.9	0.0	21.9	1.9	23.8
Papua N. G.	Milne Bay	124	0.0	22.3	2.2	0.0	20.1	2.2	22.3	124	0.0	22.3	2.2	0.0	20.2	2.2	22.3
Papua N. G.	Morobe	306	6.9	30.5	8.4	0.0	22.1	8.4	30.5	306	6.4	30.1	8.4	0.0	21.8	8.4	30.1
Papua N. G.	National Capital District	15	5.3	27.5	0.0	5.3	27.5	5.3	27.5	15	4.9	27.2	0.0	4.9	27.1	4.9	27.2
Papua N. G.	New Ireland	51	0.0	22.7	2.6	0.0	20.1	2.6	22.7	51	0.0	22.8	2.6	0.0	20.2	2.6	22.8
Papua N. G.	Northern	81	0.0	28.4	100.0	0.0	0.0	100.0	100.0	81	0.0	28.4	100.0	0.0	0.0	100.0	100.0
Papua N. G.	Northern Solomons	75	0.0	23.0	2.1	0.0	20.9	2.1	23.0	75	0.0	23.1	2.1	0.0	21.0	2.1	23.1
Papua N. G.	Southern Highlands	332	0.0	21.0	38.8	0.0	0.0	38.8	38.8	333	0.0	21.1	38.7	0.0	0.0	38.7	38.7
Papua N. G.	West New Britain	95	0.0	24.8	43.5	0.0	0.0	43.5	43.5	95	0.0	24.8	43.4	0.0	0.0	43.4	43.4
Papua N. G.	West Sepik	88	0.0	29.7	3.6	0.0	26.1	3.6	29.7	88	0.0	29.7	3.6	0.0	26.1	3.6	29.7
Papua N. G.	Western	110	0.0	32.5	100.0	0.0	0.0	100.0	100.0	110	0.0	32.6	100.0	0.0	0.0	100.0	100.0
Papua N. G.	Western Highlands	283	0.0	20.0	21.0	0.0	0.0	21.0	21.0	285	0.0	20.1	20.8	0.0	0.0	20.8	20.8
Papua N. G. tot		3,736	**9.9**	**31.4**	**20.1**	**8.9**	**20.5**	**29.0**	**40.5**	**3,736**	**9.3**	**31.1**	**20.1**	**8.4**	**20.0**	**28.5**	**40.1**
Paraguay	Alto Paraguay	33	2.3	37.3	0.0	2.3	37.3	2.3	37.3	33	2.3	37.3	0.0	2.3	37.3	2.3	37.3
Paraguay	Alto Parana	541	0.0	27.2	9.4	0.0	17.8	9.4	27.2	541	0.0	27.1	9.4	0.0	17.7	9.4	27.1
Paraguay	Amambay	141	2.3	37.3	16.2	0.0	21.2	16.2	37.3	141	2.3	37.3	16.1	0.0	21.2	16.1	37.3
Paraguay	Boqueron	77	2.4	37.8	0.0	2.4	37.7	2.4	37.8	77	2.4	37.8	0.0	2.4	37.8	2.4	37.8
Paraguay	Caaguazu	821	0.0	24.9	15.5	0.0	9.4	15.5	24.9	823	0.0	24.7	15.5	0.0	9.2	15.5	24.7
Paraguay	Caazapa	622	0.0	27.7	7.3	0.0	20.4	7.3	27.7	621	0.0	27.1	7.3	0.0	19.8	7.3	27.1
Paraguay	Canindeyu	314	0.9	31.6	57.7	0.0	0.0	57.7	57.7	314	0.9	31.7	57.7	0.0	0.0	57.7	57.7
Paraguay	Central	180	0.0	24.2	0.0	0.0	24.2	0.0	24.2	181	0.0	24.1	0.0	0.0	24.1	0.0	24.1
Paraguay	Concepcion	294	0.7	30.8	16.6	0.0	14.2	16.6	30.8	294	0.8	30.8	16.6	0.0	14.3	16.6	30.8
Paraguay	Cordillera	435	0.0	25.8	0.0	0.0	25.8	0.0	25.8	436	0.0	25.4	0.0	0.0	25.4	0.0	25.4
Paraguay	Guaira	307	0.0	23.3	1.0	0.0	22.3	1.0	23.3	308	0.0	23.0	1.0	0.0	22.0	1.0	23.0
Paraguay	Itapua	889	0.0	26.4	4.5	0.0	21.9	4.5	26.4	890	0.0	26.2	4.5	0.0	21.7	4.5	26.2
Paraguay	Misiones	319	0.0	32.0	0.0	0.0	32.0	0.0	32.0	319	0.0	31.5	0.0	0.0	31.5	0.0	31.5

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Paraguay	Neembucu	142	1.3	37.1	0.0	1.3	37.1	1.3	37.1	142	1.0	37.0	0.0	1.0	37.0	1.0	37.0
Paraguay	Paraguari	569	0.0	25.8	0.1	0.0	25.8	0.1	25.8	570	0.0	25.4	0.1	0.0	25.3	0.1	25.4
Paraguay	Presidente Hayes	922	0.0	40.0	0.0	0.0	39.9	0.0	40.0	914	0.0	39.1	0.0	0.0	39.1	0.0	39.1
Paraguay	San Pedro	853	0.0	28.8	100.0	0.0	0.0	100.0	100.0	853	0.0	28.6	100.0	0.0	0.0	100.0	100.0
Paraguay tot		7,458	**0.2**	**29.3**	**18.4**	**0.1**	**20.1**	**18.5**	**38.5**	**7,458**	**0.2**	**29.0**	**18.4**	**0.1**	**19.8**	**18.5**	**38.2**
Peru	Amazonas	107	2.1	5.0	0.2	1.8	4.8	2.1	5.0	107	2.1	5.0	0.2	1.9	4.8	2.1	5.0
Peru	Ancash	205	9.4	12.0	0.0	9.4	11.9	9.4	12.0	206	9.1	11.7	0.0	9.1	11.7	9.1	11.7
Peru	Apurimac	122	1.5	4.3	0.0	1.5	4.3	1.5	4.3	123	1.6	4.4	0.0	1.6	4.4	1.6	4.4
Peru	Arequipa	96	16.6	19.6	0.0	16.6	19.6	16.6	19.6	99	17.5	20.5	0.0	17.5	20.5	17.5	20.5
Peru	Ayacucho	122	2.3	5.4	0.1	2.3	5.3	2.3	5.4	123	2.4	5.4	0.1	2.3	5.4	2.4	5.4
Peru	Cajamarca	421	0.8	3.3	0.1	0.7	3.2	0.8	3.3	421	0.8	3.4	0.1	0.7	3.3	0.8	3.4
Peru	Callao, Provincia Constitucion	19	9.8	12.2	0.0	9.8	12.2	9.8	12.2	19	10.7	13.1	0.0	10.7	13.1	10.7	13.1
Peru	Cusco	256	1.7	4.6	0.1	1.6	4.5	1.7	4.6	257	1.8	4.6	0.1	1.7	4.5	1.8	4.6
Peru	Huancavelica	106	1.4	4.1	0.0	1.4	4.1	1.4	4.1	107	1.4	4.2	0.0	1.4	4.1	1.4	4.2
Peru	Huanuco	148	1.5	4.2	3.4	0.0	0.9	3.4	4.2	149	1.5	4.3	3.4	0.0	0.9	3.4	4.3
Peru	Ica	51	16.1	18.7	0.0	16.1	18.7	16.1	18.7	53	16.4	19.1	0.0	16.4	19.0	16.4	19.1
Peru	Junin	204	1.3	4.1	0.2	1.2	3.9	1.3	4.1	206	1.4	4.1	0.2	1.2	3.9	1.4	4.1
Peru	La Libertad	193	1.2	3.9	0.0	1.2	3.9	1.2	3.9	193	1.2	3.9	0.0	1.2	3.9	1.2	3.9
Peru	Lambayeque	107	1.0	3.7	0.0	1.0	3.6	1.0	3.7	108	1.1	3.7	0.0	1.0	3.7	1.1	3.7
Peru	Lima	1,334	74.1	74.9	0.0	74.1	74.9	74.1	74.9	1,316	72.6	73.4	0.0	72.6	73.4	72.6	73.4
Peru	Loreto	112	3.5	6.8	78.1	0.0	0.0	78.1	78.1	112	3.5	6.8	77.6	0.0	0.0	77.6	77.6
Peru	Madre De Dios	8	2.7	5.9	33.5	0.0	0.0	33.5	33.5	8	2.7	5.9	33.5	0.0	0.0	33.5	33.5
Peru	Moquegua	17	8.0	10.9	0.0	8.0	10.9	8.0	10.9	18	13.5	16.3	0.0	13.5	16.2	13.5	16.3
Peru	Pasco	43	2.7	5.8	0.2	2.5	5.6	2.7	5.8	43	2.7	5.9	0.2	2.5	5.6	2.7	5.9
Peru	Piura	316	0.9	3.5	0.1	0.9	3.5	0.9	3.5	317	1.0	3.6	0.1	0.9	3.5	1.0	3.6
Peru	Puno	281	1.5	4.3	0.1	1.4	4.2	1.5	4.3	282	1.5	4.3	0.1	1.5	4.2	1.5	4.3
Peru	San Martin	106	2.4	5.5	100.0	0.0	0.0	100.0	100.0	106	2.5	5.6	100.0	0.0	0.0	100.0	100.0
Peru	Tacna	15	4.4	8.0	0.0	4.4	8.0	4.4	8.0	15	4.4	8.0	0.0	4.4	8.0	4.4	8.0
Peru	Tumbes	28	1.8	4.6	0.1	1.7	4.5	1.8	4.6	29	1.8	4.7	0.1	1.7	4.5	1.8	4.7
Peru	Ucayali	31	2.9	6.1	100.0	0.0	0.0	100.0	100.0	32	2.9	6.1	100.0	0.0	0.0	100.0	100.0
Peru tot		4,449	**24.2**	**26.4**	**5.3**	**23.9**	**25.9**	**29.2**	**31.2**	**4,449**	**23.5**	**25.7**	**5.3**	**23.3**	**25.2**	**28.5**	**30.5**
Philippines	Cordillera Administrative region (CAR)	709	6.4	23.4	-0.9	5.5	22.5	5.5	22.5	485	11.0	27.1	-1.3	9.7	25.8	9.7	25.8
Philippines	National Capital region (NCR)	62	1.5	19.2	-0.1	1.4	19.1	1.4	19.1	62	1.4	19.1	-0.1	1.3	19.0	1.3	19.0
Philippines	Region I (Ilocos region)	919	5.1	22.3	-0.5	4.5	21.8	4.5	21.8	909	11.0	27.0	-0.5	10.4	26.5	10.4	26.5
Philippines	Region II (Cagayan Valley)	678	3.6	21.1	-0.8	2.8	20.3	2.8	20.3	653	6.5	23.4	-0.8	5.7	22.6	5.7	22.6
Philippines	Region V (Bicol region)	929	2.2	19.8	-0.9	1.4	19.0	1.4	19.0	879	2.1	19.7	-0.9	1.1	18.8	1.1	18.8
Philippines	Region VI (Western Visayas)	952	1.5	19.3	-0.8	0.7	18.5	0.7	18.5	966	1.5	19.2	-0.8	0.7	18.4	0.7	18.4
Philippines	Region VII (Central Visayas)	794	2.3	19.9	-0.7	1.6	19.2	1.6	19.2	783	3.2	20.7	-0.7	2.5	19.9	2.5	19.9
Philippines	Region VIII (Eastern Visayas)	805	1.5	19.2	-1.5	0.0	17.8	0.0	17.8	808	1.4	19.1	-1.4	0.0	17.7	0.0	17.7
Philippines	Region XIII (Caraga)	451	1.5	19.3	-2.0	0.0	17.3	0.0	17.3	453	1.4	19.2	-2.0	0.0	17.2	0.0	17.2
Philippines	Autonomous region in Muslim Mindanao (ARMM)	656	1.5	19.2	-1.0	0.5	18.3	0.5	18.3	664	1.4	19.1	-1.0	0.4	18.2	0.4	18.2
Philippines	Reg.IX (Zamboan-ga Penins.	542	1.5	19.3	-1.3	0.3	18.0	0.3	18.0	545	1.4	19.2	-1.2	0.2	17.9	0.2	17.9
Philippines	Region X (North. Mindanao)	560	1.6	19.3	-1.4	0.2	18.0	0.2	18.0	559	1.5	19.2	-1.4	0.1	17.9	0.1	17.9
Philippines	Region XI (Davao Region)	459	2.0	19.7	-1.6	0.3	18.0	0.3	18.0	457	2.3	19.9	-1.7	0.7	18.3	0.7	18.3
Philippines	Region XII (Soccsksargen)	522	1.7	19.4	-1.3	0.4	18.1	0.4	18.1	527	1.7	19.4	-1.3	0.4	18.2	0.4	18.2
Philippines	Region III (Central Luzon)	1,421	5.9	23.5	-0.5	5.5	23.1	5.5	23.1	1,501	13.7	29.7	-0.4	13.2	29.3	13.2	29.3
Philippines	Region IV-A (Calabarzon)	1,737	6.4	23.3	-0.4	5.9	22.9	5.9	22.9	1,938	15.8	31.0	-0.4	15.4	30.6	15.4	30.6

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Philippines	Region IV-B (Mimaropa)	368	1.5	19.4	-1.4	0.2	18.0	0.2	18.0	372	1.4	19.2	-1.3	0.1	17.9	0.1	17.9
Philippines tot		12,563	**3.5**	**21.0**	**-0.9**	**2.6**	**20.1**	**2.6**	**20.1**	**12,563**	**6.6**	**23.5**	**-0.9**	**5.8**	**22.6**	**5.8**	**22.6**
Rwanda	Butare	141	3.6	7.1	-2.3	1.3	4.9	1.3	4.9	201	4.0	7.5	-1.6	2.4	5.9	2.4	5.9
Rwanda	Byumba	120	3.6	7.1	-2.3	1.2	4.8	1.2	4.8	246	35.9	38.2	-1.1	34.7	37.1	34.7	37.1
Rwanda	Cyangugu	289	54.8	56.4	-1.0	53.8	55.4	53.8	55.4	468	63.4	64.7	-0.6	62.7	64.1	62.7	64.1
Rwanda	Gikongoro	128	3.6	7.1	-2.3	1.3	4.9	1.3	4.9	173	4.0	7.5	-1.7	2.3	5.9	2.3	5.9
Rwanda	Gisenyi	141	3.6	7.1	-1.8	1.8	5.3	1.8	5.3	188	4.0	7.5	-1.4	2.6	6.2	2.6	6.2
Rwanda	Gitarama	164	3.6	7.1	-2.3	1.3	4.9	1.3	4.9	238	4.0	7.5	-1.6	2.4	6.0	2.4	6.0
Rwanda	Kibungo	975	81.0	81.7	-0.5	80.5	81.2	80.5	81.2	866	71.5	72.6	-0.6	70.9	72.0	70.9	72.0
Rwanda	Kibuye	112	3.6	7.1	-2.2	1.3	4.9	1.3	4.9	156	4.0	7.5	-1.6	2.4	5.9	2.4	5.9
Rwanda	Kigali-ngali	388	49.5	51.4	-1.3	48.3	50.1	48.3	50.1	486	45.6	47.6	-1.0	44.6	46.6	44.6	46.6
Rwanda	Ville De Kigali	8	3.6	7.1	-2.0	1.6	5.1	1.6	5.1	10	4.0	7.5	-1.5	2.5	6.0	2.5	6.0
Rwanda	Ruhengeri	119	3.6	7.1	-2.2	1.4	4.9	1.4	4.9	169	4.0	7.5	-1.6	2.4	6.0	2.4	6.0
Rwanda	Umutara	1,728	92.6	92.9	-0.3	92.4	92.6	92.4	92.6	1,110	84.8	85.4	-0.4	84.4	85.0	84.4	85.0
Rwanda tot		4,313	**64.3**	**65.6**	**-0.9**	**63.4**	**64.7**	**63.4**	**64.7**	**4,313**	**51.3**	**53.1**	**-0.9**	**50.4**	**52.2**	**50.4**	**52.2**
Senegal	Dakar	19	3.0	26.4	1.0	2.0	25.4	3.0	26.4	20	3.2	26.6	0.9	2.2	25.7	3.2	26.6
Senegal	Kaolack	368	4.2	27.5	1.5	2.7	26.0	4.2	27.5	390	3.8	27.3	1.4	2.5	25.9	3.8	27.3
Senegal	Kolda	1,807	20.4	39.7	8.2	12.2	31.5	20.4	39.7	1,777	10.4	32.2	8.4	2.0	23.8	10.4	32.2
Senegal	Tambacounda	1,357	23.7	48.8	7.2	16.4	41.6	23.7	48.8	1,302	13.2	41.7	7.5	5.6	34.1	13.2	41.7
Senegal	Thies	175	3.0	26.4	3.0	0.0	23.4	3.0	26.4	188	3.2	26.6	2.8	0.4	23.8	3.2	26.6
Senegal	Ziguinchor	566	19.7	39.5	31.8	0.0	7.7	31.8	39.5	578	10.2	32.4	31.2	0.0	1.2	31.2	32.4
Senegal	Diourbel	88	3.0	26.4	0.8	2.2	25.7	3.0	26.4	91	3.2	26.6	0.8	2.4	25.9	3.2	26.6
Senegal	Fatick	205	7.2	30.3	13.0	0.0	17.3	13.0	30.3	215	5.2	28.9	12.3	0.0	16.6	12.3	28.9
Senegal	Louga	242	4.2	29.0	10.3	0.0	18.7	10.3	29.0	248	4.0	28.9	10.1	0.0	18.9	10.1	28.9
Senegal	Matam	190	6.6	31.8	15.0	0.0	16.9	15.0	31.8	199	5.4	31.1	14.3	0.0	16.8	14.3	31.1
Senegal	Saint-Louis	224	3.1	26.8	8.6	0.0	18.2	8.6	26.8	231	3.3	27.0	8.4	0.0	18.6	8.4	27.0
Senegal tot		5,239	**16.6**	**38.8**	**10.3**	**8.7**	**28.5**	**19.0**	**38.8**	**5,239**	**9.1**	**33.3**	**10.3**	**2.3**	**23.0**	**12.6**	**33.3**
Sierra Leone	Eastern	698	0.0	25.0	13.2	0.0	11.7	13.2	25.0	698	0.0	24.8	13.2	0.0	11.5	13.2	24.8
Sierra Leone	Northern	1,407	0.0	21.9	10.1	0.0	11.8	10.1	21.9	1,406	0.0	21.6	10.1	0.0	11.5	10.1	21.6
Sierra Leone	Southern	1,028	0.0	19.7	7.7	0.0	12.0	7.7	19.7	1,027	0.0	19.2	7.7	0.0	11.5	7.7	19.2
Sierra Leone	Western Area	132	1.7	26.8	1.7	0.0	25.1	1.7	26.8	132	1.6	26.7	1.7	0.0	25.0	1.7	26.7
Sierra Leone tot		3,264	**0.1**	**22.1**	**9.7**	**0.0**	**12.4**	**9.7**	**22.1**	**3,264**	**0.1**	**21.7**	**9.7**		**12.0**	**9.7**	**21.7**
Singapore	Ang Mo Kio-cheng San	2	5.0	30.0	0.0	5.0	30.0	5.0	30.0	2	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Bukit Timah	3	5.0	30.0	0.0	5.0	30.0	5.0	30.0	3	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Central Singapore	2	5.0	30.0	0.0	5.0	30.0	5.0	30.0	2	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Hougang	0	5.0	30.0	0.0	5.0	30.0	5.0	30.0	0	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Marine Parade	3	5.0	30.1	0.0	5.0	30.1	5.0	30.1	3	5.0	30.1	0.0	5.0	30.1	5.0	30.1
Singapore	Northeast	1	5.0	30.0	0.0	5.0	30.0	5.0	30.0	1	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Potong Pasir	0	5.0	30.0	0.0	5.0	30.0	5.0	30.0	0	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore	Sembawang-hong Kah	52	81.2	86.1	0.0	81.2	86.1	81.2	86.1	52	80.9	86.0	0.0	80.9	86.0	80.9	86.0
Singapore	Tanjong Pagar	1	5.0	30.0	0.0	5.0	30.0	5.0	30.0	1	5.0	30.0	0.0	5.0	30.0	5.0	30.0
Singapore tot		64	**66.8**	**75.6**	**0.0**	**66.8**	**75.6**	**66.8**	**75.6**	**64**	**66.6**	**75.4**	**0.0**	**66.6**	**75.4**	**66.6**	**75.4**
Solomon Isl.	not available	73	0.0	0.0	100.0	0.0	0.0	100.0	100.0	73	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Solomon Isl. tot		73			**100.0**			**100.0**	**100.0**	**73**			**100.0**			**100.0**	**100.0**
Somalia	Awdal	88	5.6	33.2	1.1	4.6	32.1	5.6	33.2	88	5.6	33.2	1.1	4.6	32.1	5.6	33.2
Somalia	Bakool	197	18.7	48.2	13.4	5.3	34.8	18.7	48.2	197	18.7	48.2	13.4	5.3	34.8	18.7	48.2
Somalia	Bari	194	8.5	44.6	0.9	7.6	43.7	8.5	44.6	194	8.5	44.6	0.9	7.6	43.7	8.5	44.6
Somalia	Bay	1,325	33.3	57.5	7.8	25.5	49.8	33.3	57.5	1,325	33.2	57.5	7.8	25.5	49.7	33.2	57.5
Somalia	Banadir	93	4.8	29.8	0.1	4.7	29.7	4.8	29.8	93	4.8	29.8	0.1	4.7	29.7	4.8	29.8
Somalia	Galgaduud	254	8.2	43.0	4.5	3.7	38.5	8.2	43.0	254	8.2	43.0	4.5	3.7	38.5	8.2	43.0
Somalia	Gedo	224	8.4	43.3	5.9	2.4	37.4	8.4	43.3	224	8.4	43.3	5.9	2.4	37.4	8.4	43.3
Somalia	Hiraan	198	8.1	42.2	13.0	0.0	29.2	13.0	42.2	198	8.1	42.2	13.0	0.0	29.2	13.0	42.2
Somalia	Juba Hoose	1,766	41.8	66.8	6.6	35.2	60.2	41.8	66.8	1,766	41.7	66.8	6.6	35.1	60.2	41.7	66.8
Somalia	Shabelle Hoose	750	28.3	51.8	8.9	19.4	42.9	28.3	51.8	750	28.3	51.7	8.9	19.3	42.8	28.3	51.7

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Somalia	Juba Dhexe	508	33.0	55.4	7.2	25.8	48.2	33.0	55.4	508	33.0	55.4	7.2	25.8	48.2	33.0	55.4
Somalia	Shabelle Dhexe	284	8.9	34.3	3.8	5.1	30.5	8.9	34.3	284	8.9	34.3	3.8	5.1	30.5	8.9	34.3
Somalia	Mudug	285	7.5	40.7	7.3	0.2	33.4	7.5	40.7	285	7.5	40.7	7.3	0.2	33.4	7.5	40.7
Somalia	Nugaal	69	9.4	48.2	2.5	6.8	45.7	9.4	48.2	69	9.4	48.2	2.5	6.8	45.7	9.4	48.2
Somalia	Sanaag	192	8.7	42.7	0.9	7.8	41.8	8.7	42.7	192	8.7	42.7	0.9	7.8	41.8	8.7	42.7
Somalia	Sool	107	7.4	40.3	0.9	6.5	39.4	7.4	40.3	107	7.4	40.3	0.9	6.5	39.4	7.4	40.3
Somalia	Togdheer	282	6.5	35.3	3.3	3.2	32.0	6.5	35.3	282	6.5	35.3	3.3	3.2	32.0	6.5	35.3
Somalia	Woqooyi Galbeed	203	5.7	33.5	2.5	3.2	31.0	5.7	33.5	203	5.7	33.5	2.5	3.2	31.0	5.7	33.5
Somalia tot		7,019	**25.4**	**52.4**	**6.5**	**19.1**	**46.0**	**25.6**	**52.4**	**7,019**	**25.4**	**52.4**	**6.5**	**19.1**	**45.9**	**25.5**	**52.4**
South Africa	Eastern Cape	3,789	0.0	18.5	0.0	0.0	18.5	0.0	18.5	3,467	0.0	16.3	0.0	0.0	16.3	0.0	16.3
South Africa	Free State	2,244	5.8	28.6	0.0	5.8	28.6	5.8	28.6	2,457	4.5	27.5	0.0	4.5	27.5	4.5	27.5
South Africa	Gauteng	669	2.5	21.8	0.0	2.5	21.8	2.5	21.8	778	2.1	21.5	0.0	2.1	21.5	2.1	21.5
South Africa	Kwazulu-natal	5,313	3.7	22.4	0.0	3.7	22.4	3.7	22.4	5,428	1.6	20.5	0.0	1.6	20.5	1.6	20.5
South Africa	Mpumalanga	4,279	10.5	30.9	0.0	10.5	30.9	10.5	30.9	4,070	6.6	26.9	0.0	6.6	26.9	6.6	26.9
South Africa	North-west	2,540	4.5	24.8	0.0	4.5	24.8	4.5	24.8	2,636	2.7	23.3	0.0	2.7	23.3	2.7	23.3
South Africa	Northern Cape	555	1.5	27.8	0.0	1.5	27.8	1.5	27.8	498	0.0	25.9	0.0	0.0	25.9	0.0	25.9
South Africa	Northern Province	3,462	5.0	26.6	0.0	5.0	26.6	5.0	26.6	3,533	2.8	24.8	0.0	2.8	24.8	2.8	24.8
South Africa	Western Cape	1,060	0.0	21.3	0.0	0.0	21.3	0.0	21.3	1,045	0.0	20.0	0.0	0.0	20.0	0.0	20.0
South Africa tot		23,911	**4.6**	**24.8**	**0.0**	**4.6**	**24.8**	**4.6**	**24.8**	**23,911**	**2.7**	**22.8**	**0.0**	**2.7**	**22.8**	**2.7**	**22.8**
Sri Lanka	Central	892	0.0	22.1	2.0	0.0	20.2	2.0	22.1	1,008	4.7	27.1	1.7	3.0	25.3	4.7	27.1
Sri Lanka	Eastern	466	0.0	23.3	1.9	0.0	21.4	1.9	23.3	362	4.1	26.7	2.5	1.7	24.2	4.1	26.7
Sri Lanka	North Central	834	0.0	19.9	1.6	0.0	18.3	1.6	19.9	615	4.8	27.3	2.1	2.7	25.1	4.8	27.3
Sri Lanka	North Western	1,052	0.0	22.0	1.5	0.0	20.5	1.5	22.0	1,205	4.8	27.1	1.3	3.5	25.8	4.8	27.1
Sri Lanka	Northern	475	0.0	22.2	2.7	0.0	19.6	2.7	22.2	276	4.0	26.7	4.6	0.0	22.1	4.6	26.7
Sri Lanka	Sabaragamuwa	897	0.0	21.3	2.0	0.0	19.4	2.0	21.3	1,054	4.9	27.2	1.7	3.2	25.5	4.9	27.2
Sri Lanka	Southern	788	0.0	22.7	1.2	0.0	21.6	1.2	22.7	862	4.6	27.0	1.1	3.5	25.9	4.6	27.0
Sri Lanka	Uva	747	0.0	20.8	1.8	0.0	19.0	1.8	20.8	655	4.7	27.1	2.0	2.7	25.0	4.7	27.1
Sri Lanka	Western	678	0.0	23.3	1.8	0.0	21.5	1.8	23.3	793	4.6	27.0	1.5	3.1	25.4	4.6	27.0
Sri Lanka tot		6,831		**21.8**	**1.7**		**20.1**	**1.7**	**21.8**	**6,831**	**4.7**	**27.0**	**1.7**	**2.9**	**25.3**	**4.7**	**27.0**
Sudan	Al Jazeera	465	3.3	23.0	0.1	3.2	22.9	3.3	23.0	488	3.3	23.0	0.1	3.2	22.9	3.3	23.0
Sudan	El Buheyrat	325	3.4	23.3	2.9	0.4	20.4	3.4	23.3	326	3.4	23.3	2.9	0.4	20.4	3.4	23.3
Sudan	Unity	329	26.7	45.6	1.0	25.8	44.7	26.7	45.6	248	20.8	41.4	1.3	19.5	40.1	20.8	41.4
Sudan	Central Equatoria	444	19.2	38.3	3.1	16.1	35.2	19.2	38.3	343	10.8	30.9	4.0	6.7	26.9	10.8	30.9
Sudan	Blue Nile	521	20.2	37.8	3.0	17.2	34.8	20.2	37.8	622	25.5	42.0	2.5	22.9	39.4	25.5	42.0
Sudan	Eastern Equatoria	247	5.9	31.9	2.6	3.3	29.3	5.9	31.9	247	5.9	31.9	2.6	3.3	29.3	5.9	31.9
Sudan	Jonglei	1,202	35.1	52.2	0.5	34.6	51.7	35.1	52.2	849	31.2	49.2	0.7	30.5	48.5	31.2	49.2
Sudan	Khartoum	250	3.7	24.3	0.0	3.6	24.3	3.7	24.3	258	3.7	24.3	0.0	3.6	24.2	3.7	24.3
Sudan	Northern Bahr El Ghazal	628	39.3	55.8	0.4	38.8	55.3	39.3	55.8	146	10.4	33.2	1.9	8.5	31.3	10.4	33.2
Sudan	Northern	63	4.5	27.2	0.0	4.5	27.2	4.5	27.2	66	4.5	27.1	0.0	4.5	27.1	4.5	27.1
Sudan	Northern Darfur	574	4.1	25.7	0.2	3.8	25.5	4.1	25.7	578	4.1	25.7	0.2	3.8	25.4	4.1	25.7
Sudan	Nile	148	4.9	28.5	0.1	4.8	28.5	4.9	28.5	156	4.8	28.3	0.1	4.8	28.2	4.8	28.3
Sudan	Sennar	970	26.8	44.4	0.7	26.2	43.7	26.8	44.4	1,246	31.8	48.3	0.5	31.2	47.8	31.8	48.3
Sudan	Southern Darfur	1,195	4.4	24.9	0.7	3.6	24.2	4.4	24.9	1,216	4.5	25.0	0.7	3.8	24.3	4.5	25.0
Sudan	Warab	848	20.9	37.4	0.5	20.4	36.9	20.9	37.4	617	11.0	29.5	0.7	10.2	28.7	11.0	29.5
Sudan	Western Bahr El Ghazal	562	40.3	57.1	0.4	39.9	56.7	40.3	57.1	316	35.3	52.8	0.7	34.6	52.1	35.3	52.8
Sudan	Western Equatoria	175	6.1	32.6	9.3	0.0	23.4	9.3	32.6	175	6.1	32.6	9.3	0.0	23.4	9.3	32.6
Sudan	Western Darfur	693	3.3	23.2	0.6	2.7	22.6	3.3	23.2	721	3.3	23.1	0.6	2.8	22.6	3.3	23.1
Sudan	White Nile	693	9.6	28.7	0.4	9.2	28.4	9.6	28.7	764	12.2	30.9	0.3	11.9	30.6	12.2	30.9
Sudan	Upper Nile	1,522	41.2	58.5	0.9	40.3	57.5	41.2	58.5	1,529	43.2	60.3	0.9	42.2	59.4	43.2	60.3
Sudan	Red Sea	124	8.4	32.4	0.2	8.2	32.3	8.4	32.4	137	10.7	33.8	0.1	10.5	33.7	10.7	33.8
Sudan	Kassala	510	10.8	29.7	0.3	10.5	29.3	10.8	29.7	584	14.2	32.3	0.3	13.9	32.0	14.2	32.3
Sudan	Northern Kordofan	1,078	6.8	27.4	0.3	6.5	27.1	6.8	27.4	1,119	8.0	28.4	0.3	7.7	28.1	8.0	28.4
Sudan	Southern Kordofan	3,149	36.5	53.1	0.8	35.7	52.3	36.5	53.1	3,557	39.2	54.9	0.7	38.5	54.2	39.2	54.9

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Sudan	Gadaref	1,121	26.0	41.4	0.8	25.2	40.6	26.0	41.4	1,528	32.5	46.6	0.6	31.9	46.0	32.5	46.6
Sudan tot		17,836	**22.7**	**41.0**	**0.9**	**21.9**	**40.2**	**22.7**	**41.0**	**17,836**	**23.0**	**41.1**	**0.9**	**22.2**	**40.2**	**23.1**	**41.1**
Suriname	Brokopondo	6	0.0	15.0	61.8	0.0	0.0	61.8	61.8	6	0.0	15.1	61.8	0.0	0.0	61.8	61.8
Suriname	Commewijne	9	0.0	10.9	3.2	0.0	7.6	3.2	10.9	9	0.0	10.3	3.2	0.0	7.1	3.2	10.3
Suriname	Coronie	3	0.0	18.9	0.6	0.0	18.3	0.6	18.9	3	0.0	19.0	0.6	0.0	18.4	0.6	19.0
Suriname	Marowijne	9	0.0	13.7	2.2	0.0	11.5	2.2	13.7	9	0.0	13.8	2.2	0.0	11.6	2.2	13.8
Suriname	Nickerie	18	0.0	14.0	1.8	0.0	12.2	1.8	14.0	18	0.0	14.1	1.8	0.0	12.3	1.8	14.1
Suriname	Para	12	0.0	14.4	42.6	0.0	0.0	42.6	42.6	12	0.0	14.3	42.7	0.0	0.0	42.7	42.7
Suriname	Paramaribo	10	0.0	7.6	0.5	0.0	7.1	0.5	7.6	10	0.0	7.4	0.5	0.0	6.9	0.5	7.4
Suriname	Saramacca	10	0.0	15.2	2.6	0.0	12.6	2.6	15.2	10	0.0	15.0	2.6	0.0	12.5	2.6	15.0
Suriname	Sipaliwini	18	0.0	26.1	4.7	0.0	21.4	4.7	26.1	18	0.0	26.2	4.7	0.0	21.5	4.7	26.2
Suriname	Wanica	24	0.0	0.0	1.7	0.0	0.0	1.7	1.7	24	0.0	0.0	1.7	0.0	0.0	1.7	1.7
Suriname tot		121		**12.5**	**9.5**		**8.6**	**9.5**	**18.1**	**121**		**12.5**	**9.5**		**8.6**	**9.5**	**18.1**
Swaziland	Hhohho	143	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	152	0.0	12.8	-0.4	0.0	12.4	0.0	12.4
Swaziland	Lubombo	170	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	145	0.0	15.9	-0.6	0.0	15.3	0.0	15.3
Swaziland	Manzini	161	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	179	0.0	9.8	-0.4	0.0	9.4	0.0	9.4
Swaziland	Shiselweni	161	0.0	5.8	-0.4	0.0	5.4	0.0	5.4	158	0.0	16.6	-0.4	0.0	16.2	0.0	16.2
Swaziland tot		634		**1.5**	**-0.5**		**1.4**		**1.4**	**634**		**13.6**	**-0.5**		**13.1**		**13.1**
Thailand	Amnat Charoen	90	0.5	4.0	-0.1	0.4	3.9	0.4	3.9	87	0.8	4.3	-0.1	0.7	4.2	0.7	4.2
Thailand	Ang Thong	45	0.5	3.9	0.0	0.4	3.9	0.4	3.9	48	0.7	4.2	0.0	0.7	4.2	0.7	4.2
Thailand	Bangkok	120	0.5	4.0	0.0	0.4	3.9	0.4	3.9	152	0.6	4.1	0.0	0.5	4.0	0.5	4.0
Thailand	Buriram	402	0.7	4.2	0.0	0.7	4.2	0.7	4.2	410	0.0	2.2	0.0	0.0	2.1	0.0	2.1
Thailand	Chachoengsao	278	1.4	4.9	0.0	1.4	4.8	1.4	4.8	316	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Chainat	146	1.2	4.7	0.0	1.2	4.7	1.2	4.7	155	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Chaiyaphum	542	1.5	4.9	0.0	1.4	4.9	1.4	4.9	535	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Chanthaburi	460	2.1	5.7	-0.1	2.0	5.6	2.0	5.6	492	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Chiang Mai	478	2.1	5.8	-0.1	2.0	5.7	2.0	5.7	430	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Chiang Rai	403	1.6	5.2	-0.2	1.4	5.1	1.4	5.1	351	0.0	1.2	-0.2	0.0	1.0	0.0	1.0
Thailand	Chonburi	308	1.2	4.7	0.0	1.2	4.7	1.2	4.7	366	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Chumphon	485	2.6	6.3	0.0	2.5	6.2	2.5	6.2	579	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Kalasin	337	1.2	4.6	0.0	1.1	4.6	1.1	4.6	285	0.0	1.2	0.0	0.0	1.2	0.0	1.2
Thailand	Kampaeng Phet	472	1.8	5.2	0.0	1.7	5.2	1.7	5.2	539	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Kanchanaburi	492	1.9	5.4	0.0	1.9	5.4	1.9	5.4	539	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Khon Kaen	563	1.2	4.7	0.0	1.1	4.6	1.1	4.6	562	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Krabi	89	0.5	4.0	-0.4	0.1	3.6	0.1	3.6	96	0.8	4.3	-0.3	0.5	4.0	0.5	4.0
Thailand	Lampang	929	3.5	7.6	-0.1	3.4	7.4	3.4	7.4	691	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Thailand	Lamphun	347	2.4	6.1	-0.1	2.4	6.1	2.4	6.1	324	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Loei	330	1.6	5.1	-0.1	1.5	5.0	1.5	5.0	260	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Lopburi	407	1.6	5.1	0.0	1.6	5.0	1.6	5.0	506	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Mae Hong Son	51	1.4	5.3	-0.2	1.2	5.1	1.2	5.1	52	1.7	5.6	-0.2	1.5	5.4	1.5	5.4
Thailand	Maha Sarakham	230	0.6	4.1	0.0	0.5	4.0	0.5	4.0	237	0.0	3.2	0.0	0.0	3.1	0.0	3.1
Thailand	Mukdahan	96	1.3	4.9	-0.1	1.3	4.8	1.3	4.8	63	0.0	3.4	-0.1	0.0	3.3	0.0	3.3
Thailand	Nakhon Nayok	79	1.3	4.8	0.0	1.3	4.8	1.3	4.8	99	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Nakhon Pathom	122	0.6	4.1	0.0	0.6	4.0	0.6	4.0	144	0.0	2.7	0.0	0.0	2.7	0.0	2.7
Thailand	Nakhon Phanom	216	0.6	4.0	-0.1	0.5	4.0	0.5	4.0	210	0.7	4.2	-0.1	0.6	4.1	0.6	4.1
Thailand	Nakhon Ratchasima	1,116	1.7	5.2	0.0	1.6	5.1	1.6	5.1	1,173	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Nakhon Sawan	493	1.4	4.8	-0.1	1.3	4.7	1.3	4.7	601	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Nakhon Si Thammarat	361	1.0	4.4	-0.7	0.3	3.7	0.3	3.7	327	0.0	3.6	-0.8	0.0	2.8	0.0	2.8
Thailand	Nan	121	0.9	4.5	-1.0	0.0	3.5	0.0	3.5	116	1.1	4.7	-1.1	0.0	3.6	0.0	3.6
Thailand	Narathiwat	118	0.5	4.0	-1.0	0.0	3.1	0.0	3.1	127	0.6	4.1	-0.9	0.0	3.2	0.0	3.2
Thailand	Nong Bua Lamphu	330	1.7	5.2	0.0	1.7	5.2	1.7	5.2	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Nong Khai	333	0.9	4.4	0.0	0.9	4.4	0.9	4.4	307	0.0	1.8	0.0	0.0	1.8	0.0	1.8
Thailand	Nonthaburi	47	0.4	3.9	0.0	0.4	3.9	0.4	3.9	54	0.7	4.2	0.0	0.7	4.2	0.7	4.2
Thailand	Pathum Thani	96	0.8	4.3	0.0	0.8	4.2	0.8	4.2	113	0.0	1.8	0.0	0.0	1.8	0.0	1.8
Thailand	Pattani	93	0.5	4.0	-0.1	0.4	3.9	0.4	3.9	107	0.1	3.6	-0.1	0.0	3.5	0.0	3.5

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Thailand	Phachinburi	190	1.4	4.9	0.0	1.4	4.8	1.4	4.8	242	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Phangnga	65	0.5	4.0	-0.2	0.3	3.8	0.3	3.8	66	0.8	4.4	-0.2	0.6	4.1	0.6	4.1
Thailand	Phatthalung	112	0.5	4.0	-0.1	0.3	3.8	0.3	3.8	123	0.8	4.3	-0.1	0.7	4.2	0.7	4.2
Thailand	Phayao	162	1.2	4.7	-0.1	1.1	4.7	1.1	4.7	130	0.7	4.2	-0.1	0.6	4.2	0.6	4.2
Thailand	Phetchabun	600	1.8	5.3	0.0	1.8	5.3	1.8	5.3	717	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Phetchaburi	275	2.3	6.0	0.0	2.3	6.0	2.3	6.0	344	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Phichit	238	1.2	4.7	0.0	1.2	4.6	1.2	4.6	283	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Phitsanulok	549	1.9	5.3	-0.2	1.7	5.2	1.7	5.2	463	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Thailand	Phra Nakhon Si Ayudhya	123	0.8	4.2	0.0	0.7	4.2	0.7	4.2	158	0.0	1.6	0.0	0.0	1.6	0.0	1.6
Thailand	Phrae	426	3.1	7.1	-0.1	3.0	7.0	3.0	7.0	232	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Thailand	Phuket	40	0.5	4.0	0.0	0.5	4.0	0.5	4.0	48	0.2	3.7	0.0	0.2	3.7	0.2	3.7
Thailand	Prachuap Khilikhan	280	2.4	6.1	-0.3	2.1	5.8	2.1	5.8	387	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Thailand	Ranong	64	2.3	6.2	-0.1	2.3	6.1	2.3	6.1	58	0.0	0.2	-0.1	0.0	0.1	0.0	0.1
Thailand	Ratchaburi	351	2.3	6.0	-0.1	2.1	5.8	2.1	5.8	402	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Rayong	420	2.4	6.0	0.0	2.3	6.0	2.3	6.0	576	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Roi Et	344	0.8	4.3	0.0	0.8	4.3	0.8	4.3	313	0.0	3.1	0.0	0.0	3.1	0.0	3.1
Thailand	Sa Kaeo	200	1.3	4.8	-0.1	1.3	4.7	1.3	4.7	139	0.0	2.1	-0.1	0.0	2.1	0.0	2.1
Thailand	Sakon Nakhon	422	1.2	4.7	0.0	1.2	4.7	1.2	4.7	306	0.0	2.3	-0.1	0.0	2.2	0.0	2.2
Thailand	Samut Prakarn	91	0.4	3.9	0.0	0.4	3.9	0.4	3.9	109	0.7	4.2	0.0	0.7	4.2	0.7	4.2
Thailand	Samut Sakhon	68	0.9	4.4	0.0	0.9	4.4	0.9	4.4	83	0.0	1.0	0.0	0.0	1.0	0.0	1.0
Thailand	Samut Songkham	54	1.1	4.6	0.0	1.1	4.6	1.1	4.6	56	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Saraburi	265	1.8	5.4	0.0	1.8	5.4	1.8	5.4	342	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Satun	61	0.5	4.0	-0.1	0.4	3.9	0.4	3.9	70	0.8	4.3	-0.1	0.7	4.2	0.7	4.2
Thailand	Si Saket	315	0.5	4.0	0.0	0.4	3.9	0.4	3.9	316	0.7	4.2	0.0	0.7	4.2	0.7	4.2
Thailand	Singburi	41	0.4	3.9	0.0	0.4	3.9	0.4	3.9	43	0.7	4.2	0.0	0.7	4.2	0.7	4.2
Thailand	Songkhla	200	0.7	4.2	-0.1	0.7	4.2	0.7	4.2	216	0.1	3.7	-0.1	0.1	3.6	0.1	3.6
Thailand	Sukhothai	421	2.3	6.0	-0.1	2.2	5.9	2.2	5.9	376	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Suphanburi	220	0.8	4.3	0.0	0.8	4.3	0.8	4.3	231	0.0	1.1	0.0	0.0	1.1	0.0	1.1
Thailand	Surat Thani	537	1.9	5.4	-0.4	1.4	4.9	1.4	4.9	435	0.0	0.0	-0.5	0.0	0.0	0.0	0.0
Thailand	Surin	337	0.6	4.1	0.0	0.6	4.1	0.6	4.1	336	0.0	3.3	0.0	0.0	3.3	0.0	3.3
Thailand	Tak	414	2.0	5.6	-0.2	1.9	5.4	1.9	5.4	465	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Thailand	Trad	188	1.8	5.3	-0.1	1.7	5.2	1.7	5.2	64	0.8	4.3	-0.2	0.7	4.2	0.7	4.2
Thailand	Trang	223	1.5	5.0	-0.1	1.5	4.9	1.5	4.9	200	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Ubon Ratchathani	418	0.6	4.1	-0.1	0.6	4.1	0.6	4.1	403	0.0	3.5	-0.1	0.0	3.4	0.0	3.4
Thailand	Udon Thani	768	1.7	5.2	-0.1	1.6	5.1	1.6	5.1	649	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Thailand	Uthai Thani	215	1.7	5.1	0.0	1.6	5.1	1.6	5.1	226	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Uttaradit	392	2.8	6.6	0.0	2.7	6.6	2.7	6.6	320	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thailand	Yala	74	0.6	4.1	-0.2	0.4	3.9	0.4	3.9	82	0.9	4.4	-0.1	0.7	4.3	0.7	4.3
Thailand	Yasothon	137	0.5	4.0	0.0	0.4	3.9	0.4	3.9	134	0.8	4.3	0.0	0.7	4.2	0.7	4.2
Thailand tot		21,924	**1.6**	**5.2**	**-0.1**	**1.5**	**5.1**	**1.5**	**5.1**	**21,924**	**0.1**	**0.9**	**-0.1**	**0.1**	**0.9**	**0.1**	**0.9**
Timor-Leste	Aileu	7	5.0	28.6	100.0	0.0	0.0	100.0	100.0	7	5.0	28.6	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Ainaro	5	5.0	28.6	100.0	0.0	0.0	100.0	100.0	5	5.0	28.6	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Baucau	5	5.1	29.0	100.0	0.0	0.0	100.0	100.0	5	5.1	29.0	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Bobonaro	13	5.0	28.6	100.0	0.0	0.0	100.0	100.0	13	5.0	28.6	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Cova Lima	8	5.1	28.8	100.0	0.0	0.0	100.0	100.0	8	5.1	28.8	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Dili	4	5.0	28.6	100.0	0.0	0.0	100.0	100.0	4	5.0	28.6	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Ermera	5	5.0	28.6	100.0	0.0	0.0	100.0	100.0	5	5.0	28.6	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Lautem	7	5.1	28.9	100.0	0.0	0.0	100.0	100.0	7	5.1	28.9	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Liquica	2	5.2	29.2	100.0	0.0	0.0	100.0	100.0	2	5.2	29.2	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Manatuto	15	0.0	16.7	100.0	0.0	0.0	100.0	100.0	15	0.0	13.7	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Manufahi	5	5.1	29.0	100.0	0.0	0.0	100.0	100.0	5	5.1	29.0	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Oecussi	10	0.0	1.2	100.0	0.0	0.0	100.0	100.0	10	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Timor-Leste	Viqueque	8	5.1	28.9	100.0	0.0	0.0	100.0	100.0	8	5.1	28.9	100.0	0.0	0.0	100.0	100.0
Timor-Leste tot		95	**3.7**	**24.0**	**100.0**			**100.0**	**100.0**	**95**	**3.7**	**23.4**	**100.0**			**100.0**	**100.0**

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Togo	Centrale	738	38.0	51.8	10.6	27.3	41.2	38.0	51.8	727	34.8	49.4	10.8	24.0	38.6	34.8	49.4
Togo	Kara	477	20.1	37.9	5.2	14.9	32.7	20.1	37.9	475	18.4	36.6	5.2	13.3	31.5	18.4	36.6
Togo	Maritime	608	17.2	35.7	11.0	6.2	24.7	17.2	35.7	624	16.3	35.0	10.7	5.6	24.3	16.3	35.0
Togo	Plateaux	1,721	34.6	49.2	11.6	23.0	37.6	34.6	49.2	1,710	31.9	47.1	11.7	20.2	35.4	31.9	47.1
Togo	Savanes	234	9.3	29.6	5.4	3.9	24.1	9.3	29.6	243	9.5	29.7	5.2	4.2	24.4	9.5	29.7
Togo tot		3,778	**29.1**	**44.9**	**10.1**	**18.9**	**34.8**	**29.1**	**44.9**	**3,778**	**26.8**	**43.1**	**10.1**	**16.6**	**33.0**	**26.8**	**43.1**
Trinidad & Tobago	Arima	1	0.0	2.1	3.4	0.0	0.0	3.4	3.4	1	0.0	2.4	3.4	0.0	0.0	3.4	3.4
Trinidad & Tobago	Chaguanas	2	0.0	2.1	4.5	0.0	0.0	4.5	4.5	2	0.0	2.4	4.5	0.0	0.0	4.5	4.5
Trinidad & Tobago	Couva/Tabaquite/Talparo	7	0.0	0.0	71.5	0.0	0.0	71.5	71.5	7	0.0	0.0	72.0	0.0	0.0	72.0	72.0
Trinidad & Tobago	Diego Martin	4	0.0	2.1	18.8	0.0	0.0	18.8	18.8	4	0.0	2.4	18.8	0.0	0.0	18.8	18.8
Trinidad & Tobago	Penal/Debe	3	0.0	0.0	28.6	0.0	0.0	28.6	28.6	3	0.0	0.0	28.2	0.0	0.0	28.2	28.2
Trinidad & Tobago	Point Fortin	0	0.0	2.1	42.2	0.0	0.0	42.2	42.2	0	0.0	2.4	42.2	0.0	0.0	42.2	42.2
Trinidad & Tobago	Port Of Spain	1	0.0	2.1	0.1	0.0	1.9	0.1	2.1	1	0.0	2.4	0.1	0.0	2.3	0.1	2.4
Trinidad & Tobago	Princes Town	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Trinidad & Tobago	Rio Claro/Mayaro	1	0.0	2.1	100.0	0.0	0.0	100.0	100.0	1	0.0	2.4	100.0	0.0	0.0	100.0	100.0
Trinidad & Tobago	San Fernando	2	0.0	0.2	0.5	0.0	0.0	0.5	0.5	2	0.0	0.1	0.5	0.0	0.0	0.5	0.5
Trinidad & Tobago	San Juan/Laventille	4	0.0	2.1	27.7	0.0	0.0	27.7	27.7	4	0.0	2.4	27.7	0.0	0.0	27.7	27.7
Trinidad & Tobago	Sangre Grande	2	0.0	2.2	100.0	0.0	0.0	100.0	100.0	2	0.0	2.6	100.0	0.0	0.0	100.0	100.0
Trinidad & Tobago	Siparia	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0	3	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Trinidad & Tobago	Tobago	2	0.0	2.1	100.0	0.0	0.0	100.0	100.0	2	0.0	2.4	100.0	0.0	0.0	100.0	100.0
Trinidad & Tobago	Tunapuna/Piarco	4	0.0	2.1	52.4	0.0	0.0	52.4	52.4	4	0.0	2.5	52.4	0.0	0.0	52.4	52.4
Trinidad & Tobago tot		39	0.0	**1.2**	**55.5**	0.0	**0.1**	**55.5**	**55.6**	**39**	**0.0**	**1.4**	**55.2**	**0.0**	**0.1**	**55.2**	**55.2**
Uganda		Adjumani	100	3.3	27.5	8.9	0.0	18.6	8.9	27.5	101	3.6	27.6	8.8	0.0	18.8	8.8
Uganda	Apac	670	31.1	48.2	6.4	24.7	41.8	31.1	48.2	672	30.8	48.0	6.4	24.4	41.6	30.8	48.0
Uganda	Bugiri	127	11.0	33.2	7.3	3.8	26.0	11.0	33.2	129	11.1	33.3	7.2	4.0	26.1	11.1	33.3
Uganda	Bundibugyo	91	6.2	29.6	15.1	0.0	14.5	15.1	29.6	92	6.7	29.9	14.9	0.0	15.0	14.9	29.9
Uganda	Bushenyi	440	50.3	63.5	7.4	43.0	56.1	50.3	63.5	435	49.6	62.9	7.4	42.1	55.5	49.6	62.9
Uganda	Busia	54	4.3	28.1	7.9	0.0	20.1	7.9	28.1	55	4.7	28.4	7.8	0.0	20.6	7.8	28.4
Uganda	Gulu	1,674	66.7	75.3	3.7	63.0	71.6	66.7	75.3	1,658	66.1	74.8	3.7	62.3	71.1	66.1	74.8
Uganda	Hoima	939	62.8	72.2	9.6	53.2	62.6	62.8	72.2	935	62.2	71.7	9.7	52.5	62.1	62.2	71.7
Uganda	Jinja	108	2.5	26.8	5.0	0.0	21.7	5.0	26.8	109	2.7	27.0	5.0	0.0	22.0	5.0	27.0
Uganda	Kabale	104	1.3	25.9	11.9	0.0	13.9	11.9	25.9	107	1.3	25.9	11.6	0.0	14.3	11.6	25.9
Uganda	Kalangala	66	47.5	60.5	12.4	35.0	48.1	47.5	60.5	66	47.1	60.3	12.5	34.6	47.8	47.1	60.3
Uganda	Kasese	106	17.0	37.8	11.4	5.6	26.4	17.0	37.8	106	16.7	37.6	11.4	5.3	26.2	16.7	37.6
Uganda	Kibaale	1,452	68.2	76.2	8.7	59.6	67.5	68.2	76.2	1,443	67.7	75.7	8.7	59.0	67.0	67.7	75.7
Uganda	Kiboga	766	60.5	70.4	7.3	53.2	63.1	60.5	70.4	770	60.2	70.1	7.3	52.9	62.9	60.2	70.1
Uganda	Kisoro	46	1.3	25.9	16.6	0.0	9.3	16.6	25.9	48	1.6	26.1	16.2	0.0	10.0	16.2	26.1
Uganda	Kumi	182	16.1	37.2	1.8	14.4	35.4	16.1	37.2	183	15.9	37.0	1.7	14.1	35.2	15.9	37.0
Uganda	Masaka	326	20.9	40.8	12.3	8.6	28.5	20.9	40.8	328	20.7	40.6	12.2	8.5	28.4	20.7	40.6
Uganda	Moyo	110	12.0	33.9	7.3	4.7	26.6	12.0	33.9	113	13.3	34.9	7.1	6.2	27.8	13.3	34.9
Uganda	Nebbi	187	9.4	31.9	7.6	1.8	24.3	9.4	31.9	190	10.0	32.4	7.5	2.5	24.9	10.0	32.4
Uganda	Ntungamo	124	3.1	27.2	9.9	0.0	17.3	9.9	27.2	126	3.3	27.4	9.8	0.0	17.6	9.8	27.4
Uganda	Pallisa	176	22.1	41.9	2.4	19.8	39.6	22.1	41.9	176	21.7	41.6	2.4	19.3	39.2	21.7	41.6
Uganda	Rakai	474	42.9	57.2	8.9	34.0	48.3	42.9	57.2	475	42.5	56.9	8.9	33.6	48.0	42.5	56.9
Uganda	Sembabule	315	50.0	62.4	7.8	42.1	54.6	50.0	62.4	315	49.5	62.1	7.8	41.7	54.2	49.5	62.1
Uganda	Iganga	204	11.4	33.4	6.7	4.7	26.7	11.4	33.4	206	11.2	33.3	6.7	4.6	26.7	11.2	33.3
Uganda	Kabarole	107	14.5	35.8	15.1	0.0	20.7	15.1	35.8	108	14.4	35.7	14.9	0.0	20.7	14.9	35.7
Uganda	Kaberamaido	131	30.9	48.1	2.3	28.6	45.8	30.9	48.1	133	31.2	48.3	2.3	28.9	46.1	31.2	48.3
Uganda	Kampala	12	1.3	25.9	3.7	0.0	22.1	3.7	25.9	12	1.3	25.9	3.7	0.0	22.2	3.7	25.9

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Uganda	Kamwenge	209	40.9	55.6	8.6	32.4	47.1	40.9	55.6	211	40.9	55.6	8.5	32.4	47.2	40.9	55.6
Uganda	Kanungu	68	11.0	33.2	14.9	0.0	18.3	14.9	33.2	68	11.2	33.4	14.8	0.0	18.6	14.8	33.4
Uganda	Kayunga	155	25.9	44.3	12.0	13.9	32.4	25.9	44.3	156	25.7	44.2	11.9	13.8	32.3	25.7	44.2
Uganda	Kitgum	1,077	64.0	73.1	4.9	59.0	68.1	64.0	73.1	1,069	63.4	72.6	5.0	58.4	67.6	63.4	72.6
Uganda	Kyenjojo	1,099	63.4	72.5	9.1	54.3	63.4	63.4	72.5	1,099	62.9	72.2	9.1	53.8	63.0	62.9	72.2
Uganda	Masindi	1,059	60.3	70.5	6.6	53.7	63.8	60.3	70.5	1,055	59.8	70.1	6.7	53.1	63.4	59.8	70.1
Uganda	Mayuge	126	31.5	48.7	8.1	23.4	40.6	31.5	48.7	127	31.0	48.4	8.0	23.0	40.3	31.0	48.4
Uganda	Moroto	197	45.1	59.3	10.3	34.8	49.0	45.1	59.3	200	45.3	59.4	10.2	35.1	49.3	45.3	59.4
Uganda	Mpigi	426	39.8	54.8	10.9	28.9	43.9	39.8	54.8	431	39.7	54.8	10.8	28.9	44.0	39.7	54.8
Uganda	Mukono	584	43.4	57.6	11.5	31.9	46.1	43.4	57.6	584	42.9	57.2	11.5	31.4	45.8	42.9	57.2
Uganda	Nakapiripirit	183	38.9	54.5	8.2	30.7	46.3	38.9	54.5	186	39.3	54.9	8.1	31.3	46.8	39.3	54.9
Uganda	Nakasongola	940	70.5	77.9	1.7	68.8	76.2	70.5	77.9	932	70.0	77.5	1.8	68.2	75.7	70.0	77.5
Uganda	Pader	1,111	64.3	73.2	3.3	61.0	69.9	64.3	73.2	1,101	63.7	72.7	3.4	60.3	69.4	63.7	72.7
Uganda	Rukungiri	64	1.3	25.9	10.1	0.0	15.8	10.1	25.9	64	1.3	26.0	10.0	0.0	15.9	10.0	26.0
Uganda	Sironko	104	43.4	58.0	8.3	35.1	49.8	43.4	58.0	104	43.0	57.7	8.2	34.8	49.5	43.0	57.7
Uganda	Soroti	204	14.9	36.2	1.7	13.2	34.5	14.9	36.2	208	15.7	36.8	1.7	14.0	35.1	15.7	36.8
Uganda	Wakiso	239	17.8	38.2	9.3	8.5	29.0	17.8	38.2	241	17.8	38.3	9.2	8.6	29.1	17.8	38.3
Uganda	Yumbe	155	10.7	32.9	6.6	4.1	26.3	10.7	32.9	155	10.6	32.9	6.6	4.1	26.3	10.6	32.9
Uganda	Amolatar	58	4.1	28.2	5.0	0.0	23.2	5.0	28.2	59	4.7	28.7	4.9	0.0	23.8	4.9	28.7
Uganda	Amuria	238	38.4	53.7	2.8	35.6	51.0	38.4	53.7	238	38.1	53.5	2.7	35.4	50.8	38.1	53.5
Uganda	Arua	346	23.8	42.8	6.2	17.7	36.6	23.8	42.8	351	24.1	43.0	6.1	18.0	37.0	24.1	43.0
Uganda	Bukwa	16	1.3	25.9	14.2	0.0	11.6	14.2	25.9	16	1.3	25.9	14.1	0.0	11.8	14.1	25.9
Uganda	Butaleja	54	13.7	35.2	5.0	8.7	30.2	13.7	35.2	54	13.7	35.2	5.0	8.7	30.2	13.7	35.2
Uganda	Ibanda	88	31.0	48.6	5.6	25.4	43.0	31.0	48.6	87	30.3	48.1	5.6	24.7	42.5	30.3	48.1
Uganda	Isingiro	178	14.8	36.1	9.0	5.8	27.1	14.8	36.1	181	15.1	36.3	8.9	6.2	27.4	15.1	36.3
Uganda	Kaabong	602	54.8	66.2	8.4	46.4	57.8	54.8	66.2	600	54.3	65.8	8.5	45.8	57.3	54.3	65.8
Uganda	Kaliro	71	17.3	38.1	3.9	13.4	34.1	17.3	38.1	72	17.4	38.2	3.9	13.5	34.3	17.4	38.2
Uganda	Kamuli	236	14.0	35.4	9.3	4.7	26.1	14.0	35.4	238	14.0	35.5	9.2	4.8	26.3	14.0	35.5
Uganda	Kapchorwa	54	2.1	26.5	8.7	0.0	17.8	8.7	26.5	55	2.1	26.5	8.7	0.0	17.9	8.7	26.5
Uganda	Katakwi	225	45.3	59.0	4.9	40.4	54.1	45.3	59.0	226	45.1	58.8	4.9	40.2	53.9	45.1	58.8
Uganda	Kiruhura	497	53.2	64.9	6.0	47.3	58.9	53.2	64.9	498	52.9	64.6	6.0	46.9	58.7	52.9	64.6
Uganda	Koboko	72	21.0	40.7	8.3	12.7	32.3	21.0	40.7	73	21.3	40.9	8.2	13.1	32.7	21.3	40.9
Uganda	Kotido	333	46.2	59.7	8.5	37.7	51.2	46.2	59.7	331	45.6	59.3	8.5	37.0	50.7	45.6	59.3
Uganda	Lira	575	39.8	54.8	2.8	37.0	52.0	39.8	54.8	574	39.3	54.5	2.8	36.5	51.6	39.3	54.5
Uganda	Luweero	291	37.4	53.0	10.5	26.9	42.5	37.4	53.0	292	37.0	52.7	10.5	26.5	42.2	37.0	52.7
Uganda	Manafwa	43	1.7	26.2	7.9	0.0	18.2	7.9	26.2	44	1.7	26.2	7.9	0.0	18.3	7.9	26.2
Uganda	Mbale	33	3.1	27.3	5.4	0.0	21.9	5.4	27.3	33	3.5	27.6	5.3	0.0	22.3	5.3	27.6
Uganda	Mbarara	108	2.4	26.7	9.8	0.0	16.9	9.8	26.7	110	2.6	26.9	9.7	0.0	17.2	9.7	26.9
Uganda	Mityana	129	6.5	29.8	17.7	0.0	12.1	17.7	29.8	131	6.8	30.0	17.5	0.0	12.5	17.5	30.0
Uganda	Mubende	926	58.8	69.1	8.4	50.4	60.6	58.8	69.1	929	58.4	68.7	8.4	50.0	60.4	58.4	68.7
Uganda	Nakaseke	1,089	70.9	78.1	3.7	67.2	74.4	70.9	78.1	1,080	70.3	77.7	3.8	66.5	73.9	70.3	77.7
Uganda	Tororo	78	1.3	25.9	1.7	0.0	24.2	1.7	25.9	79	1.3	25.9	1.6	0.0	24.3	1.6	25.9
Uganda tot		23,431	**48.6**	**61.5**	**6.9**	**42.1**	**54.6**	**49.0**	**61.5**	**23,431**	**48.1**	**61.1**	**6.9**	**41.5**	**54.2**	**48.5**	**61.1**
Un. Rep. Tanzania	Arusha	719	10.9	14.9	5.0	5.9	9.8	10.9	14.9	719	10.3	14.3	5.0	5.3	9.3	10.3	14.3
Un. Rep. Tanzania	Dar es Salaam	93	11.7	15.2	5.4	6.4	9.8	11.7	15.2	94	11.1	14.6	5.3	5.8	9.3	11.1	14.6
Un. Rep. Tanzania	Dodoma	2,522	16.3	19.6	5.9	10.4	13.7	16.3	19.6	2,516	15.1	18.4	5.9	9.2	12.5	15.1	18.4
Un. Rep. Tanzania	Iringa	2,240	16.0	19.4	49.8	0.0	0.0	49.8	49.8	2,241	14.8	18.2	49.8	0.0	0.0	49.8	49.8
Un. Rep. Tanzania	Kagera	1,337	4.9	8.6	8.7	0.0	0.0	8.7	8.7	1,349	4.9	8.6	8.6	0.0	0.0	8.6	8.6
Un. Rep. Tanzania	Kigoma	979	4.1	7.9	14.3	0.0	0.0	14.3	14.3	983	4.1	7.9	14.2	0.0	0.0	14.2	14.2
Un. Rep. Tanzania	Kilimanjaro	480	6.5	10.2	6.7	0.0	3.5	6.7	10.2	485	6.3	10.0	6.6	0.0	3.4	6.6	10.0
Un. Rep. Tanzania	Lindi	1,709	18.6	22.0	9.5	9.1	12.5	18.6	22.0	1,704	17.2	20.7	9.5	7.7	11.1	17.2	20.7
Un. Rep. Tanzania	Manyara	3,139	23.4	27.4	6.6	16.8	20.8	23.4	27.4	3,114	21.7	25.8	6.7	15.0	19.1	21.7	25.8

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Un. Rep. Tanzania	Mara	947	10.9	14.5	6.0	5.0	8.6	10.9	14.5	952	10.2	13.9	5.9	4.3	7.9	10.2	13.9
Un. Rep. Tanzania	Mbeya	1,703	11.6	15.4	8.0	3.6	7.4	11.6	15.4	1,709	10.9	14.7	8.0	2.9	6.7	10.9	14.7
Un. Rep. Tanzania	Morogoro	2,007	15.5	19.0	68.9	0.0	0.0	68.9	68.9	2,005	14.4	17.9	69.0	0.0	0.0	69.0	69.0
Un. Rep. Tanzania	Mtwara	962	7.6	11.3	8.9	0.0	2.4	8.9	11.3	972	7.4	11.0	8.8	0.0	2.2	8.8	11.0
Un. Rep. Tanzania	Mwanza	1,206	4.3	8.0	4.7	0.0	3.3	4.7	8.0	1,219	4.3	8.0	4.6	0.0	3.4	4.6	8.0
Un. Rep. Tanzania	Pemba North	30	4.1	7.9	7.1	0.0	0.7	7.1	7.9	31	4.1	7.9	7.0	0.0	0.8	7.0	7.9
Un. Rep. Tanzania	Unguja North	31	4.1	7.9	5.8	0.0	2.0	5.8	7.9	32	4.1	7.9	5.8	0.0	2.1	5.8	7.9
Un. Rep. Tanzania	Pwani	2,459	20.7	24.0	8.2	12.5	15.8	20.7	24.0	2,446	19.1	22.4	8.3	10.8	14.2	19.1	22.4
Un. Rep. Tanzania	Rukwa	867	5.1	9.1	14.6	0.0	0.0	14.6	14.6	869	5.1	9.1	14.6	0.0	0.0	14.6	14.6
Un. Rep. Tanzania	Ruvuma	855	5.6	9.7	20.6	0.0	0.0	20.6	20.6	858	5.6	9.7	20.5	0.0	0.0	20.5	20.5
Un. Rep. Tanzania	Shinyanga	1,501	4.6	8.3	4.8	0.0	3.5	4.8	8.3	1,513	4.6	8.3	4.7	0.0	3.6	4.7	8.3
Un. Rep. Tanzania	Singida	2,618	21.3	25.0	5.5	15.8	19.5	21.3	25.0	2,596	19.7	23.4	5.5	14.2	17.9	19.7	23.4
Un. Rep. Tanzania	Pemba South	35	4.1	7.9	8.0	0.0	0.0	8.0	8.0	36	4.1	7.9	7.9	0.0	0.0	7.9	7.9
Un. Rep. Tanzania	Unguja South	61	7.9	11.5	14.6	0.0	0.0	14.6	14.6	61	7.5	11.2	14.5	0.0	0.0	14.5	14.5
Un. Rep. Tanzania	Tabora	2,338	17.0	20.7	5.9	11.1	14.9	17.0	20.7	2,335	15.8	19.6	5.9	9.9	13.7	15.8	19.6
Un. Rep. Tanzania	Tanga	1,987	16.8	20.2	13.5	3.3	6.7	16.8	20.2	1,985	15.5	19.0	13.5	2.0	5.4	15.5	19.0
Un. Rep. Tanzania	Unguja Urban West	36	4.1	7.9	2.6	1.5	5.3	4.1	7.9	37	4.1	7.9	2.6	1.6	5.3	4.1	7.9
Un. Rep. Tanzania tot		32,861	**14.5**	**18.1**	**14.7**	**6.5**	**9.2**	**21.2**	**23.9**	**32,861**	**13.5**	**17.1**	**14.7**	**5.7**	**8.3**	**20.4**	**23.0**
Uruguay	Artigas	41	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	42	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Uruguay	Canelones	237	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	267	0.0	0.0	-0.5	0.0	0.0	0.0	0.0
Uruguay	Cerro Largo	30	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	31	0.0	0.0	-0.5	0.0	0.0	0.0	0.0
Uruguay	Colonia	114	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	114	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Uruguay	Durazno	31	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	32	0.0	0.0	-0.5	0.0	0.0	0.0	0.0
Uruguay	Flores	13	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	13	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Florida	162	0.0	0.0	-0.5	0.0	0.0	0.0	0.0	135	0.0	0.0	-0.7	0.0	0.0	0.0	0.0
Uruguay	Lavalleja	61	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	54	0.0	0.0	-0.6	0.0	0.0	0.0	0.0
Uruguay	Maldonado	74	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	75	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Montevideo	43	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	49	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Paysandu	47	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	48	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Rio Negro	34	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	35	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Rivera	39	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	39	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Uruguay	Rocha	48	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	49	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Uruguay	Salto	51	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	52	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Uruguay	San Jose	167	0.0	0.0	-0.6	0.0	0.0	0.0	0.0	157	0.0	0.0	-0.6	0.0	0.0	0.0	0.0
Uruguay	Soriano	41	0.0	0.0	-0.3	0.0	0.0	0.0	0.0	42	0.0	0.0	-0.3	0.0	0.0	0.0	0.0
Uruguay	Tacuarembo	59	0.0	0.0	-0.2	0.0	0.0	0.0	0.0	60	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Uruguay	Treinta Y Tres	33	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	34	0.0	0.0	-0.4	0.0	0.0	0.0	0.0
Uruguay tot		1,326			**-0.4**					**1,326**			**-0.4**				
Venezuela	Amazonas	13	0.0	36.7	100.0	0.0	0.0	100.0	100.0	13	0.0	36.7	100.0	0.0	0.0	100.0	100.0
Venezuela	Anzoategui	165	0.0	30.0	7.1	0.0	22.9	7.1	30.0	165	0.0	30.0	7.1	0.0	22.9	7.1	30.0
Venezuela	Apure	128	0.0	37.3	1.3	0.0	36.0	1.3	37.3	128	0.0	37.3	1.3	0.0	36.0	1.3	37.3
Venezuela	Aragua	141	0.0	0.0	12.4	0.0	0.0	12.4	12.4	141	0.0	0.0	12.4	0.0	0.0	12.4	12.4
Venezuela	Barinas	164	0.0	30.1	3.3	0.0	26.8	3.3	30.1	164	0.0	30.1	3.3	0.0	26.8	3.3	30.1
Venezuela	Bolivar	128	0.0	35.4	100.0	0.0	0.0	100.0	100.0	128	0.0	35.4	100.0	0.0	0.0	100.0	100.0
Venezuela	Carabobo	61	0.0	12.0	54.7	0.0	0.0	54.7	54.7	61	0.0	12.0	54.7	0.0	0.0	54.7	54.7
Venezuela	Cojedes	44	0.0	34.3	43.6	0.0	0.0	43.6	43.6	44	0.0	34.3	43.6	0.0	0.0	43.6	43.6
Venezuela	Delta Amacuro	22	0.0	37.9	100.0	0.0	0.0	100.0	100.0	22	0.0	37.9	100.0	0.0	0.0	100.0	100.0
Venezuela	Dependencias Federales	0	0.3	42.0	0.0	0.3	42.0	0.3	42.0	0	0.3	42.0	0.0	0.3	42.0	0.3	42.0

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Venezuela	Falcon	137	0.0	30.3	2.5	0.0	27.8	2.5	30.3	137	0.0	30.3	2.5	0.0	27.8	2.5	30.3
Venezuela	Guarico	193	0.0	33.4	11.9	0.0	21.6	11.9	33.4	193	0.0	33.4	11.9	0.0	21.6	11.9	33.4
Venezuela	Lara	143	0.0	10.0	10.7	0.0	0.0	10.7	10.7	143	0.0	10.0	10.7	0.0	0.0	10.7	10.7
Venezuela	Merida	57	0.0	22.5	21.1	0.0	1.5	21.1	22.5	57	0.0	22.5	21.1	0.0	1.5	21.1	22.5
Venezuela	Miranda	183	0.0	0.0	100.0	0.0	0.0	100.0	100.0	183	0.0	0.0	100.0	0.0	0.0	100.0	100.0
Venezuela	Monagas	95	0.0	28.6	100.0	0.0	0.0	100.0	100.0	95	0.0	28.6	100.0	0.0	0.0	100.0	100.0
Venezuela	Nueva Esparta	18	0.0	21.3	1.6	0.0	19.6	1.6	21.3	18	0.0	21.3	1.6	0.0	19.6	1.6	21.3
Venezuela	Portuguesa	119	0.0	18.4	7.8	0.0	10.6	7.8	18.4	119	0.0	18.4	7.8	0.0	10.6	7.8	18.4
Venezuela	Sucre	94	0.0	24.4	100.0	0.0	0.0	100.0	100.0	94	0.0	24.4	100.0	0.0	0.0	100.0	100.0
Venezuela	Tachira	87	0.0	22.9	9.2	0.0	13.7	9.2	22.9	87	0.0	22.9	9.2	0.0	13.7	9.2	22.9
Venezuela	Trujillo	54	0.0	20.6	12.8	0.0	7.9	12.8	20.6	54	0.0	20.6	12.8	0.0	7.9	12.8	20.6
Venezuela	Yaracuy	38	0.0	14.2	100.0	0.0	0.0	100.0	100.0	38	0.0	14.2	100.0	0.0	0.0	100.0	100.0
Venezuela	Zulia	293	0.0	15.5	100.0	0.0	0.0	100.0	100.0	293	0.0	15.5	100.0	0.0	0.0	100.0	100.0
Venezuela	Vargas	27	0.0	0.0	4.4	0.0	0.0	4.4	4.4	27	0.0	0.0	4.4	0.0	0.0	4.4	4.4
Venezuela	Distrito Capital	16	0.0	7.0	5.2	0.0	1.7	5.2	7.0	16	0.0	7.0	5.2	0.0	1.7	5.2	7.0
Venezuela tot		2,421	**0.0**	**21.5**	**42.7**	**0.0**	**10.0**	**42.7**	**52.7**	**2,421**	**0.0**	**21.5**	**42.7**	**0.0**	**10.0**	**42.7**	**52.7**
Viet Nam	An Giang	297	2.0	20.7	-0.1	1.9	20.6	1.9	20.6	296	1.7	20.6	-0.1	1.7	20.5	1.7	20.5
Viet Nam	Ba Ria-Vung Tau	216	0.0	16.2	-0.1	0.0	16.0	0.0	16.0	242	0.0	4.1	-0.1	0.0	4.0	0.0	4.0
Viet Nam	Bac Kan	354	0.0	13.1	-0.4	0.0	12.7	0.0	12.7	277	0.0	0.0	-0.5	0.0	0.0	0.0	0.0
Viet Nam	Bac Giang	494	0.0	16.5	-0.1	0.0	16.3	0.0	16.3	607	0.0	2.8	-0.1	0.0	2.6	0.0	2.6
Viet Nam	Bac Lieu	169	0.9	19.8	-0.2	0.7	19.6	0.7	19.6	202	0.0	14.7	-0.1	0.0	14.5	0.0	14.5
Viet Nam	Bac Ninh	73	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	99	2.8	21.4	-0.1	2.8	21.4	2.8	21.4
Viet Nam	Ben Tre	226	1.8	20.5	-0.1	1.7	20.4	1.7	20.4	241	0.9	19.9	-0.1	0.8	19.8	0.8	19.8
Viet Nam	Binh Dinh	599	0.0	17.9	-0.2	0.0	17.7	0.0	17.7	586	0.0	5.3	-0.2	0.0	5.2	0.0	5.2
Viet Nam	Binh Duong	363	0.0	14.8	-0.1	0.0	14.7	0.0	14.7	405	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Viet Nam	Binh Phuoc	760	0.0	14.7	-0.2	0.0	14.5	0.0	14.5	842	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Viet Nam	Binh Thuan	632	0.0	18.3	-0.1	0.0	18.2	0.0	18.2	586	0.0	2.2	-0.2	0.0	2.1	0.0	2.1
Viet Nam	Cao Bang	180	0.7	19.8	-0.8	0.0	19.1	0.0	19.1	191	0.0	16.4	-0.7	0.0	15.6	0.0	15.6
Viet Nam	Ca Mau	341	0.0	18.9	-0.3	0.0	18.5	0.0	18.5	353	0.0	15.6	-0.3	0.0	15.3	0.0	15.3
Viet Nam	Da Nang City	81	0.0	20.2	-0.1	0.0	20.1	0.0	20.1	85	0.0	13.2	-0.1	0.0	13.1	0.0	13.1
Viet Nam	Dong Nai	693	0.0	17.2	-0.2	0.0	17.0	0.0	17.0	805	0.0	4.9	-0.1	0.0	4.8	0.0	4.8
Viet Nam	Dong Thap	308	1.0	19.9	-0.1	0.9	19.8	0.9	19.8	299	0.0	18.6	-0.1	0.0	18.5	0.0	18.5
Viet Nam	Gia Lai	889	0.0	16.6	-2.3	0.0	14.3	0.0	14.3	542	0.0	6.6	-3.7	0.0	2.9	0.0	2.9
Viet Nam	Ha Giang	445	0.0	15.3	-0.4	0.0	14.9	0.0	14.9	320	0.0	6.9	-0.6	0.0	6.4	0.0	6.4
Viet Nam	Ha Nam	85	1.0	19.9	-0.1	0.9	19.8	0.9	19.8	112	0.0	17.1	-0.1	0.0	17.0	0.0	17.0
Viet Nam	Ha Noi City	125	2.4	21.0	-0.1	2.4	21.0	2.4	21.0	147	2.2	20.9	-0.1	2.1	20.9	2.1	20.9
Viet Nam	Ha Tay	199	2.0	20.7	-0.1	1.9	20.6	1.9	20.6	271	0.8	19.8	-0.1	0.7	19.7	0.7	19.7
Viet Nam	Ha Tinh	508	0.0	17.7	-0.5	0.0	17.3	0.0	17.3	590	0.0	2.7	-0.4	0.0	2.2	0.0	2.2
Viet Nam	Hai Duong	130	1.7	20.4	-0.1	1.6	20.3	1.6	20.3	165	0.0	19.1	-0.1	0.0	19.0	0.0	19.0
Viet Nam	Hai Phong City	92	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	104	2.8	21.4	-0.1	2.7	21.3	2.7	21.3
Viet Nam	Ho Chi Minh City	199	1.0	20.6	-0.1	0.8	20.5	0.8	20.5	242	0.0	17.0	-0.1	0.0	16.9	0.0	16.9
Viet Nam	Hoa Binh	610	0.0	15.6	-0.2	0.0	15.3	0.0	15.3	682	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Viet Nam	Hung Yen	88	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	122	2.8	21.4	-0.1	2.7	21.4	2.7	21.4
Viet Nam	Khanh Hoa	235	0.0	18.1	-0.2	0.0	18.0	0.0	18.0	213	0.0	10.4	-0.2	0.0	10.2	0.0	10.2
Viet Nam	Kien Giang	373	0.9	19.8	-0.2	0.7	19.6	0.7	19.6	368	0.0	18.5	-0.2	0.0	18.3	0.0	18.3
Viet Nam	Kon Tum	484	0.0	23.6	-1.3	0.0	22.4	0.0	22.4	211	0.0	10.2	-2.9	0.0	7.2	0.0	7.2
Viet Nam	Lam Dong	821	0.0	15.5	-1.1	0.0	14.3	0.0	14.3	750	0.0	0.0	-1.2	0.0	0.0	0.0	0.0
Viet Nam	Lang Son	1,127	0.0	13.5	-0.2	0.0	13.3	0.0	13.3	1,161	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Viet Nam	Long An	458	0.0	18.2	-0.1	0.0	18.0	0.0	18.0	465	0.0	12.6	-0.1	0.0	12.4	0.0	12.4
Viet Nam	Nam Dinh	134	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	149	2.8	21.4	-0.1	2.8	21.4	2.8	21.4
Viet Nam	Nghe An	1,105	0.0	19.0	-1.0	0.0	18.0	0.0	18.0	1,193	0.0	4.5	-1.0	0.0	3.5	0.0	3.5
Viet Nam	Ninh Binh	138	0.0	19.9	-0.1	0.0	19.8	0.0	19.8	171	0.0	12.8	-0.1	0.0	12.7	0.0	12.7
Viet Nam	Ninh Thuan	208	0.0	17.8	-0.1	0.0	17.6	0.0	17.6	174	0.0	3.7	-0.2	0.0	3.6	0.0	3.6
Viet Nam	Phu Tho	471	0.0	17.8	-0.1	0.0	17.7	0.0	17.7	579	0.0	6.5	-0.1	0.0	6.4	0.0	6.4
Viet Nam	Phu Yen	326	0.0	16.5	-0.2	0.0	16.2	0.0	16.2	295	0.0	6.7	-0.3	0.0	6.5	0.0	6.5

		Low plantation productivity variant								High plantation productivity variant							
		Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC					Wf harvesting	NRB values without consideration for biomass from defo & aff.		NRB values with consideration for biomass available from LULCC				
					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting					NRB from def (neg) or aff (pos)	NRB additionalf to def /aff material		Total NRB incl. def or aff and addit. harvesting	
			Minimum	Expected		Minimum	Expected	Minimum	Expected		Minimum	Expected		Minimum	Expected	Minimum	Expected
Country	Adm1_Name	Kt	%	%	%	%	%	%	%	Kt	%	%	%	%	%	%	%
Viet Nam	Quang Binh	536	0.0	15.9	-0.7	0.0	15.2	0.0	15.2	475	0.0	0.3	-0.8	0.0	0.0	0.0	0.0
Viet Nam	Quang Nam	863	0.0	17.6	-0.2	0.0	17.4	0.0	17.4	764	0.0	0.6	-0.3	0.0	0.3	0.0	0.3
Viet Nam	Quang Ngai	525	0.0	17.5	-0.2	0.0	17.3	0.0	17.3	526	0.0	4.6	-0.2	0.0	4.5	0.0	4.5
Viet Nam	Quang Ninh	468	0.0	16.3	-0.2	0.0	16.1	0.0	16.1	466	0.0	2.1	-0.2	0.0	1.9	0.0	1.9
Viet Nam	Quang Tri	185	0.0	17.8	-0.6	0.0	17.2	0.0	17.2	166	0.0	15.8	-0.7	0.0	15.1	0.0	15.1
Viet Nam	Soc Trang	221	2.0	20.7	-0.1	1.9	20.6	1.9	20.6	236	1.3	20.2	-0.1	1.2	20.1	1.2	20.1
Viet Nam	Son La	339	0.0	19.4	-1.8	0.0	17.6	0.0	17.6	332	0.0	16.3	-1.8	0.0	14.5	0.0	14.5
Viet Nam	Tay Ninh	378	0.0	17.3	-0.1	0.0	17.2	0.0	17.2	429	0.0	7.9	-0.1	0.0	7.7	0.0	7.7
Viet Nam	Thai Binh	135	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	153	2.8	21.4	-0.1	2.8	21.4	2.8	21.4
Viet Nam	Thai Nguyen	525	0.0	14.6	-0.1	0.0	14.5	0.0	14.5	632	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Viet Nam	Thanh Hoa	1,188	0.0	18.1	-0.6	0.0	17.4	0.0	17.4	1,324	0.0	2.8	-0.5	0.0	2.3	0.0	2.3
Viet Nam	Thua Thien - Hue	288	0.0	19.5	-0.5	0.0	19.0	0.0	19.0	287	0.0	9.9	-0.5	0.0	9.4	0.0	9.4
Viet Nam	Tien Giang	235	1.4	20.2	-0.1	1.3	20.1	1.3	20.1	235	0.0	19.0	-0.1	0.0	19.0	0.0	19.0
Viet Nam	Tra Vinh	183	1.9	20.6	-0.1	1.8	20.5	1.8	20.5	196	0.0	19.1	-0.1	0.0	19.0	0.0	19.0
Viet Nam	Tuyen Quang	698	0.0	15.9	-0.2	0.0	15.7	0.0	15.7	708	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Viet Nam	Vinh Long	136	2.4	21.0	-0.1	2.3	20.9	2.3	20.9	139	2.5	21.2	-0.1	2.4	21.1	2.4	21.1
Viet Nam	Vinh Phuc	105	1.2	20.1	-0.1	1.1	20.0	1.1	20.0	139	0.0	17.6	-0.1	0.0	17.5	0.0	17.5
Viet Nam	Yen Bai	551	0.0	14.8	-0.2	0.0	14.5	0.0	14.5	553	0.0	0.0	-0.2	0.0	0.0	0.0	0.0
Viet Nam	Can Tho city	103	2.5	21.1	-0.1	2.4	21.0	2.4	21.0	104	2.8	21.4	-0.1	2.7	21.3	2.7	21.3
Viet Nam	Dak Lak	1,076	0.0	14.5	-1.5	0.0	13.0	0.0	13.0	933	0.0	1.9	-1.7	0.0	0.2	0.0	0.2
Viet Nam	Dak Nong	657	0.0	15.5	-0.7	0.0	14.8	0.0	14.8	582	0.0	0.0	-0.8	0.0	0.0	0.0	0.0
Viet Nam	Dien Bien	116	2.7	21.8	-2.0	0.8	19.8	0.8	19.8	122	3.0	22.1	-1.9	1.2	20.2	1.2	20.2
Viet Nam	Hau Giang	148	2.3	20.9	-0.1	2.2	20.8	2.2	20.8	149	2.2	20.9	-0.1	2.1	20.8	2.1	20.8
Viet Nam	Lai Chau	100	2.8	21.9	-2.2	0.6	19.7	0.6	19.7	103	3.1	22.2	-2.1	0.9	20.1	0.9	20.1
Viet Nam	Lao Cai	309	0.0	16.0	-0.4	0.0	15.6	0.0	15.6	210	0.0	12.3	-0.7	0.0	11.6	0.0	11.6
Viet Nam tot		25,105	**0.3**	**17.3**	**-0.5**	**0.2**	**16.8**	**0.2**	**16.8**	**25,105**	**0.2**	**6.6**	**-0.5**	**0.2**	**6.2**	**0.2**	**6.2**
Zambia	Central	2,522	19.4	39.2	7.2	12.2	32.0	19.4	39.2	2,520	19.0	38.9	7.2	11.8	31.7	19.0	38.9
Zambia	Copperbelt	1,834	22.1	42.0	8.7	13.4	33.3	22.1	42.0	1,831	21.7	41.7	8.7	13.0	33.0	21.7	41.7
Zambia	Eastern	1,184	4.2	25.0	12.2	0.0	12.8	12.2	25.0	1,185	4.2	25.0	12.1	0.0	12.8	12.1	25.0
Zambia	Luapula	694	4.3	25.1	26.9	0.0	0.0	26.9	26.9	694	4.3	25.1	26.8	0.0	0.0	26.8	26.8
Zambia	Lusaka	582	17.8	38.0	7.1	10.8	31.0	17.8	38.0	581	17.5	37.7	7.1	10.4	30.7	17.5	37.7
Zambia	North-Western	645	8.1	34.3	20.7	0.0	13.6	20.7	34.3	645	8.1	34.3	20.7	0.0	13.6	20.7	34.3
Zambia	Northern	1,542	4.9	27.0	24.4	0.0	2.6	24.4	27.0	1,543	4.9	27.0	24.4	0.0	2.6	24.4	27.0
Zambia	Southern	1,783	12.9	32.5	7.4	5.5	25.1	12.9	32.5	1,786	12.7	32.3	7.3	5.3	25.0	12.7	32.3
Zambia	Western	784	6.7	33.2	7.4	0.0	25.8	7.4	33.2	785	6.7	33.2	7.4	0.0	25.8	7.4	33.2
Zambia tot		11,569	**12.9**	**33.9**	**12.2**	**6.2**	**21.9**	**18.4**	**34.0**	**11,569**	**12.6**	**33.8**	**12.2**	**6.0**	**21.7**	**18.2**	**33.9**
Zimbabwe	Bulawayo	19	7.8	30.7	14.7	0.0	16.0	14.7	30.7	19	7.2	30.3	14.7	0.0	15.6	14.7	30.3
Zimbabwe	Harare	40	5.4	28.6	12.4	0.0	16.3	12.4	28.6	40	5.3	28.5	12.3	0.0	16.2	12.3	28.5
Zimbabwe	Manicaland	1,172	5.4	29.0	51.0	0.0	0.0	51.0	51.0	1,177	5.2	28.9	50.7	0.0	0.0	50.7	50.7
Zimbabwe	Mashonaland Central	1,135	6.5	29.6	35.6	0.0	0.0	35.6	35.6	1,141	6.2	29.4	35.3	0.0	0.0	35.3	35.3
Zimbabwe	Mashonaland West	1,728	10.8	34.3	30.9	0.0	3.4	30.9	34.3	1,724	9.9	33.6	30.9	0.0	2.6	30.9	33.6
Zimbabwe	Masvingo	1,240	5.5	30.1	40.5	0.0	0.0	40.5	40.5	1,244	5.4	30.0	40.4	0.0	0.0	40.4	40.4
Zimbabwe	Matabeleland South	1,029	11.3	37.2	33.6	0.0	3.7	33.6	37.2	1,025	10.4	36.6	33.7	0.0	2.9	33.7	36.6
Zimbabwe	Midlands	1,857	11.4	35.2	31.7	0.0	3.5	31.7	35.2	1,853	10.4	34.4	31.8	0.0	2.6	31.8	34.4
Zimbabwe	Matabeleland North	1,168	13.9	40.5	42.5	0.0	0.0	42.5	42.5	1,158	12.6	39.7	42.8	0.0	0.0	42.8	42.8
Zimbabwe	Mashonaland East	1,199	6.9	30.1	24.6	0.0	5.5	24.6	30.1	1,204	6.6	29.8	24.5	0.0	5.3	24.5	29.8
Zimbabwe tot		10,584	**9.2**	**33.3**	**35.6**		**2.2**	**35.6**	**37.8**	**10,584**	**8.5**	**32.8**	**35.6**		**1.9**	**35.6**	**37.5**

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