## GLOBAL FOREST RESOURCES ASSESSMENT 2015

## **COUNTRY REPORT**

# Cambodia

FAO, at the request of its member countries, regularly monitors the world's forests and their management and uses through the Global Forest Resources Assessment (FRA). This country report is prepared as a contribution to the FAO publication, the Global Forest Resources Assessment 2015 (FRA 2015).

The content and the structure are in accordance with the recommendations and guidelines given by FAO in the document Guide for country reporting for FRA 2015 (http://www.fao.org/3/a-au190e.pdf). These reports were submitted to FAO as official government documents.

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| Introductory | Text |
|--------------|------|
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Place an introductory text on the content of this report

Desk Study?

|             | Check "yes" if this survey is a I | esk Study, "no" otherwise |  |
|-------------|-----------------------------------|---------------------------|--|
| Desk Study? |                                   | no                        |  |

## 1. What is the area of forest and other wooded land and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

#### 1.1 Categories and definitions

| Category   | Definition   |
|--|--|
| Forest   | Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use.  |
| Other wooded land                                  | Land not classified as "Forest" spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of 5-10 percent or trees able to reach these thresholds; or with a combined cover of shrubs bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use. |
| Other land   | All land that is not classified as "Forest" or "Other wooded land".  |
| of which with tree cover (sub-category)            | Land considered as "Other land", that is predominantly agricultural or urban lands use and has patches of tree cover that span more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity. It includes bothe forest and non-forest tree species.                       |
| Inland water bodies                                | Inland water bodies generally include major rivers, lakes and water reservoirs.  |
| Forest expansion                                   | Expansion of forest on land that, until then, was not defined as forest.   |
| of which afforestation (sub-category)              | Establishment of forest through planting and/or deliberate seeding on land that, until then, was not defined as forest.  |
| of which natural expansion of forest (subcategory) | Expansion of forests through natural succession on land that, until then, was under another land use (e.g. forest succession on land previously used for agriculture).   |
| Deforestation                                      | The conversion of forest to other land use or the longterm reduction of the tree canopy cover below the minimum 10 percent threshold.  |
| of which human induced (sub-category)              | Human induced conversion of forest to other land use or the permanent reduction of the tree canopy cover below the minimum 10 percent threshold.   |
| Reforestation                                      | Natural regeneration or re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.  |
| of which artificial reforestation (sub-category)   | Re-establishment of forest through planting and/or deliberate seeding on land already in forest land use.  |

#### 1.2 National data

#### 1.2.1 Data sources

|   | References to sources of information | Variables            | Years   | Additional comments                              |
|---|--------------------------------------|----------------------|---------|--|
| 1 | Original data from Remote sensing    | Forest cover 1992/93 | 1992/93 | Little ground truthing to<br>Remote Sensing Data |
| 2 | Original data from Remote sensing    | Forest cover 1996/97 | 1996/97 | Little ground truthing to<br>Remote Sensing Data |

| 3 | Original data from Remote sensing  | Forest cover 2002 | 2002 | Based on Remote Sensing and adequate ground truthing |
|---|------------------------------------|-------------------|------|--|
| 4 | Original data from Remote sensing  | Forest cover 2005 | 2005 | Based on Remote Sensing and adequate ground truthing |
| 5 | Cambodia: Forestry Statistics 2002 | N/A               | 2002 | N/A  |
| 6 | Cambodia: Forestry Statistics 2004 | N/A               | 2004 | N/A  |
| 7 | Cambodia: Forestry Statistics 2006 | N/A               | 2006 | N/A  |

#### 1.2.2 Classification and definitions

| National class                                     | Definition  |
|--|---|
| 2006 Evergreen forest with high cover density      | Forest contains usually multi-storied forests where trees keep their leaves during the whole year. They are always seen on hills and along the course of streams and rivers. Evergreen forests appear dark red on the satellite images with a medium texture. They comprise the lowland tropical rain forests, the hill evergreen forests and the dry evergreen forests. A certain percentage of deciduous trees may be included as well and most moist deciduous forests may not be visible from the evergreen forests. The forest comprises of forest cover # 90% and crown cover #70%  |
| Evergreen forest with medium and low cover density | < 90% and crown cover # 20 % - < 70%" /> Forests contain usually multi-storied forests where trees keep their leaves during the whole year. They are always seen on hills and along the course of streams and rivers. Evergreen forests appear dark red on the satellite images with a medium texture. They comprise the lowland tropical rain forests, the hill evergreen forests and the dry evergreen forests. A certain percentage of deciduous trees may be included as well and most moist deciduous forests may not be visible from the evergreen forests. The forests comprise of forest cover # 70% - < 90% and crown cover # 20 % - < 70% |
| Evergreen mosaic forest                            | < 70% and crown cover # 20%" /> Forests contain usually multi-storied forests where trees keep their leaves during the whole year. They are always seen on hills and along the course of streams and rivers. Evergreen forests appear dark red on the satellite images with a medium texture. They comprise the lowland tropical rain forests, the hill evergreen forests and the dry evergreen forests. A certain percentage of deciduous trees may be included as well and most moist deciduous forests may not be visible from the evergreen forests. The forests comprise of forest cover # 40% - < 70% and crown cover # 20%                   |

| Mixed evergreen and deciduous forest with high cover density           | The forests contain a variable percentage of evergreen and deciduous trees. The percentage deciduous trees may vary from some 30 to some 70 percent. The variability of this class is high as it is stretching from the moist mixed deciduous forests to the mixed deciduous and to a more humid version of the dry deciduous forests. It can not be excluded that depending on the proportion of leaf shedding trees and on the overall appearance some parts of dry evergreen forests are mapped to this class as well. The forest comprises of forest cover # 90% and crown cover #70%   |
|--|---|
| Mixed evergreen and deciduous forest with medium and low cover density | < 90% and crown cover # 20 % - < 70%" /> The forests contain a variable percentage of evergreen and deciduous trees. The percentage deciduous trees may vary from some 30 to some 70 percent. The variability of this class is high as it is stretching from the moist mixed deciduous forests to the mixed deciduous and to a more humid version of the dry deciduous forests. It can not be excluded that depending on the proportion of leaf shedding trees and on the overall appearance some parts of dry evergreen forests are mapped to this class as well. The forests comprise of forest cover # 70% - < 90% and crown cover # 20 % - < 70%  |
| Mixed mosaic forest  | < 70% and crown cover # 20%." /> The forests contain a variable percentage of evergreen and deciduous trees. The percentage deciduous trees may vary from some 30 to some 70 percent. The variability of this class is high as it is stretching from the moist mixed deciduous forests to the mixed deciduous and to a more humid version of the dry deciduous forests. It can not be excluded that depending on the proportion of leaf shedding trees and on the overall appearance some parts of dry evergreen forests are mapped to this class as well. The forests comprise of forest cover # 40% - < 70% and crown cover # 20%.  |
| Deciduous forest   | The forests contain the dry mixed deciduous forests and dry Dipterocarp forests. Deciduous forests drop their leaves more or less completely during the dry season. The signatures vary from reddish violet to yellowish brown at the end of wet season, and from brownish green to bluish grey during the dry season, with a medium to smooth texture. Human impact such as fire is usually much higher compared to other forest types. It was not possible to separate consistently the dry mixed deciduous forests from the dry Dipterocarp forests. Dry Dipterocarp forests have naturally an open character. Undisturbed they may have a crown cover of only 40%. The soil and the grass layer can have a significant impact on the reflection of these forests. It is impossible to separate crown cover differences consistently. The separation to deciduous shrub-land is difficult during the wet season and almost impossible during the dry season. |
| Deciduous mosaic forest  | < 70% and crown cover # 20%." /> The characteristic of the forests is nearly the same as Deciduous forest, just different from the density of forest cover and crown cover. The forest cover varies from # 40% - < 70% and crown cover # 20%.   |
| Forest regrowth  | More or less dense layer of young trees belonging already to the 'forest cover' class. The spatial texture is usually homogenous. No differentiation in density classes foreseen. General re-growth of mixed vegetation would be assigned to 'Non-Forest Regrowth'  |

| Inundated forest regrowth    | Forest regrowth found in the inundated areas around the Tonle Sap Lake was mapped as a separate class.   |
|------------------------------|--|
| Inundated forest             | This forest type is found in Cambodia around the Tonle Sap<br>Lake. Most of the forests are low and disturbed. In many cases<br>there is only a mosaic remaining. Degradation was often caused<br>by charcoal production.  |
| Mangrove forest              | Mangrove forests can only be found in the South Western part of Cambodia.  |
| Forest plantation            | Forest plantations are often visible due to their textures and geometric shapes, species should be assigned when the knowledge of the local conditions allows to do so, otherwise '0'.   |
| Inundated mosaic forest      | < 70% and crown cover # 20%." /> The characteristic of the forests is nearly the same as inundated forest, just different from the density of forest cover and crown cover. The forest cover varies from # 40% - < 70% and crown cover # 20%.  |
| Wood and shrubland evergreen | Wood and shrub-land is a mixture of shrubs, grass and trees, the tree cover however remaining below 20 percent. This class can be found mainly on shallow soils, on the top of mountains under climax conditions or as a result of non-sustainable land use (degraded land, forest on fire frequently). The signature remains light red during the whole year. A sub-variant of this class represents the re-growth of forest, i.e., growing after shifting cultivation. There is usually a dense layer of shrubs and grass with some small trees and a significant proportion of bamboo. Other sub-variants diversely comprise land areas, trees, shrubs, grass and small paddy fields on lowland as long as the agriculture land is not cancelled. |
| Bamboo                       | Large areas of dense bamboo are usually discernible due to their pink and orange colour and their typical texture. After the field trips it was decided to map all bamboo visible into one class. A sparse bamboo coverage or small bamboo will not be discernible and will remain in one of the classes mentioned before. Small lots of bamboo as result of degradation of mixed deciduous or evergreen forests will also not be included in this class.  |
| Wood and shrubland dry       | Wood and shrub-land is a mixture of shrubs, grass and trees, the tree cover however remaining below 20 percent. This class can be found in the dry plains or on the plateaus of the southern part of the L.M.B, but also on dry and sun exposed slopes. The appearance often remains on a dry  |
| Wood and shrubland inundated | Wood and shrub-land is a mixture of shrubs, grass and trees, the tree cover however remaining below 20 percent. This class was defined to cover the degraded inundated areas around the Tonle Sap Lake. There is often a dense layer of small trees, which can not be classified as forest.  |
| Non forest                   | N/A  |
| Grassland                    | In dry conditions grassland is displayed in bluish grey tones during the dry season showing a smooth texture. In the humid domain grassland looks light red with a component of yellow to white during the dry season.   |

| < 30%" /> Mosaic of cropping where cropping area < 30% | This class contains a mixture of fields actually under cropping or in various stages of fallow with shrubs and re-growth. The pattern shows a mosaic of red, white, grey and black patches. Re-growth is found in shifting cultivation areas after the land has been abandoned and contains also young trees. If not cleared again, the chances of becoming forest are theoretically high. Small tree blocks can be found within this class as well, however the percentage of forest blocks should be below 40%, otherwise they would have to be classified as |
|--|---|
| 30%" /> Mosaic of cropping where cropping area > 30%   | < 30% except for the percentage of cropping area." /> The characteristic of this class is nearly the same as Mosaic of cropping where cropping area < 30% except for the percentage of cropping area.   |
| Agriculture land                                       | It is delineated as one class without further differentiation. It contains permanent fields, mainly paddy fields, or mixed agricultural land, as long as the agricultural component appears to be dominant. Additional knowledge of the area is often required for a good interpretation. Permanent mixed agriculture on slopes, as occurred frequently in the Central Highlands of Vietnam is difficult to separate from shifting cultivation.   |
| Barren land  | Not vegetated areas   |
| Rock   | Rock  |
| Urban area   | If a village can be found this class IS classified. Small villages contain fruit trees and trees without clear boundaries. The urban area of the village may be done afterwards by using GIS.   |
| Water  | Sea, lakes, rivers etc.   |
| Other  | This class belongs to unidentified class.   |
| Wetland  | Wetlands contain swamps and marshes. Due to the high water content the signatures are usually dark grey, in case of a grass layer the dark tones are mixed with light red to pink tones.  |
| N/A  | Forest  |
| Evergreen forest                                       | Forest contains usually multi-storied forests where trees keep their leaves during the whole year. They comprise the lowland tropical rain forests, the hill evergreen forests and the dry evergreen forests. It includes Evergreen forest classified as high cover density, medium and low density during earlier remote sensing efforts.  |
| Semi- evergreen  | The forests contain a variable percentage of evergreen and deciduous trees It includes mixed evergreen forest classified as high cover density, medium and low density and mixed mosaic forests during earlier remote sensing efforts.  |
| Deciduous forest                                       | The forests contain the dry mixed deciduous forests and dry Dipterocarp forests. It includes deciduous forest classified as deciduous and mosaic forests during earlier remote sensing efforts.   |
| Other forests  | The forests contain a variable percentage of following categories defined in earlier remote sensing efforts. Forest Re-growth, Inundated forests re-growth, Inundated forests Mangrove forests, Forest Plantation, and Inundated Mosaic forests   |

| Bamboo                   | Large areas of dense bamboo are usually discernible due to their pink and orange colour and their typical texture. After the field trips it was decided to map all bamboo visible into one class. A sparse bamboo coverage or small bamboo will not be discernible and will remain in one of the classes mentioned before. Small lots of bamboo as result of degradation of mixed deciduous or evergreen forests will also not be included in this class. |
|--------------------------|---|
| Wood and shrub evergreen | Wood and shrub-land is a mixture of shrubs, grass and trees, the tree cover however remaining below 20 percent. It represents wood and shrub land evergreen category of earlier remote sensing efforts.   |
| Wood and shrub dry       | This category of wood and shrub-land can be found in the dry plains or on the plateaus of the southern part of the L.M.B, but also on dry and sun exposed slopes. It represents wood and shrub land dry category of earlier remote sensing efforts.   |
| Non Forest               | It contains a variable percentage of following categories of earlier remote sensing efforts. Grass land, Mosaic of cropping, Agriculture land, Barren land, Rock Urban Area, Water, Other, Wetland, and area that in satellite imagery were covered with Cloud.   |

## 1.2.3 Original data

| Forest | OPOO  |
|--------|-------|
| HAPPEL | yrey. |

| Code   | Land Cover<br>Types                                | 1992/93   | 1996/97   | 2002      | 2005      |
|--------|--|-----------|-----------|-----------|-----------|
|        |  | Area (ha) | Area (ha) | Area (ha) | Area (ha) |
| Forest |  |           |           | -         |           |
| 11     | Evergreen forest with high cover density           | 656,582   | 627,219   | 3,720,507 | 3,668,891 |
| 12     | Evergreen forest with medium and low cover density | 3254,204  | 3,185,603 |           |           |
| 13     | Evergreen<br>mosaic forest                         | 131,651   | 178,150   |           |           |

| 17 | Mixed evergreen and deciduous  forest with high cover density       | 98,851    | 95,322    | 1,455,095 | 1,362,638 |
|----|---|-----------|-----------|-----------|-----------|
| 18 | Mixed evergreen and deciduous  forest with medium-low cover density | 1,309,010 | 1,286,649 |           |           |
| 19 | Mixed mosaic forest   | 110,103   | 125,331   |           |           |
| 20 | Deciduous<br>forest   | 4,026,133 | 3931,292  | 4 922 125 | 4.602.000 |
| 22 | Deciduous<br>mosaic forest  | 342,851   | 350,193   | 4,833,135 | 4,692,098 |
| 40 | forest<br>regrowth  | 435,353   | 374,178   | 1,065,706 | 866,811   |
| 41 | Inundated forest regrowth   | 21,623    | 20,819    |           |           |
| 52 | Inundated forest  | 229,093   | 219,896   |           |           |
| 56 | Inundated mosaic forest   | 98,587    | 94,582    |           |           |
| 53 | Mangrove<br>forest  | 77,244    | 72,457    |           | 31,037    |
| 54 | Forest plantation   | 72,354    | 82,472    |           | 73,493    |
| 61 | Wood and<br>shrubland<br>evergreen                                  | 558,864   | 544,753   | 150,017   | 96,390    |
| 65 | Wood and<br>shrubland<br>inundated                                  | 377,401   | 348,959   |           |           |
| 64 | Wood and shrubland dry  | 1,267,281 | 1,164,743 | 138,935   | 37,028    |

| 63         | Bamboo                                       | 32,209     | 33,715     | 28,951     | 35,802     |  |  |  |  |  |  |
|------------|--|------------|------------|------------|------------|--|--|--|--|--|--|
| Non-forest | Non-forest                                   |            |            |            |            |  |  |  |  |  |  |
| 62         | Grassland                                    | 478,486    | 488,919    | 6,768,325  |            |  |  |  |  |  |  |
| 81         | Mosaic of cropping where cropping area < 30% | 198,908    | 285,227    |            | 7,296,484  |  |  |  |  |  |  |
| 82         | Mosaic of cropping where cropping area > 30% | 104,428    | 143,756    |            |            |  |  |  |  |  |  |
| 91         | Agriculture land                             | 3,698,464  | 3,903,605  |            |            |  |  |  |  |  |  |
| 92         | Barren land                                  | 14,973     | 18,022     |            |            |  |  |  |  |  |  |
| 93         | Rock   | 2,149      | 2,323      |            |            |  |  |  |  |  |  |
| 94         | Urban area                                   | 26,606     | 27,638     |            |            |  |  |  |  |  |  |
| 95         | Water  | 446,317    | 469,294    |            |            |  |  |  |  |  |  |
| 96         | Other  | 1,756      | 1,756      |            |            |  |  |  |  |  |  |
| 97         | Wetland                                      | 87,351     | 83,458     |            |            |  |  |  |  |  |  |
| 99         | Clouds                                       | 1,497      | 0,000      |            |            |  |  |  |  |  |  |
|            | Grand Total                                  | 18,160,331 | 18,160,331 | 18,160,670 |            |  |  |  |  |  |  |
|            |  |            |            |            | 18,160,673 |  |  |  |  |  |  |

## Forest expansion, reforestation

Summary of Forest Plantation(ha), 1988-2007

| 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|------|------|------|------|------|------|------|------|------|------|
| 576  | 867  | 504  | 226  | 909  | 732  | 853  | 677  | 611  | 485  |
|      |      |      |      |      |      |      |      |      |      |

| 1998 | 1999 | 2000 | 2001 | 2002  | 2003  | 2004  | 2005   | 2006  | 2007  |
|------|------|------|------|-------|-------|-------|--------|-------|-------|
| 2    | 502  | 984  | 869  | 1,303 | 2,013 | 1,416 | 11,860 | 4,766 | 9,220 |

#### 1.3 Analysis and processing of national data

#### 1.3.1 Adjustment

#### Forest area

The total country area has been calibrated to match with FAOSTAT figure of 18104 (000 ha). Similarly the area of inland water bodies has been calibrated to match FAOSTAT figure of 452 (000 ha). All differences have been adjusted only in the area of other lands.

#### 1.3.2 Estimation and forecasting

#### Forest area

Bamboo has been grouped together with Forests as in FRA 2000. All types of wood and Shrub lands have been grouped together as Wood and Shrub lands.

A. Segregation of 2002 and 2005 figures.

The 2002 figures provide aggregated figures for some of the categories that make it difficult to estimate and forecast and classify figures for FRA. Specifically, 2002 provides an aggregated figure of 1,065,706 ha for area of forest regrowth, inundated forest regrowth, inundated forests, Mangrove forests, and forest plantations and inundated forest mosaic.

This figure has been segregated in following steps.

- 1. Forecasting 2002 area 314,288 of inundated (forests +mosaic+regrowth) based on 1992 and 1996
- 2. Forecasting 2002 area 65,277 of Mangrove forests based on 1992 and 1996 figures

3. Using figure 76,486 ha of productive plantations base on interpolation figures 1996 and 2005

The remainder area 609,655 ha out of 1,065,706 ha has been treated as area of forest re-growth.

The 2005 figures provides an aggregated figure of 866,811 ha for area of forest regrowth, inundated forest regrowth, inundated forests and inundated forest mosaic.

1. Forecasting 2005 area 303,783 ha of inundated (forests +mosaic+ regrowth) based on 1996 and 2002

The remainder area 563,028 ha out of 866,811 ha has been treated as area of forest re-growth.

B. Summary information for 1992, 1996, 2002 and 2005 after above steps

| Categories                                   | Area in hectares |            |            |            |  |  |  |  |
|--|------------------|------------|------------|------------|--|--|--|--|
|  | 1992             | 1996       | 2002       | 2005       |  |  |  |  |
| Evergreen                                    | 4,042,435        | 3,990,972  | 3,720,507  | 3,668,891  |  |  |  |  |
| Mixed  | 1,517,964        | 1,507,302  | 1,455,095  | 1,362,638  |  |  |  |  |
| Deciduous                                    | 4,368,984        | 4,281,485  | 4,833,135  | 4,692,098  |  |  |  |  |
| Bamboo                                       | 32,209           | 33,715     | 28,951     | 35,802     |  |  |  |  |
| Inundated (Forest<br>+ Re-growth+<br>Mosaic) | 349,303          | 335,297    | 314,288    | 303,783    |  |  |  |  |
| Mangrove                                     | 77,244           | 72,457     | 65,277     | 31,037     |  |  |  |  |
| Forest Plantation                            | 72,354           | 82,472     | 76,486     | 73,493     |  |  |  |  |
| Forest Regrowth                              | 435,353          | 374,178    | 619,142    | 563,028    |  |  |  |  |
| <b>Total Forests</b>                         | 10,895,846       | 10,677,878 | 11,112,881 | 10,730,770 |  |  |  |  |
| Total Wood and<br>Shrub land                 | 2,203,546        | 2,058,455  | 288,952    | 133,418    |  |  |  |  |

| Total Forest and Other Wooded Land | 13,099,392 | 12,736,333 | 11,401,833 | 10,864,188 |
|------------------------------------|------------|------------|------------|------------|
| Total Other land                   | 4,552,608  | 4,915,667  | 6,250,167  | 6,787,812  |
| Inland water bodies                | 452,000    | 452,000    | 452,000    | 452,000    |
| Total                              | 18,104,000 | 18,104,000 | 18,104,000 | 18,104,000 |

#### C. Calibration of figures for certain categories of landuse

The above figures show abnormal trends in 1992 and 1996 under certain categories like "wood and shrub land", "Deciduous forests" and "Forest Regrowth". This is mainly due to the fact that apart for 2002 figures, very little ground truthing (field checking) of satellite interpreted data was done for 1992 and 1996 due to war and economy reasons of the country. Therefore, for the purposes of this table for "wood and shrub land" equalling the FRA category "other wooded land" were calibrated in following manner: All the forest categories were grouped into one than the percentage 2.5342592% of "wood and shrub land" and percentage 97.4657408% of "forest" to total of "forests" and "wood and shrub land" in 2002 were applied to respective figures in 1992 and 1996 to estimate "wood and shrub land" and "forests" in these years. However, in 2005 attribute table keep remaining the same.

Percentage of wood and shrubland: 2.5342592%

| Categories             | 1992       | 1996       | 2002       | 2005       |
|------------------------|------------|------------|------------|------------|
| Forests                | 12767419   | 12413561   | 11,112,881 | 10,730,770 |
| Wood and Shrub<br>land | 331973     | 322772     | 288,952    | 133,418    |
| Total Other land       | 4,552,608  | 4,915,667  | 6,250,167  | 678,7812   |
| Inland water bodies    | 452,000    | 452,000    | 452,000    | 452,000    |
| Total                  | 18,104,000 | 18,104,000 | 18,104,000 | 18,104,000 |

#### D. Estimation and Forecasting

Estimation and forecasting has been done for 1990, 2000, 2005 and 2010 using linear-inter or linear-extrapolation method and with all adjustments in "Other land".

| Categories          | Area in hectares | Area in hectares |            |            |  |  |  |  |
|---------------------|------------------|------------------|------------|------------|--|--|--|--|
|                     | 1990             | 2000             | 2005       | 2010       |  |  |  |  |
| Forests             | 12,944,348       | 11,546,441       | 10,730,770 | 10,093,918 |  |  |  |  |
| Wood and Shrub land | 335,040          | 300,225          | 133,418    | 133,418    |  |  |  |  |
| Other land          | 4,372,612        | 5,805,334        | 6,787,812  | 7,424,664  |  |  |  |  |
| Inland water bodies | 452,000          | 452,000          | 452,000    | 452,000    |  |  |  |  |
| Total               | 18,104,000       | 18,104,000       | 18,104,000 | 18,104,000 |  |  |  |  |

For the avoiding of negative estimation in year 2010 of Wood and Shrub land, the value of 2005 will be used.

#### 1.3.3 Reclassification

| National<br>Categories | Percentage allocation to FRA categories |                    |            |                     |  |  |  |
|------------------------|---|--------------------|------------|---------------------|--|--|--|
|                        | Forests                                 | Other Wooded lands | Other land | Inland Water bodies |  |  |  |
| Forests                | 100                                     |                    |            |                     |  |  |  |
| Wood and Shrub<br>land |   | 100                |            |                     |  |  |  |
| Other land             |   |                    | 100        |                     |  |  |  |
| Inland water bodies    |   |                    |            | 100                 |  |  |  |

#### 1.4 Data

Table 1a

|      | Categories               |          | Area (000 hectares) |          |          |          |  |  |
|------|--------------------------|----------|---------------------|----------|----------|----------|--|--|
|      |                          |          | 2000                | 2005     | 2010     | 2015     |  |  |
| CFRQ | Forest                   | 12944    | 11546               | 10731    | 10094    | 9457     |  |  |
| CFRQ | Other wooded land        | 335      | 300                 | 133      | 133      | 133      |  |  |
| CFRQ | Other land               | 4373     | 5805                | 6788     | 7425     | 8062     |  |  |
| CFRQ | of which with tree cover | N/A      | N/A                 | N/A      | N/A      | N/A      |  |  |
| CFRQ | Inland water bodies      | 452      | 452                 | 452      | 452      | 452      |  |  |
|      | TOTAL                    | 18104.00 | 18103.00            | 18104.00 | 18104.00 | 18104.00 |  |  |

#### Table 1b

|      | Categories                           |       | Annual forest establishment /<br>loss (000 hectares per year) |       |       | of which of introduced<br>species (000 hectares per year) |      |      |      |
|------|--------------------------------------|-------|---|-------|-------|---|------|------|------|
|      |                                      |       | 2000  | 2005  | 2010  | 1990  | 2000 | 2005 | 2010 |
| CFRQ | Forest expansion                     | 0     | 0   | 0     | 0     | N/A   | N/A  | N/A  | N/A  |
| CFRQ | of which afforestation               | N/A   | N/A   | N/A   | N/A   | N/A   | N/A  | N/A  | N/A  |
| CFRQ | of which natural expansion of forest | N/A   | N/A   | N/A   | N/A   | N/A   | N/A  | N/A  | N/A  |
| CFRQ | Deforestation                        | N/A   | N/A   | N/A   | N/A   | N/A   | N/A  | N/A  | N/A  |
| CFRQ | of which human induced               | N/A   | N/A   | N/A   | N/A   | N/A   | N/A  | N/A  | N/A  |
| CFRQ | Reforestation                        | 0.616 | 0.732   | 5.855 | 5.855 | N/A   | N/A  | N/A  | N/A  |
| CFRQ | of which artificial                  | 0.616 | 0.732   | 5.855 | 5.855 | N/A   | N/A  | N/A  | N/A  |

#### Tiers

| Category          | Tier for status | Tier for reported trend |
|-------------------|-----------------|-------------------------|
| Forest            | Tier 3          | Tier 3                  |
| Other wooded land | Tier 1          | Tier 1                  |
| Forest expansion  | N/A             | N/A                     |
| Deforestation     | N/A             | N/A                     |
| Reforestation     | Tier 2          | Tier 2                  |

#### Tier criteria

| Category  | Tier for status   | Tier for reported trend   |
|---|---|---|
| <ul> <li>Forest</li> <li>Other wooded land</li> <li>Afforestation</li> <li>Reforestation</li> <li>Natural expansion of forest</li> <li>Deforestation</li> </ul> | Tier 3: Data sources: Either recent (less than 10 years ago) National Forest Inventory or remote sensing, with ground truthing, or programme for repeated compatible NFIs Tier 2: Data sources: Full cover mapping / remote sensing or old NFI (more than 10 years ago) Tier 1: Other | <b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other |

#### 1.5 Comments

| Category                   | Comments related to data definitions etc   | Comments on the reported trends  |
|----------------------------|--|--|
| Forest                     | N/A  | The difference in forest area in FRA 2000 and FRA 2005 is mainly caused by the different definition (reclassification) and estimation process. It may also be mentioned that the former definition of forest of Forestry Administration, a land is classified as forest when it has a forest cover more than 20% where as FAO's definition, only 10% of forest cover is necessary for this purpose.  |
| Other wooded land          | N/A  | The 1992, 1996, 2002 and 2005 presents unexplainable trends in some categories like "wood and shrub land", "Deciduous forests" and "Forest Re-growth". This is attributed mainly to the fact that except for 2002 and 2005 figures very little ground truthing (field checking) of satellite interpreted data was done for 1992 and 1996 due to war and economy reasons. Therefore, for the purposes of this table figures for "other wooded lands for 1990 and 2000 were estimated by applying percentage of "other wooded land" in 2002 to 1992 and 1996 data. |
| Other land                 | The reason for differences in national figures for total country area may be because now the country is using boundaries defined by its Department of Geography while for FRA 2000 boundaries defined by MRC (Mekong River Commission) were used. The calibration has been done only for the purposes of the FRA report otherwise country wishes to maintain its figures from Department of Geography. | N/A  |
| Other land with tree cover | N/A  | N/A  |
| Inland water bodies        | N/A  | N/A  |
| Forest expansion           | N/A  | N/A  |

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| Deforestation | N/A | N/A |
|---------------|-----|-----|
| Reforestation | N/A | N/A |

|     | Other general comments to the table |  |
|-----|-------------------------------------|--|
| N/A |                                     |  |

## 2. What is the area of natural and planted forest and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

#### 2.1 Categories and definitions

| Term  | Definition  |
|---|---|
| Naturally regenerated forest                  | Forest predominantly composed of trees established through natural regeneration.  |
| Naturalized introduced species                | Other naturally regenerated forest where the tree species are predominantly non-native and do not need human help to reproduce/maintain populations over time.  |
| Introduced species                            | A species, subspecies or lower taxon occurring <u>outside</u> its natural range (past or present) and dispersal potential (i.e. outside the range it occupies naturally or could occupy without direct or indirect introduction or care by humans). |
| Category                                      | Definition  |
| Primary forest                                | Naturally regenerated forest of native species where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.   |
| Other naturally regenerated forest            | Naturally regenerated forest where there are clearly visible indications of human activities.   |
| of which of introduced species (sub-category) | Other naturally regenerated forest where the trees are predominantly of introduced species.   |
| of which naturalized (sub-sub category)       | Other naturally regenerated forest where the trees are predominantly of naturalized introduced species.   |
| Planted forest                                | Forest predominantly composed of trees established through planting and/or deliberate seeding.  |
| of which of introduced species (sub-category) | Planted forest where the planted/seeded trees are predominantly of introduced species.  |
| Mangroves                                     | Area of forest and other wooded land with mangrove vegetation.  |
| of which planted (sub-category)               | Mangroves predominantly composed of trees established through planting.   |

#### 2.2 National data

#### 2.2.1 Data sources

|   | References to sources of information  | Variables        | Years       | Additional comments |
|---|---|------------------|-------------|---------------------|
| 1 | World Bank, 1996. Cambodia<br>Forest Policy Assessment.<br>Report No 15777-KH. The<br>World Bank.                   | Concession Areas | Before 1996 | N/A                 |
| 2 | KC. 2004. National Report to<br>the fifth session of the United<br>Nations Forum on Forests.<br>Kingdom of Cambodia | Concession Areas | 2004        | N/A                 |

| 3 | N/A | N/A | N/A | N/A |
|---|-----|-----|-----|-----|
| 4 | N/A | N/A | N/A | N/A |

#### 2.2.2 Classification and definitions

| National class | Definition  |
|----------------|---|
| Not available  | FRA definitions are being used to derive the required information |
| N/A            | N/A   |
| N/A            | N/A   |
| N/A            | N/A   |

#### 2.2.3 Original data

The area of primary forest was estimated through GIS where the forest cover density is higher than 90% and access roads are not clearly visible. Area of productive plantations for 1992, 1996 and 2002 is from Question 1..

| National Area (1000 hectares) |        |      |      |      |         |            |      |  |
|-------------------------------|--------|------|------|------|---------|------------|------|--|
| Categories                    | Forest | -    |      | _    | Other w | ooded land | _    |  |
|                               | 1992   | 1996 | 2002 | 2005 | 1992    | 1996       | 2002 |  |
| Primary                       | 755    | 723  | 322  | n.a  | n.a.    | n.a.       | n.a. |  |
| Productive plantations        | 72     | 83   | 77   | 74   | n.a.    | n.a.       | n.a. |  |
|                               |        |      |      |      |         |            |      |  |

#### 2.3 Analysis and processing of national data

#### 2.3.1 Adjustment

#### 2.3.2 Estimation and forecasting

#### Primary forest:

The forest areas where the forest cover density is higher than 90% and access roads are not clearly visible on GIS. Since linear interpolation was providing too low figure for 2005, therefore the figure of 2002 has been assumed for 2005 and 2010.

| National Categories    | Area (1000 hectares)     |      |      |      |      |      |      |      |  |
|------------------------|--------------------------|------|------|------|------|------|------|------|--|
|                        | Forest Other wooded land |      |      |      |      |      |      |      |  |
|                        | 1990                     | 2000 | 2005 | 2010 | 1990 | 2000 | 2005 | 2010 |  |
| Primary                | 766                      | 456  | 322  | 322  | n.a. | n.a. | n.a. | n.a. |  |
| Productive plantations |                          | 79   | 74   | 69   | n.a. | n.a. | n.a. | n.a. |  |

#### Planted forest:

Estimation for Planted forest was done for:

1990: using extrapolation of 1992-1996 figures

2000: using interpolation of 1996-2002 figures

2005: using 2005 figures directly

2010: using forecast based on 2002-2005 figures

| Planted forest (1000 ha) |      |      |      |  |  |
|--------------------------|------|------|------|--|--|
| 1990                     | 2000 | 2005 | 2010 |  |  |
| 67                       | 79   | 74   | 69   |  |  |

The rest of the forest area was considered as other naturally regenerated forest.

#### 2.3.3 Reclassification

#### **2.4 Data**

#### Table 2a

| Categories |                                    | Forest area (000 hectares) |          |          |          |         |
|------------|------------------------------------|----------------------------|----------|----------|----------|---------|
|            |                                    | 1990                       | 2000     | 2005     | 2010     | 2015    |
| CFRQ       | Primary forest                     | 766                        | 456      | 322      | 322      | 322     |
| CFRQ       | Other naturally regenerated forest | 12111                      | 11011    | 10335    | 9703     | 9066    |
| CFRQ       | of which of introduced species     | N/A                        | N/A      | N/A      | N/A      | N/A     |
| CFRQ       | of which naturalized               | N/A                        | N/A      | N/A      | N/A      | N/A     |
| CFRQ       | Planted forest                     | 67                         | 79       | 74       | 69       | 69      |
| CFRQ       | of which of introduced species     | N/A                        | N/A      | N/A      | N/A      | N/A     |
| TOTAL      |                                    | 12944.00                   | 11546.00 | 10731.00 | 10094.00 | 9457.00 |

#### Table 2b

| Primary forest converted to (000 ha) |         |            |                                  |           |            |                                  |         |            |
|--------------------------------------|---------|------------|----------------------------------|-----------|------------|----------------------------------|---------|------------|
| 1990-2000                            |         |            |                                  | 2000-2010 |            | 2010-2015                        |         |            |
| Other<br>natural<br>regeneration     | Planted | Other land | Other<br>natural<br>regeneration | Planted   | Other land | Other<br>natural<br>regeneration | Planted | Other land |
| 0                                    | 0       | 0          | 0                                | 0         | 0          | 0                                | 0       | 0          |

#### Table 2c

| Categories                 | Area (000 hectares) |      |      |      |      |
|----------------------------|---------------------|------|------|------|------|
| Categories                 | 1990                | 2000 | 2005 | 2010 | 2015 |
| Mangroves (forest and OWL) | 80                  | 68   | 62   | 56   | 50   |
| of which planted           | N/A                 | N/A  | N/A  | N/A  | N/A  |

#### Tiers

| Category Tier for status Tier for reported trend |
|--|
|--|

| Primary forest                     | Tier 1 | Tier 1 |
|------------------------------------|--------|--------|
| Other naturally regenerated forest | Tier 1 | Tier 1 |
| Planted forest                     | Tier 1 | Tier 1 |
| Mangroves                          | Tier 1 | Tier 1 |

#### Tier Criteria

| Category   | Tier for status  | Tier for reported trend   |
|--|--|---|
| Primary forest/Other naturally regenerated forest/Planted forest | Tier 3: Data sources: Recent (less than 10 years) National Forest Inventory or remote sensing with ground truthing or data provided by official agencies or programme for repeated compatible NFIs Tier 2: Data sources: Full cover mapping/remote sensing or old NFI (more than 10 years) Tier 1: Other | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |

#### 2.5 Comments

| Category                            | Comments related to data definitions etc                         | Comments on reported trend   |
|-------------------------------------|--|--|
| Primary forest                      | N/A  | Some parts of primary forest are disturbed by human activities; therefore, the primary forest area is reduced. |
| Other naturally regenerating forest | N/A  | N/A  |
| Planted forest                      | All the planted forest area are considered as rubber plantation. | N/A  |
| Mangroves                           | N/A  | N/A  |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

## 3. What are the stocks and growth rates of the forests and how have they changed?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

#### 3.1 Categories and definitions

| Category                       | Definition   |
|--------------------------------|--|
| Growing stock                  | Volume over bark of all living trees with a minimum diameter of 10 cm at breast height (or above buttress if these are higher). Includes the stem from ground level up to a top diameter of 0 cm, excluding branches.  |
| Net Annual Increment (NAI)     | Average annual volume of gross increment over the given reference period less that of natural losses on all trees, measured to minimum diameters as defined for "Growing stock".   |
| Above-ground biomass           | All living biomass above the soil including stem stump branches bark seeds and foliage.  |
| Below-ground biomass           | All biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.  |
| Dead wood                      | All non-living woody biomass not contained in the litter either standing lying on the ground or in the soil. Dead wood includes wood lying on the surface dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country.               |
| Carbon in above-ground biomass | Carbon in all living biomass above the soil including stem stump branches bark seeds and foliage.  |
| Carbon in below-ground biomass | Carbon in all biomass of live roots. Fine roots of less than 2 mm diameter are excluded because these often cannot be distinguished empirically from soil organic matter or litter.  |
| Carbon in dead wood            | Carbon in all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil. Dead wood includes wood lying on the surface, dead roots and stumps larger than or equal to 10 cm in diameter or any other diameter used by the country. |
| Carbon in litter               | Carbon in all non-living biomass with a diameter less than the minimum diameter for dead wood (e.g. 10 cm ) lying dead in various states of decomposition above the mineral or organic soil.   |
| Soil carbon                    | Organic carbon in mineral and organic soils (including peat) to a soil depth of 30 cm.   |

#### 3.2 National data

#### 3.2.1 Data sources

|   | References to sources of information  | Variables | Years | Additional comments   |
|---|---|-----------|-------|---|
| 1 | N/A   | N/A       | N/A   | No information is available except from growing stock per hectare estimates from an old FAO inventory.      |
| 2 | FAO. 2008. Guidelines<br>for Country Reporting to<br>FRA 2005. Global Forest<br>Resources Assessment 2010 | N/A       | N/A   | Biomass conversion and<br>expansion factor (BCEF)<br>and root-shoot ratio from<br>Appendix 5 FRA guidelines |
| 3 | FAO. 2008. Guidelines<br>for Country Reporting to<br>FRA 2005. Global Forest<br>Resources Assessment 2010 | N/A       | N/A   | Carbon conversion factor of 0.47  |

| 4 | N/A | N/A | N/A | N/A |
|---|-----|-----|-----|-----|
|   |     |     |     |     |

#### 3.2.2 Classification and definitions

| National class | Definition  |
|----------------|---|
| Growing stock  | No information on national definitions or classes is available. |
| Biomass stock  | Not available   |
| Carbon stock   | Not available   |
| N/A            | N/A   |

#### 3.2.3 Original data

#### **Growing stock**

Estimate of per hectare growing stock for three major forest types (evergreen, Mixed and Deciduous) are only available from old FAO supported inventory and no new estimates are available. (Email of National Correspondent of December  $18^{\rm th}$ , 2005).

| National class   | Growing Stock (m <sup>3</sup> /ha) |
|--|------------------------------------|
| Evergreen forest with high cover density                               | 230                                |
| Evergreen forest with medium and low cover density                     | 165 (average of 230 and 100)       |
| Evergreen mosaic forest  | 100                                |
| Mixed evergreen and deciduous forest with high cover density           | 145 (average of 230 and 60)        |
| Mixed evergreen and deciduous forest with medium and low cover density | 80 (average of 100 and 60)         |
| Mixed mosaic forest  | 50 (average of 40 and 60)          |
| Deciduous forest   | 60                                 |
| Deciduous mosaic forest  | 60 (assumed same as deciduous)     |
| Forest regrowth  | Not considered                     |

| Inundated forest regrowth     | Not considered     |
|-------------------------------|--------------------|
| Inundated forest              | 20                 |
| Mangrove forest               | 20                 |
| Forest plantation             |                    |
| Inundated mosaic forest       | 20                 |
| Bamboo                        | 20                 |
| Wood and shrub land evergreen | Data not available |
| Wood and shrub land dry       | Data not available |
| Wood and shrub land inundated | Data not available |

#### **Biomass stock**

No national data on biomass were available so IPCC default values were applied to the growing stock.

#### Carbon stock

No original data on carbon were available, so the carbon conversion factor of 0.47 recommended in the FRA guidelines has been applied to the biomass.

#### 3.3 Analysis and processing of national data

#### 3.3.1 Adjustment

#### **Growing stock**

This step is not necessary as area estimates are taken from Question 1.

#### 3.3.2 Estimation and forecasting

#### **Growing stock**

Weighted Growing stock per hectare for three major forest types

|                        | 1         |       |             |                |
|------------------------|-----------|-------|-------------|----------------|
| ForestTypes            | Area (ha) | GS/ha | Volume (m3) | Weighted GS/ha |
| A. Evergreen           |           |       |             |                |
| For 1992               |           |       |             |                |
| Evergreen Dense        | 656,582   | 230   | 151,013,860 |                |
| Evergreen<br>Disturbed | 3,254,202 | 165   | 536,943,330 |                |
| Evergreen Mosaic       | 131,651   | 100   | 13,165,100  |                |
| Total                  | 4,042,435 |       | 701,122,290 | 173.44         |
| For 1996               |           |       |             |                |
| Evergreen Dense        | 627,219   | 230   | 144,260,370 |                |
| Evergreen<br>Disturbed | 3,185,603 | 165   | 525,624,495 |                |
| Evergreen Mosaic       | 178,150   | 100   | 17,815,000  |                |
| Total                  | 3,990,972 |       | 687,699,865 | 172.31         |
| B. Mixed               |           |       |             |                |
| For 1992               |           |       |             |                |
| Mixed Dense            | 98,851    | 145   | 14,333,395  |                |
| Mixed Disturbed        | 1,309,010 | 80    | 104,720,800 |                |
| Mixed Mosaic           | 110,103   | 50    | 5,505,150   |                |
| Total                  | 1,517,964 |       | 124,559,345 | 82.06          |
| For 1996               |           |       |             |                |
| Mixed Dense            | 95,322    | 145   | 13,821,690  |                |
| Mixed Disturbed        | 1,286,649 | 80    | 102,931,920 |                |
| Mixed Mosaic           | 125,331   | 50    | 6,266,550   |                |
| Total                  | 1,507,302 |       | 123,020,160 | 81.62          |
| C. Deciduous           |           |       |             | 60.00          |

| D. Inundated, Mangrove and Bamboo Forests | 20.00 |
|---|-------|
|   |       |

#### B. Weighted Growing stock per hectare for Plantations

The estimates for growing stock of plantations are not available. Therefore following method has been followed.

• Grouping plantation area by species and age

Information about area by age of plantations is totally only for 43,000 ha from combination of

country information collected for FRA 2000 (More than 40 year and about 20 year) with table 5.2.3 (1990 to 2007). An average net MAI of about 1 cubic meter/ha/annum is being assumed for net area under plantations to estimate weighted GS/ha in plantations. Further, it is assumed that the estimated weighted average will be applicable to all the forest areas under plantations.

| Category by age                    | Area   | Assumed GS/ha | Volume     | Weighted GS/ha |
|------------------------------------|--------|---------------|------------|----------------|
| of (forest species)<br>plantations | 000 ha |               | (000 cubm) |                |
| More than 40 years                 | 3      | 40            | 120        |                |
| About 20 years                     | 2      | 20            | 40         |                |
| Less than 20                       | 38     | 10            | 380        |                |
| Total                              | 43     |               | 540        | 13             |

#### C. Weighted Growing Stock per hectare of "forests"

The percentage composition of forests in 2002 has been used to calculate following weighted average of growing stock of forests per ha in 1992 and 1996 because only 2002 provide figures with reasonable ground verification.

| Type of                                       | Percentage          | 1992   |          | 1996   |          |
|---|---------------------|--------|----------|--------|----------|
| iorests                                       | forests Composition |        | Weighted | GS/ha  | Weighted |
|   | (2002)              |        | GS/ha    |        | GS/ha    |
| Evergreen                                     | 33.48               | 173.44 |          | 172.31 |          |
| Mixed   | 13.09               | 82.06  |          | 81.62  |          |
| Deciduous                                     | 43.49               | 60     |          | 60     |          |
| Bamboo  | 0.26                | 20     |          | 20     |          |
| Inundated<br>(Forest<br>+Mosaic<br>+Regrowth) | 2.83                | 20     |          | 20     |          |
| Mangrove                                      | 0.59                | 20     |          | 20     |          |
| Forest<br>Plantation                          | 0.69                | 20     |          | 20     |          |
| Forest<br>Regrowth                            | 5.57                | 20     |          | 20     |          |
| Total<br>Forests                              | 100.00              |        | 96.89    |        | 96.46    |

D. Weighted Growing Stock per ha of forests for FRA reference years

| Category                        | Weighted Growing Stock cubic meter per hectare |       |       |       |       |       |  |
|---------------------------------|--|-------|-------|-------|-------|-------|--|
|                                 | 1992   | 1996  | 1990  | 2000  | 2005  | 2010  |  |
| Growing stock per ha in Forests | 96.89  | 96.46 | 97.11 | 96.03 | 95.49 | 94.96 |  |

D. Estimation of Growing Stock and Commercial Growing Stock

| Variable         | Unit                   | 1990   | 2000   | 2005   | 2010   |
|------------------|------------------------|--------|--------|--------|--------|
| Forest Area      | 000 ha                 | 12,944 | 11,546 | 10,731 | 10,094 |
| GS/ha            | cubic meter<br>per ha  | 97     | 96     | 95     | 95     |
| Growing<br>Stock | million cubic<br>meter | 1,257  | 1,109  | 1,025  | 959    |

#### **Biomass stock**

#### Above ground biomass:

Following recommendations from FRA guidelines the following assumptions and calculations have been made:

From appendix 5, table 5.4 pag 6 of the FRA guidelines and considering an ecological zone corresponding to the mostly tropical dry forest (open deciduous forest) the biomass conversion and expansion factor (BCEF) of 0.66 have been applied to the growing stock:

Above ground biomass=growing stock\*BCEF

1990= 1257 m3\*0.66 t/m3= 830 t

2000= 1109 m3\*0.66 t/m3= 732 t

2005= 1025 m3\*0.66 t/m3= 676 t

2010= 959 m3\*0.66 t/m3= 633 t

#### Below ground biomass:

From appendix 5, table 5.3 pag 5 of the FRA guidelines, considering an above ground biomass>20t/ha and a tropical dry forest biome, the root-shoot ratio of 0.56 has been chosen.

1990= 830 m3\*0.56 t/m3= 465 t

2000= 732 m3\*0.56 t/m3= 410 t

2005= 676 m3\*0.56 t/m3= 379 t

2010= 633 m3\*0.56 t/m3= 354 t

#### Carbon stock

The soil carbon is estimated from the forest area multiply by the HAC soils of Tropical, dry (38) found in Table 5.10 FRA Guidelines.

#### 3.3.3 Reclassification

#### **Growing stock**

This step is not necessary.

#### 3.4 Data

#### Table 3a

|      |                           | Growing stock volume (million m <sup>3</sup> over bark) |      |        |      |      |      |      |           |      |      |
|------|---------------------------|---|------|--------|------|------|------|------|-----------|------|------|
| Cat  | Category Forest           |   |      | Forest |      |      |      | Oth  | er wooded | land |      |
|      |                           | 1990  | 2000 | 2005   | 2010 | 2015 | 1990 | 2000 | 2005      | 2010 | 2015 |
| CFRQ | Total<br>growing<br>stock | 1257  | 1109 | 1025   | 959  | 893  | N/A  | N/A  | N/A       | N/A  | N/A  |
| CFRQ | of<br>which<br>coniferous | N/A   | N/A  | N/A    | N/A  | N/A  | N/A  | N/A  | N/A       | N/A  | N/A  |
| CFRQ | of<br>which<br>broadleave | N/A<br>ed   | N/A  | N/A    | N/A  | N/A  | N/A  | N/A  | N/A       | N/A  | N/A  |

#### Table 3b

| Category/Species name |                              |             | Growing stock in forest (million cubic meters) |      |      |      |
|-----------------------|------------------------------|-------------|--|------|------|------|
| Rank                  | Scientific name              | Common name | 1990   | 2000 | 2005 | 2010 |
| 1 st                  | Dipterocarpus<br>dyeri       | N/A         | N/A  | N/A  | N/A  | N/A  |
| 2 nd                  | Dipterocarpus costatus       | N/A         | N/A  | N/A  | N/A  | N/A  |
| 3 rd                  | Dipterocarpus alatus         | N/A         | N/A  | N/A  | N/A  | N/A  |
| 4 th                  | Anisoptera cochinchinenesis  | N/A         | N/A  | N/A  | N/A  | N/A  |
| 5 th                  | Tarritia javanica            | N/A         | N/A  | N/A  | N/A  | N/A  |
| 6 th                  | Anisoptera<br>costata, Korth | N/A         | N/A  | N/A  | N/A  | N/A  |
| 7 th                  | Hopea pierrei                | N/A         | N/A  | N/A  | N/A  | N/A  |

| 8 th      | Dipterocarpus obtusifolius    | N/A | N/A | N/A | N/A | N/A |
|-----------|-------------------------------|-----|-----|-----|-----|-----|
| 9 th      | Dipterocarpus<br>tuberculatus | N/A | N/A | N/A | N/A | N/A |
| 10 th     | Dipterocarpus intricatus      | N/A | N/A | N/A | N/A | N/A |
| Remaining |                               |     | N/A | N/A | N/A | N/A |
| TOTAL     |                               |     | .00 | .00 | .00 | .00 |

## THE PRE-FILLED VALUES FOR GROWING STOCK REFER TO THE FOLLOWING THRESHOLD VALUES (SEE TABLE BELOW)

| Item  | Value | Complementary information |
|---|-------|---------------------------|
| Minimum diameter (cm) at breast height of trees included in growing stock (X)     | N/A   | N/A                       |
| Minimum diameter (cm) at the top end of stem for calculation of growing stock (Y) | N/A   | N/A                       |
| Minimum diameter (cm) of branches included in growing stock (W)                   | N/A   | N/A                       |
| Volume refers to above ground (AG) or above stump (AS)                            | N/A   | N/A                       |

# PLEASE NOTE THAT THE DEFINITION OF GROWING STOCK HAS CHANGED AND SHOULD BE REPORTED AS GROWING STOCK DBH 10 CM INCLUDING THE STEM FROM GROUND LEVEL UP TO A DIAMETER OF 0 CM, EXCLUDING BRANCHES.

#### Table 3c

|      | Category             |      | Net annual increment (m <sup>3</sup> per hectare and year) |      |      |      |  |  |  |
|------|----------------------|------|--|------|------|------|--|--|--|
| C    |                      |      | Forest   |      |      |      |  |  |  |
|      |                      | 1990 | 2000   | 2005 | 2010 | 2015 |  |  |  |
| CFRQ | Net annual increment | N/A  | N/A  | N/A  | N/A  | N/A  |  |  |  |
| CFRQ | of which coniferous  | N/A  | N/A  | N/A  | N/A  | N/A  |  |  |  |
| CFRQ | of which broadleaved | N/A  | N/A  | N/A  | N/A  | N/A  |  |  |  |

#### Table 3d

|          | Biomass (million metric tonnes oven-dry weight) |      |        |      |      |      |      |           |      |      |
|----------|---|------|--------|------|------|------|------|-----------|------|------|
| Category |   |      | Forest |      |      |      | Oth  | er wooded | land |      |
|          | 1990  | 2000 | 2005   | 2010 | 2015 | 1990 | 2000 | 2005      | 2010 | 2015 |

| CFRQ  | Above ground biomass       | 830     | 732     | 676     | 633    | 590    | N/A | N/A | N/A | N/A | N/A |
|-------|----------------------------|---------|---------|---------|--------|--------|-----|-----|-----|-----|-----|
| CFRQ  | Below<br>ground<br>biomass | 465     | 410     | 379     | 354    | 329    | N/A | N/A | N/A | N/A | N/A |
| CFRQ  | Dead<br>wood               | N/A     | N/A     | N/A     | N/A    | N/A    | N/A | N/A | N/A | N/A | N/A |
| TOTAL |                            | 1295.00 | 1142.00 | 1055.00 | 987.00 | 919.00 | .00 | .00 | .00 | .00 | .00 |

Table 3e

|       |   |         |        |        | Car    | bon (Millio | on metric to      | onnes) |      |      |      |
|-------|---|---------|--------|--------|--------|-------------|-------------------|--------|------|------|------|
| Cat   | egory                                   |         | Forest |        |        |             | Other wooded land |        |      |      |      |
|       |   | 1990    | 2000   | 2005   | 2010   | 2015        | 1990              | 2000   | 2005 | 2010 | 2015 |
| CFRQ  | Carbon<br>in above<br>ground<br>biomass | 390     | 344    | 318    | 298    | 278         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Carbon<br>in below<br>ground<br>biomass | 219     | 193    | 177    | 166    | 155         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Subtotal<br>Living<br>biomass           | 609     | 537    | 495    | 464    | 433         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Carbon<br>in dead<br>wood               | N/A     | N/A    | N/A    | N/A    | N/A         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Carbon in litter                        | N/A     | N/A    | N/A    | N/A    | N/A         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Subtotal<br>Dead<br>wood<br>and litter  | N/A     | N/A    | N/A    | N/A    | N/A         | N/A               | N/A    | N/A  | N/A  | N/A  |
| CFRQ  | Soil<br>carbon                          | 492     | 439    | 408    | 384    | 360         | N/A               | N/A    | N/A  | N/A  | N/A  |
| TOTAL |   | 1101.00 | 976.00 | 903.00 | 848.00 | 793.00      | .00               | .00    | .00  | .00  | .00  |

## Tiers

| Variable/category    | Tier for status | Tier for trend |
|----------------------|-----------------|----------------|
| Total growing stock  | Tier 1          | Tier 1         |
| Net annual increment | N/A             | N/A            |
| Above ground biomass | Tier 1          | Tier 1         |

| Below ground biomass           | Tier 1 | Tier 1 |
|--------------------------------|--------|--------|
| Dead wood                      | N/A    | N/A    |
| Carbon in above-ground biomass | Tier 1 | N/A    |
| Carbon in below ground biomass | Tier 1 | N/A    |
| Carbon in dead wood and litter | N/A    | N/A    |
| Soil carbon                    | Tier 1 | Tier 1 |

#### Tier criteria

| Category  | Tier for status  | Tier for reported trend   |
|---|--|---|
| Total growing stock   | Tier 3: Data sources Recent 10 years National Forest Inventory or remote sensing with ground truthing or programme for repeated compatible NFI 10 years Domestic volume functions Tier 2: Data sources/registers and statistics modelling or old NFI 10 years or partial field inventory Tier 1: Other data sources  | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Domestic growth functions Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 tier for status Tier 1: Other |
| Net annual increment  | Tier 3: Scientifically tested national volume and growth functions Tier 2: Selection of volume and growth functions as relevant as possible Tier 1: Other  | Tier 3: Confirmation/adjustment of functions used through scientific work Tier 2: Review work done to seek alternative functions Tier: 1 Other  |
| Biomass   | Tier 3: Country-specific national or subnational biomass conversion expansion factors applied or other domestic or otherwise nationally relevant biomass studies Tier 2: Application of country specific national or sub-national biomass conversion factors from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other                         |
| <ul> <li>Carbon in above ground biomass</li> <li>Carbon in below ground biomass</li> <li>Carbon in dead wood and litter</li> <li>Soil carbon</li> </ul> | Tier 3: Country-specific national or subnational biomass conversion expansion factors applied Tier 2: Application of country specific national or subnational biomass conversion factors form from other country with similar climatic conditions and forest types Tier 1: International/regional default biomass expansion factors applied  | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other                         |

## 3.5 Comments on growing stock biomass and carbon

| Category            | Comments related to data definitions etc | Comments on the reported trend |
|---------------------|--|--------------------------------|
| Total growing stock | N/A                                      | N/A                            |

| Growing stock of broadleaved coniferous | N/A | N/A |
|---|-----|-----|
| Growing stock composition               | N/A | N/A |
| Net annual increment                    | N/A | N/A |
| Above-ground biomass                    | N/A | N/A |
| Below-ground biomass                    | N/A | N/A |
| Dead wood                               | N/A | N/A |
| Carbon in above-ground biomass          | N/A | N/A |
| Carbon in below-ground biomass          | N/A | N/A |
| Carbon in dead wood                     | N/A | N/A |
| Carbon in litter                        | N/A | N/A |
| Soil carbon                             | N/A | N/A |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# 4. What is the status of forest production and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 4.1 Categories and definitions

| Term                           | Definition  |
|--------------------------------|---|
| Primary designated function    | The primary function or management objective assigned to a management unit either by legal prescription documented decision of the landowner/manager or evidence provided by documented studies of forest management practices and customary use. |
| Non wood forest product (NWFP) | Goods derived from forests that are tangible and physical objects of biological origin other than wood.   |
| Commercial value of NWFP       | For the purpose of this table, value is defined as the commercial market value at the forest gate.  |
| Category                       | Definition  |
| Production forest              | Forest area designated primarily for production of wood, fibre, bio-energy and/or non-wood forest products.   |
| Multiple use forest            | Forest area designated for more than one purpose and where none of these alone is considered as the predominant designated function.  |
| Total wood removals            | The total of industrial round wood removals and woodfuel removals.  |
| of which woodfuel              | The wood removed for energy production purposes, regardless whether for industrial, commercial or domestic use.   |

## 4.2 National data

#### 4.2.1 Data sources

|   | References to sources of information  | Variables        | Years       | Additional comments |
|---|---|------------------|-------------|---------------------|
| 1 | World Bank, 1996. Cambodia<br>Forest Policy Assessment.<br>Report No 15777-KH. The<br>World Bank.                   | Concession Areas | Before 1996 | N/A                 |
| 2 | KC. 2004. National Report to<br>the fifth session of the United<br>Nations Forum on Forests.<br>Kingdom of Cambodia | Concession Areas | 2004        | N/A                 |
| 3 | Royal Decree, 1993.<br>Government of Cambodia   | Protected Area   | 1993        | N/A                 |
| 4 | Royal Decree, 2004.<br>Government of Cambodia   | Protected Area   | 2004        | N/A                 |
| 5 | Original GIS data source  | Protected Areas  | N/A         | N/A                 |
| 6 | Gov't Sub Degree  | Protected Forest | N/A         | N/A                 |

|   | 7 | Law on Forestry | N/A | 2002 | N/A |
|---|---|-----------------|-----|------|-----|
| - |   |                 |     |      |     |

#### 4.2.2 Classification and definitions

| National class            | Definition  |
|---------------------------|---|
| Permanent Forest Estate   | Consist of Permanent Forest Reserves and Private Forests  |
| Permanent Forest Reserves | Consist of Production forest, Protection Forest and Conversion Forestland for other Development Purpose Note: Conversion Forest land for other development purpose is idle land, comprised mainly of secondary vegetation, not yet designated for use by any sector that shell be classified as Permanent Forest Reveres until the Royal Government decide to use and develop the land for anther purpose |
| N/A                       | N/A   |
| N/A                       | N/A   |

### 4.2.3 Original data

### A. Concession Areas (Production Areas)

These are identified for promoting forest based development and are considered as production forests as defined by FRA. The area of forest under concession prior to 1994 (World Bank, 1996) and in 1996 was about 2.244 million hectares and 6.464 million hectares respectively. Since 1999, fifteen (15) forest concession have been cancelled to ensure the sustainability of forests, the area has reduced to about 3.374 million hectares (KC, 2004).

#### B. Protection Areas and Protected Forest

| Types of Protected              | Name (Year)         | Area (1000 ha)       |                      |                         |          |  |
|---------------------------------|---------------------|----------------------|----------------------|-------------------------|----------|--|
| Forest and<br>Protected<br>Area |                     | Royal Decree<br>1993 | Royal Decree<br>2004 | Gov't Sub<br>Degree2004 | GIS Data |  |
| Watershed<br>Protection         | Kbal Chay<br>(1997) | 0                    |                      | 6                       | 6        |  |

| Watershed<br>and<br>Biodiversity | Central<br>Cardamom<br>(2002)                                    | 0   |     | 401 | 401 |
|----------------------------------|--|-----|-----|-----|-----|
| Conservation                     | Southern<br>Cardamom<br>(2004)                                   | 0   |     | 144 | 144 |
| Zoo                              | Phnom Ta<br>Moa (1997)   | 0   |     | 1   | 2   |
| Biodiversity<br>Conservation     | Seima FA<br>(2004)   | 0   |     | 305 | 298 |
|                                  | Preah<br>Vihear_FA<br>(2002)                                     | 0   |     | 190 | 190 |
|                                  | Mondul Kirri<br>(2002)   | 0   |     | 429 | 429 |
|                                  | Oyadav Protected Forest for Recreation Sport Game Hunting (2009) |     |     | 101 | 101 |
| Bird<br>Conservation             | Ang Trapeng<br>Thmor (2000)                                      |     | 13  | 0   | 13  |
|                                  | Beoung Prek<br>Lpov(2007)  | 0   | 0   | 8   | 8   |
| National<br>Park* <sup>1</sup>   | Virachey<br>(1993)   | 333 | 333 | 0   | 338 |
|                                  | Phnom Kulen (1993)   | 38  | 38  | 0   | 38  |
|                                  | Botum Sakor<br>(1993)  | 171 | 171 | 0   | 183 |
|                                  | Kirirom<br>(1993)  | 35  | 35  | 0   | 28  |
|                                  | Phnom Bokor<br>(1993)  | 140 | 140 | 0   | 142 |
|                                  | Ream (1993)  | 21  | 21  | 0   | 15  |
|                                  | Kep (1993)   | 5   | 5   | 0   | 7   |

| Wildlife<br>Sanctuary* <sup>1</sup> | Kulen<br>Promtep<br>(1993)  | 403  | 403  | 0    | 407  |
|-------------------------------------|-----------------------------|------|------|------|------|
|                                     | Lomphat (1993)              | 250  | 250  | 0    | 251  |
|                                     | Beng Per (1993)             | 243  | 243  | 0    | 249  |
|                                     | Phnom Prich (1993)          | 223  | 223  | 0    | 222  |
|                                     | Phnom Nam<br>Lyr (1993)     | 48   | 48   | 0    | 54   |
|                                     | Phnom<br>Samkos<br>(1993)   | 334  | 334  | 0    | 331  |
|                                     | Phnom Aural<br>(1993)       | 254  | 254  | 0    | 257  |
|                                     | Snoul (1993)                | 75   | 75   | 0    | 74   |
|                                     | Peam Krasop<br>(1993)       | 24   | 24   | 0    | 25   |
|                                     | Roniem Daun<br>Sam (1993)   | 179  | 40   | 0    | 40   |
| Protected Landscape* 1              | Preah Vihear<br>(1993)      | 5    | 5    | 0    | 5    |
|                                     | Banteay<br>Chhmar<br>(1993) | 81   | 81   | 0    | 82   |
|                                     | Angkor<br>(1993)            | 11   | 11   | 0    | 14   |
| Multiple<br>Landuse*                | Tonle Sap<br>( 1993)        | 316  | 316  | 0    | 322  |
|                                     | Samlaut<br>(1993)           | 60   | 60   | 0    | 60   |
|                                     | Dong Peng<br>(1993)         | 28   | 28   | 0    | 29   |
| Total                               |                             | 3277 |      | 1585 | 4765 |
|                                     |                             |      | 3151 |      |      |

The differences between the area in Royal Decree and the area in GIS data caused by the boundaries and area of the protected areas were drawn and calculated by hand

and then were transferred into GIS format in 1997. All figures are processed based on forest cover data and protected area data through GIS spatial analysis with resolution 50 meters grid cell.

\* The area in Protected Area was stated by Royal Degree 1993

#### 4.3 Analysis and processing of national data

#### 4.3.1 Adjustment

#### 4.3.2 Estimation and forecasting

#### A. Concession Areas

It is assumed that figure 2.244 million ha of areas under concession prior to 1994 reflects the state in 1990. The figure 4.919 million ha for 2000 has been derived by linear interpolation of 1996 figure of 6.464 million ha and 2004 figure 3.374 million ha. The figure for 2004 is assumed for 2005. The 2006 figure 3.374 million ha is assumed for 2010.

#### B. Protection of Soil and Water

The area of 551,000 ha specifically designated for watershed conservation in 1997, 2002 and 2004 are considered as area under protection for soil and water in 2010.

#### C. Multiple Purposes

Area of about 404,000 ha designated for multiple land use since 1993 (and before) is being considered as area under multiple purposes for 1990, 2000 and 2005 and 2010.

#### D. Social Services

Area of about 97,000 ha of designated for protected landscapes since 1993 (and before) is being considered as area under social services for 1990, 2000 and 2005 and 2010.

#### E. Conservation of Biodiversity

Since this is the largest proportion of the protected areas, the calibration from the original data to the actual size of 4,735 million ha in 2004 is done through reduction of Royal degree and Gov't sub-degree classes.

The figure 3,277,000 ha( 97,000 ha under Social Services and 404,000ha under multiple purposes were included) of areas under "Protection areas" in 1993 is assumed for 1990. The figure 4,735,000 ha ( 404,000 ha under multiple land use,97,000 ha under Social Services and 551,000 ha under protection to soil and water were included) of protected forest and protected areas for 2004 are assumed for 2005. The figure 3,381,000 ha for 2000 is derived by linear interpolation of above derived figures for 1990 and 2005. The figure 3,985,000 ha for 2010 is derived by linear interpolation of above derived figures for 2000 and 2005.

### 4.3.3 Reclassification

| D '      | T               |
|----------|-----------------|
| Drimort  | <b>Function</b> |
| FILIMALV | 1 11116 1116 11 |
|          |                 |
|          |                 |

| Forest                                      | Production | Protection<br>of Soil and<br>Water | Conservation of Biodiversity | Social<br>Service | Multiple<br>Purpose | No or<br>Unknown<br>Function |
|---|------------|------------------------------------|------------------------------|-------------------|---------------------|------------------------------|
| Concession<br>Areas                         | 100%       |                                    |                              |                   |                     |                              |
| Watershed<br>Protection                     |            | 100%                               |                              |                   |                     |                              |
| Zoo,<br>Biodiversity<br>Conservation,       |            |                                    | 100%                         |                   |                     |                              |
| Crane<br>Conservation,<br>National<br>Park, |            |                                    |                              |                   |                     |                              |
| Wildlife<br>Sanctuary                       |            |                                    |                              |                   |                     |                              |

| Protected<br>Landscape |  | 100% |      |      |
|------------------------|--|------|------|------|
| Multiple<br>Landuse    |  |      | 100% |      |
| Unknown                |  |      |      | 100% |

## 4.4 Data

## Table 4a

| Categories |                     | Forest area (000 hectares) |      |      |      |      |  |
|------------|---------------------|----------------------------|------|------|------|------|--|
|            |                     | 1990                       | 2000 | 2005 | 2010 | 2015 |  |
| CFRQ       | Production forest   | 2244                       | 4919 | 3374 | 3374 | 3374 |  |
| CFRQ       | Multiple use forest | 404                        | 404  | 404  | 404  | 404  |  |

## Table 4b

| Rank  | Name of product | Key species | Commercial value<br>of NWFP removals<br>2010 (value 1000<br>local currency) | NWFP category |
|-------|-----------------|-------------|---|---------------|
| 1 st  | N/A             | N/A         | N/A   | N/A           |
| 2 nd  | N/A             | N/A         | N/A   | N/A           |
| 3 rd  | N/A             | N/A         | N/A   | N/A           |
| 4 th  | N/A             | N/A         | N/A   | N/A           |
| 5 th  | N/A             | N/A         | N/A   | N/A           |
| 6 th  | N/A             | N/A         | N/A   | N/A           |
| 7 th  | N/A             | N/A         | N/A   | N/A           |
| 8 th  | N/A             | N/A         | N/A   | N/A           |
| 9 th  | N/A             | N/A         | N/A   | N/A           |
| 10 th | N/A             | N/A         | N/A   | N/A           |
| TOTAL | <u> </u>        |             | .00   |               |

| 2010 |  |  |
|------|--|--|
|      |  |  |

| Name of local currency | N/A |
|------------------------|-----|
|                        |     |

# Category Plant products / raw material 1 Food 2 Fodder 3 Raw material for medicine and aromatic products 4 Raw material for colorants and dyes 5 Raw material for utensils handicrafts construction 6 Ornamental plants 7 Exudates 8 Other plant products Animal products / raw material 9 Living animals 10 Hides skins and trophies 11 Wild honey and beewax 12 Wild meat 13 Raw material for medicine 14 Raw material for colorants 15 Other edible animal products 16 Other non-edible animal products

### Table 4c Pre-filled data from FAOSTAT

| Year  | FRA 2015 category (1000 m <sup>3</sup> u.b.) |                   |  |
|-------|--|-------------------|--|
| i Cai | Total wood removals                          | of which woodfuel |  |
| 1990  | 11795.2                                      | 11228.23          |  |
| 1991  | 11916.5                                      | 11176.52          |  |
| 1992  | 11842.8                                      | 11107.76          |  |

| 1993 | 11756.8 | 11061.84 |
|------|---------|----------|
| 1994 | 12056.6 | 11097.63 |
| 1995 | 12026.6 | 10986.63 |
| 1996 | 11863.1 | 10823.08 |
| 1997 | 11807.7 | 10767.75 |
| 1998 | 11560.5 | 10520.54 |
| 1999 | 11236.6 | 10315.64 |
| 2000 | 10298.4 | 10119.41 |
| 2001 | 10047.3 | 9924.32  |
| 2002 | 9862.3  | 9737.33  |
| 2003 | 9683    | 9558.05  |
| 2004 | 9511.1  | 9386.08  |
| 2005 | 9334.1  | 9221.07  |
| 2006 | 9165.6  | 9052.64  |
| 2007 | 9009    | 8891     |
| 2008 | 8853.4  | 8735.4   |
| 2009 | 8704    | 8586.01  |
| 2010 | 8525.2  | 8442.34  |
| 2011 | 8614.3  | 8442.34  |
| L    | 1       |          |

## Tiers

| Category            | Tier for status | Tier for reported trend |
|---------------------|-----------------|-------------------------|
| Production forest   | Tier 1          | Tier 1                  |
| Multiple use forest | Tier 1          | Tier 1                  |

## Tier Criteria

| Category Tier for status Tier for reported trend |
|--|
|--|

| Production forest Multiple use forest | Tier 3: Updated including field         | Tier 3: Estimate based on repeated                   |
|---------------------------------------|---|--|
| _                                     | verifications national forest maps      | compatible tiers 3 (tier for status) <b>Tier 2</b> : |
|                                       | including functions Tier 2: Forest maps | Estimate based on repeated compatible tier           |
|                                       | older than 6 years including forest     | 2 or combination tier 3 and 2 or 1 (tier for         |
|                                       | functions Tier 1: Other                 | status) <b>Tier 1</b> : Other                        |

## **4.5** Comments

| Category                 | Comments related to data definitions etc | Comments on the reported trend                                 |
|--------------------------|--|--|
| Production forest        | N/A                                      | N/A  |
| Multiple use forest      | N/A                                      | Multiple use is under jurisdiction of Ministry of Environment. |
| Total wood removals      | N/A                                      | N/A  |
| Commercial value of NWFP | N/A                                      | N/A  |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# **5.** How much forest area is managed for protection of soil and water and ecosystem services?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## **5.1 Categories and definitions**

| Category   | Definition   |
|--|--|
| Protection of soil and water   | Forest area designated or managed for protection of soil and water   |
| of which production of clean water (sub-category)                              | Forest area primarily designated or managed for water production, where most human uses are excluded or heavily modified to protect water quality.                                 |
| of which coastal<br>stabilization (sub-<br>category)                           | Forest area primarily designated or managed for coastal stabilization.   |
| of which desertification control (sub-category)                                | Forest area primarily designated or managed for desertification control.   |
| of which avalanche control (sub-category)                                      | Forest area primarily designated or managed to prevent the development or impact of avalanches on human life assets or infrastructure.   |
| of which erosion, flood<br>protection or reducing<br>flood risk (sub-category) | Forest area primarily designated or managed for protecting communities or assets from the impacts of erosion riparian floods and landslides or for providing flood plain services. |
| of which other (sub-category)  | Forest area primarily designated or managed for other protective functions.  |
| Ecosystem services, cultural or spiritual values                               | Forest area primarily designated or managed for selected ecosystem services or cultural or spiritual values.   |
| of which public recreation (sub-category)                                      | Forest area designated or managed for public recreation.   |
| of which carbon storage<br>or sequestration (sub-<br>category)                 | Forest area designated or managed for carbon storage or sequestration.   |
| of which spiritual or cultural services (subcategory)                          | Forest area designated or managed for spiritual or cultural services.  |
| of which other (sub-category)  | Forest area designated or managed for other ecosystem services.  |

### 5.2 National data

### 5.2.1 Data sources

|   | References to sources of information                | Variables      | Years     | Additional comments |
|---|---|----------------|-----------|---------------------|
| 1 | Royal Decree, 1993 and 2004. Government of Cambodia | Protected area | 1993-2004 | N/A                 |

| 2 | N/A | N/A | N/A | N/A |
|---|-----|-----|-----|-----|
| 3 | N/A | N/A | N/A | N/A |
| 4 | N/A | N/A | N/A | N/A |

### 5.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

# 5.2.3 Original data

Protection Areas and Protected Forest

| Types of Name (Year) Area (1000 ha) |                                |                      |                      |                         |          |
|-------------------------------------|--------------------------------|----------------------|----------------------|-------------------------|----------|
| Protected Forest and Protected Area |                                | Royal Decree<br>1993 | Royal Decree<br>2004 | Gov't Sub<br>Degree2004 | GIS Data |
| Watershed<br>Protection             | Kbal Chay<br>(1997)            | 0                    |                      | 6                       | 6        |
| Watershed<br>and<br>Biodiversity    | Central<br>Cardamom<br>(2002)  | 0                    |                      | 401                     | 401      |
| Conservation                        | Southern<br>Cardamom<br>(2004) | 0                    |                      | 144                     | 144      |

# 5.3 Analysis and processing of national data

## 5.3.1 Adjustment

# 5.3.2 Estimation and forecasting

# 5.3.3 Reclassification

## 5.4 Data

Table 5a

| Categories  |   |       | Forest area (1000 hectares) |      |      |      |
|-------------|---|-------|-----------------------------|------|------|------|
| Cate        | Categories  |       | 2000                        | 2005 | 2010 | 2015 |
| CFRQ        | Protection of soil and water  | 11589 | 10320                       | 9591 | 9022 | 8449 |
| CRQ         | of which<br>production of<br>clean water                              | 0     | 6                           | 551  | 551  | 551  |
| CFG         | of which<br>coastal<br>stabilization                                  | N/A   | N/A                         | N/A  | N/A  | N/A  |
| CFIQ        | of which<br>desertification<br>control                                | N/A   | N/A                         | N/A  | N/A  | N/A  |
| CFIQ        | of which avalanche control  | N/A   | N/A                         | N/A  | N/A  | N/A  |
| CFRQ        | of which<br>erosion, flood<br>protection or<br>reducing flood<br>risk | N/A   | N/A                         | N/A  | N/A  | N/A  |
| <b>CFRQ</b> | of which other<br>(please specify<br>in comments<br>below the table)  | N/A   | N/A                         | N/A  | N/A  | N/A  |

### Other

Area for protection of soil and water was estimated using natural forest area \*.9

## Table 5b

| Categories | Forest area (1000 hectares) |
|------------|-----------------------------|
|------------|-----------------------------|

|  | 1990 | 2000 | 2005 | 2010 | 2015 |
|--|------|------|------|------|------|
| Ecosystem services, cultural or spiritual values                     | N/A  | N/A  | N/A  | N/A  | N/A  |
| of which public recreation   | N/A  | N/A  | N/A  | N/A  | N/A  |
| of which carbon storage or sequestration                             | N/A  | N/A  | N/A  | N/A  | N/A  |
| of which spiritual or cultural services                              | N/A  | N/A  | N/A  | N/A  | N/A  |
| of which other<br>(please specify in<br>comments below<br>the table) | N/A  | N/A  | N/A  | N/A  | N/A  |

## Tiers

| Category   | Tier for reported trend | Tier for status |
|--|-------------------------|-----------------|
| Protection of soil and water                     | Tier 1                  | Tier 1          |
| Ecosystem services, cultural or spiritual values | N/A                     | N/A             |

## Tier criteria

| Category   | Tier for status   | Tier for reported trend   |
|--|---|---|
| Protection of soil and water   | Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations or legislation relating to soil and water protection. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |
| <ul> <li>Cultural or spiritual values</li> <li>Public recreation</li> <li>Spiritual or cultural services</li> <li>Other</li> </ul> | Tier 3: High reliability data derived either from high intensity sample survey or data obtained from national or state agencies responsible for regulations. Tier 2: Approaches based on low intensity or incomplete sample-based surveys or studies that provide data for specific areas that is extrapolated through statistical analysis to national level estimates. Tier 1: Other  | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |

## **5.5** Comments

| Category | Comments related to data definitions etc | Comments on the reported trend |
|----------|--|--------------------------------|
|----------|--|--------------------------------|

| Protection of soil and water                     | N/A | N/A   |
|--|-----|---|
| Production of clean water                        | N/A | Protection of soil and water is under jurisdiction of Forestry Administration of Ministry of Agriculture, Forestry and Fisheries. |
| Coastal stabilization                            | N/A | N/A   |
| Desertification control                          | N/A | N/A   |
| Avalanche control                                | N/A | N/A   |
| Erosion, flood protection or reducing flood risk | N/A | N/A   |
| Other protective functions                       | N/A | N/A   |
| Ecosystem services, cultural or spiritual values | N/A | N/A   |
| Public recreation                                | N/A | N/A   |
| Carbon storage or sequestration                  | N/A | N/A   |
| Spiritual or cultural services                   | N/A | N/A   |
| Other ecosystem services                         | N/A | N/A   |

| Other general comments | to the table |
|------------------------|--------------|
| N/A                    |              |

# 6. How much forest area is protected and designated for the conservation of biodiversity and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 6.1 Categories and definitions

| Category                           | Definition   |
|------------------------------------|--|
| Conservation of biodiversity       | Forest area designated primarily for conservation of biological diversity. Includes but is not limited to areas designated for biodiversity conservation within the protected areas. |
| Forest area within protected areas | Forest area within formally established protected areas independently of the purpose for which the protected areas were established.   |

### 6.2 National data

### 6.2.1 Data sources

|   | References to sources of information          | Variables        | Years | Additional comments |
|---|---|------------------|-------|---------------------|
| 1 | Royal Decree, 1993.<br>Government of Cambodia | Protected Area   | 1993  | N/A                 |
| 2 | Royal Decree, 2004.<br>Government of Cambodia | Protected Area   | 2004  | N/A                 |
| 3 | Original GIS data source                      | Protected Areas  | N/A   | N/A                 |
| 4 | Gov't Sub Degree                              | Protected Forest | N/A   | N/A                 |
| 5 | Law on Forestry                               | N/A              | 2002  | N/A                 |

### 6.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

## 6.2.3 Original data

| See 4.2.3. |  |
|------------|--|
|            |  |

## 6.3 Analysis and processing of national data

#### 6.3.1 Adjustment

#### 6.3.2 Estimation and forecasting

#### See 4.3.2.

#### E. Conservation of Biodiversity

Since this is the largest proportion of the protected areas, the calibration from the original data to the actual size of 4,735 million ha in 2004 is done through reduction of Royal degree and Gov't sub-degree classes.

The figure 3,277,000 ha( 97,000 ha under Social Services and 404,000ha under multiple purposes were included) of areas under "Protection areas" in 1993 is assumed for 1990. The figure 4,735,000 ha ( 404,000 ha under multiple land use,97,000 ha under Social Services and 551,000 ha under protection to soil and water were included) of protected forest and protected areas for 2004 are assumed for 2005. The figure 3,381,000 ha for 2000 is derived by linear interpolation of above derived figures for 1990 and 2005. The figure 3,985,000 ha for 2010 is derived by linear interpolation of above derived figures for 2000 and 2005.

#### 6.3.3 Reclassification

See 4.3.3

#### 6.4 Data

#### Table 6

| Categories |                                    | Forest area (000 hectares) |      |      |      |      |
|------------|------------------------------------|----------------------------|------|------|------|------|
|            |                                    | 1990                       | 2000 | 2005 | 2010 | 2015 |
| CFRQ       | Conservation of biodiversity       | 2776                       | 3381 | 3683 | 3985 | 4287 |
| CRQ        | Forest area within protected areas | 3277                       | 3184 | 3138 | 3092 | 3092 |

#### Tiers

| Category                     | Tier for status | Tier for reported trend |
|------------------------------|-----------------|-------------------------|
| Conservation of biodiversity | Tier 1          | Tier 1                  |

| Forest area within protected areas | Tier 1 | Tier 1 |
|------------------------------------|--------|--------|
|                                    |        |        |

## Tier criteria

| Category   |   | Tier for status  | Tier for reported trend   |
|--|---|--|---|
| <ul><li>Conservation of biodive</li><li>Forests within protected</li></ul> | • | state agencies responsible for conservation and protected area or legislation relating | <b>Tier 3</b> : Estimate based on repeated compatible tiers 3 (tier for status) <b>Tier 2</b> : Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) <b>Tier 1</b> : Other |

## **6.5** Comments

| Category                           | Comments related to data definitions etc | Comments on the reported trend   |
|------------------------------------|--|--|
| Conservation of biodiversity       | N/A                                      | Conservation of biodiversity responsible<br>by two institutes are protected forest and<br>protected area. Protected forest is under<br>jurisdiction of Forestry Administration<br>of Ministry of Agriculture, Forestry and<br>Fisheries and protected area is under<br>jurisdiction of Ministry of Environment |
| Forest area within protected areas | N/A                                      | N/A  |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# 7. What is the area of forest affected by woody invasive species?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 7.1 Categories and definitions

| Category         | Definition   |  |
|------------------|--|--|
| Invasive species | Species that are non-native to a particular ecosystem and whose introduction and spread cause, or are likely to cause, socio-cultural, economic or environmental harm or harm to human health. |  |

### 7.2 National data

#### 7.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

## 7.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

## 7.2.3 Original data

## 7.3 Analysis and processing of national data

## 7.3.1 Adjustment

# 7.3.2 Estimation and forecasting

## 7.3.3 Reclassification

## **7.4 Data**

## Table 7

| Scientific name of     | Fores | Forest area affected (000 ha) |  |  |
|------------------------|-------|-------------------------------|--|--|
| woody invasive species | 2005  | 2010                          |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| N/A                    | N/A   | N/A                           |  |  |
| Total                  | N/A   | N/A                           |  |  |

## Tiers

| Category         | Tier for status | Tier for reported trend |
|------------------|-----------------|-------------------------|
| Invasive species | N/A             | N/A                     |

## Tier Criteria

| Category | Tier for status | Tier for reported trend |
|----------|-----------------|-------------------------|
|----------|-----------------|-------------------------|

| Invasive species | inventory or other survey (e.g. by conservation department) within the last | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |
|------------------|---|---|
|------------------|---|---|

## 7.5 Comments

| Category         | Comments related to data definitions etc | Comments on the reported trend |
|------------------|--|--------------------------------|
| Invasive species | N/A                                      | N/A                            |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# 8. How much forest area is damaged each year?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 8.1 Categories and definitions

| Category              | Definition  |
|-----------------------|---|
| Number of fires       | Number of fires per year  |
| Burned area           | Area burned per year  |
| Outbreaks of insects  | A detectable reduction in forest health caused by a sudden increase in numbers of harmful insects.  |
| Outbreaks of diseases | A detectable reduction in forest health caused by a sudden increase in numbers of harmful pathogens, such as bacteria, fungi, phytoplasma or virus. |
| Severe weather events | Damage caused severe weather events, such as snow, storm, drought, etc.   |

### 8.2 National data

#### 8.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

### 8.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

## 8.2.3 Original data

## 8.3 Analysis and processing of national data

## 8.3.1 Adjustment

## 8.3.2 Estimation and forecasting

### 8.3.3 Reclassification

### **8.4 Data**

Table 8a

|      |   | 000 ha, number of fires  |     |         |     |         |     |         |     |         |     |
|------|---|--------------------------|-----|---------|-----|---------|-----|---------|-----|---------|-----|
| Cate | egory                                   | 2003 2004 2005 2006 2007 |     |         |     |         |     | 07      |     |         |     |
|      |   | 000 ha                   | #   | 000 ha  | #   | 000 ha  | #   | 000 ha  | #   | 000 ha  | #   |
| CFRQ | Total<br>land area<br>burned            | 1031.26                  | N/A | 1691.61 | N/A | 1308.53 | N/A | 1067.24 | N/A | 1475.61 | N/A |
| CFRQ | of<br>which<br>forest<br>area<br>burned | 155.37                   | N/A | 83.23   | N/A | 153.36  | N/A | 143.69  | N/A | 316.6   | N/A |
| G.   |   |                          |     | 2009    |     |         |     |         |     | 2012    |     |
| Cate | egory                                   | 20                       | 08  | 20      | 09  | 20      | 10  | 20      | 11  | 20      | 12  |
| Cate | egory                                   | 20<br>000 ha             | #   | 000 ha  | #   | 000 ha  | #   | 000 ha  | #   | 000 ha  | #   |
| Cate | Total land area burned                  |                          |     |         | l   |         |     |         |     |         |     |

### Table 8b

| Outbreak category | Description/name | Year(s) of latest outbreak | Area damaged (000 hectares) |
|-------------------|------------------|----------------------------|-----------------------------|
| N/A               | N/A              | N/A                        | N/A                         |
| N/A               | N/A              | N/A                        | N/A                         |

| N/A | N/A | N/A | N/A |
|-----|-----|-----|-----|
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |
| N/A | N/A | N/A | N/A |

| Outbreak category       |
|-------------------------|
| 1 Insects               |
| 2 Diseases              |
| 3 Severe weather events |

## Tiers

| Category   | Tier for status | Tier for trend |
|--|-----------------|----------------|
| Area affected by fire  | Tier 2          | Tier 2         |
| <ul><li>Insects</li><li>Diseases</li><li>Severe weather events</li></ul> | N/A             | N/A            |

## Tier criteria

| Category   | Tier for status   | Tier for reported trend   |  |
|--|---|---|--|
| Burned area  | Tier 3: National fire monitoring routines Tier 2: Remote sensing surveys Tier 1: Other                              |   |  |
| <ul><li>Insects</li><li>Diseases</li><li>Severe weather events</li></ul> | Tier 3: Systematic survey (e.g. via inventory or aerial damage assessment) Tier 2: Management records Tier 1: Other | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |  |

## **8.5** Comments

| Category | Comments related to data definitions etc | Comments on the reported trend |
|----------|--|--------------------------------|
|----------|--|--------------------------------|

| Burned area           | FAO provided data from remote sensing was used | FAO provided data from remote sensing was used |  |
|-----------------------|--|--|--|
| Insects               | N/A  | N/A  |  |
| Diseases              | N/A  | N/A  |  |
| Severe weather events | N/A  | N/A  |  |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# 9. What is the forest area with reduced canopy cover?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

| Category | Definition   |
|----------|--|
| 1        | Forest that has undergone a reduction of canopy cover of more than 20% between the years 2000 and 2010 within the forest canopy cover range of 30-80% as detected by the MODIS VCF sensor. |

## Table 9

| Category                  | Area of forest with reduced canopy cover (000 ha) |
|---------------------------|---|
| Reduction in canopy cover | 5093.44   |

### **Tiers**

| Category                  | Tier for reported trend |
|---------------------------|-------------------------|
| Reduction in canopy cover | Tier 2                  |

## Tier criteria

| Category                  | Tier for reported trend  |  |
|---------------------------|--|--|
| Reduction in canopy cover | <b>Tier 3</b> : Remote sensing with ground truthing and/or Landsat imagery <b>Tier 2</b> : Remote sensing using Modis (using pre-filled data provided by FAO) <b>Tier 1</b> : Expert opinion |  |

#### Comments

| Category                  | Comments related to data definitions etc |
|---------------------------|--|
| Reduction in canopy cover | N/A                                      |

## Other general comments

# 10. What forest policy and regulatory framework exists to support implementation of sustainable forest management SFM?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 10.1 Categories and definitions

| 1011 CuteSories and definitions                                      |  |  |  |
|--|--|--|--|
| Category   | Definition   |  |  |
| Policies supporting sustainable forest management                    | Policies or strategies that explicitly encourage sustainable forest management.                      |  |  |
| Legislation and regulations supporting sustainable forest management | Legislation and regulations that govern and guide sustainable forest management, operations and use. |  |  |

### 10.2 National data

#### 10.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

## 10.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

## 10.2.3 Original data

#### **10.3 Data**

Table 10

| Category   | National  | Sub-national |                  |       |
|--|-----------|--------------|------------------|-------|
|  | Ivational | Regional     | Provincial/State | Local |
| Policies supporting sustainable forest management                    | yes       | no           | no               | no    |
| of which, in <u>publicly</u> owned forests                           | yes       | no           | no               | no    |
| of which, in <u>privately</u> owned forests                          | no        | no           | no               | no    |
| Legislation and regulations supporting sustainable forest management | yes       | no           | no               | no    |
| of which, in <u>publicly</u><br>owned forests                        | yes       | no           | no               | no    |
| of which, in <u>privately</u> owned forests                          | no        | no           | no               | no    |

## **10.4 Comments**

| Variable / category  | Comments related to data definitions etc |
|--|--|
| Policies supporting sustainable forest management                    | N/A                                      |
| Legislation and regulations supporting sustainable forest management | N/A                                      |

# Other general comments

# 11. Is there a national platform that promotes stakeholder participation in forest policy development?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

### 11.1 Categories and definitions

| Category                      | Definition  |
|-------------------------------|---|
| National stakeholder platform | A recognized procedure that a broad range of stakeholders can use to provide opinions, suggestions, analysis, recommendations and other input into the development of national forest policy. |

### 11.2 National data

### 11.2.1 Data sources

|   | References to sources of information | Years | Additional comments |
|---|--------------------------------------|-------|---------------------|
| 1 | N/A                                  | N/A   | N/A                 |
| 2 | N/A                                  | N/A   | N/A                 |
| 3 | N/A                                  | N/A   | N/A                 |
| 4 | N/A                                  | N/A   | N/A                 |

## Table 11

| Is there a national platform that promotes or allows for | no |
|--|----|
| stakeholder participation in forest policy development?  |    |

## 11.3 Comments

| Category                      | Comments related to data definitions etc |
|-------------------------------|--|
| National stakeholder platform | N/A                                      |

## Other general comments

# 12. What is the forest area intended to be in permanent forest land use and how has it changed over time?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 12.1 Categories and definitions

| Category  | Definition  |
|---|---|
| Forest area intended to be in permanent forest land use | Forest area that is designated or expected to be retained as forest and is highly unlikely to be converted to other land use. |
| of which permanent forest estate (sub-category)         | Forest area that is designated by law or regulation to be retained as forest and may not be converted to other land use.      |

### 12.2 National data

## 12.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

## 12.2.2 Classification and definitions

| National class            | Definition  |
|---------------------------|---|
| Permanent Forest Estate   | Consist of Permanent Forest Reserves and Private Forests  |
| Permanent Forest Reserves | Consist of Production forest, Protection Forest and Conversion Forestland for other Development Purpose Note: Conversion Forest land for other development purpose is idle land, comprised mainly of secondary vegetation, not yet designated for use by any sector that shell be classified as Permanent Forest Reveres until the Royal Government decide to use and develop the land for anther purpose |
| N/A                       | N/A   |
| N/A                       | N/A   |

## 12.2.3 Original data

See 4.2.3.

# 12.3 Analysis and processing of national data

# 12.3.1 Adjustment

## 12.3.2 Estimation and forecasting

See 4.3.2

## 12.3.3 Reclassification

## **12.4 Data**

## Table 12

| Categories |   | Forest area 2010 (000 ha) |
|------------|---|---------------------------|
| <b>CRG</b> | Forest area intended to be in permanent forest land use | 10094                     |
| CRG        | of which permanent forest estate                        | 10094                     |

### **Tiers**

| Category  | Tier for status |
|---|-----------------|
| Forest area intended to be in permanent forest land use | Tier 2          |
| Permanent forest estate                                 | Tier 2          |

## Tier Criteria

| Category  | Tier for status   |
|---|---|
| Forest area intended to be in permanent forest land use | <b>Tier 3</b> : National or sub-national land use plans strategy documents or other reports within the past 10 years <b>Tier 2</b> : National or sub-national land use plans strategy documents or other reports within the past 20 years <b>Tier 1</b> : Other |
| Permanent forest estate                                 | <b>Tier 3</b> : National or sub-national land use plans strategy documents or other reports within the past 10 years <b>Tier 2</b> : National or sub-national land use plans strategy documents or other reports within the past 20 years <b>Tier 1</b> : Other |

## 12.5 Comments

| Category  | Comments related to data definitions etc |
|---|--|
| Forest area intended to be in permanent forest land use | N/A                                      |
| Permanent forest estate                                 | N/A                                      |

| Other ger | ieral | comments |
|-----------|-------|----------|
|-----------|-------|----------|

# 13. How does your country measure and report progress towards SFM at the national level?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 13.1 Categories and definitions

| Category   | Definition   |
|--|--|
| Forest area monitored<br>under a national forest<br>monitoring framework | Forest area monitored by a national monitoring framework or systems that provide measurement based periodic monitoring of forest extent and quality. |
| Forest reporting at national scale                                       | National reporting of forest extent and characteristics that includes some measure of progress toward sustainable forest management.                 |

### 13.2 National data

### 13.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |  |
|---|--------------------------------------|-----------|-------|---------------------|--|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |  |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |  |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |  |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |  |

## 13.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

### **13.3 Data**

Table 13a

|                                |                           |                     | Check all boxes that apply |          |                              |                              |   |   |
|--------------------------------|---------------------------|---------------------|----------------------------|----------|------------------------------|------------------------------|---|---|
| Category                       | % of total<br>forest area | Most<br>recent year | Continuous                 | Periodic | Permanent<br>ground<br>plots | Temporary<br>ground<br>plots | Aerial/<br>remote<br>sensing<br>sample<br>based | Aerial/<br>remote<br>sensing full<br>coverage |
| Forest inventory               | N/A                       | N/A                 | no                         | no       | no                           | no                           | no  | no  |
| Other field assessments        | N/A                       | N/A                 | yes                        | yes      | no                           | yes                          | yes   | no  |
| Updates<br>to other<br>sources | N/A                       | N/A                 | no                         | no       | no                           | no                           | no  | no  |
| Expert estimate                | N/A                       | N/A                 |                            |          |                              |                              |   |   |

## Table 13b

| Type of forest reporting used at national scale | Check boxes that apply |
|---|------------------------|
| 1 Criteria and Indicators reporting             | no                     |
| 2 Periodic national state of the forest report  | no                     |
| 3 Other (please document)                       | no                     |
| 4 None  | yes                    |

|     | Other type of forest reporting |
|-----|--------------------------------|
| N/A |                                |

## **13.4 Comments**

| Category | Comments |
|----------|----------|
| N/A      | N/A      |
| N/A      | N/A      |
| N/A      | N/A      |

| Other | general | comments |
|-------|---------|----------|
|       |         |          |

# 14. What is the area of forest under a forest management plan and how is this monitored? Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## **14.1 Categories and definitions**

| Category                                 | Definition  |
|--|---|
| Forest area with management plan         | Forest area that has a long-term documented management plan, aiming at defined management goals which is periodically revised                 |
| of which for production (sub-category)   | Forest management plan mainly focused on production   |
| of which for conservation (sub-category) | Forest management plan mainly focused on conservation   |
| Monitoring of forest management plans    | Government monitoring of forest management plan implementation conducted through field visits or audits of forest management plan performance |

### 14.2 National data

### 14.2.1 Data sources

|   | References to sources of information  | Variables        | Years       | Additional comments |
|---|---|------------------|-------------|---------------------|
| 1 | World Bank, 1996. Cambodia<br>Forest Policy Assessment.<br>Report No 15777-KH. The<br>World Bank.                   | Concession Areas | Before 1996 | N/A                 |
| 2 | KC. 2004. National Report to<br>the fifth session of the United<br>Nations Forum on Forests.<br>Kingdom of Cambodia | Concession Areas | 2004        | N/A                 |
| 3 | Royal Decree, 1993.<br>Government of Cambodia   | Protected Area   | 1993        | N/A                 |
| 4 | Royal Decree, 2004.<br>Government of Cambodia   | Protected Area   | 2004        | N/A                 |
| 5 | Original GIS data source  | Protected Areas  | N/A         | N/A                 |
| 6 | Gov't Sub Degree  | Protected Forest | N/A         | N/A                 |
| 7 | Law on Forestry   | N/A              | 2002        | N/A                 |

## 14.3 Data

Table 14a

| Forest plan type                 | Forest area 2010 (000 ha) |
|----------------------------------|---------------------------|
| Forest area with management plan | 0                         |

| of which for production   | N/A |
|---------------------------|-----|
| of which for conservation | N/A |

## Table 14b

| Indicate which (if any) of the following are required in forest management plans in your country |     |  |
|--|-----|--|
| 1 Soil and water management  | yes |  |
| 2 High conservation value forest delineation   | yes |  |
| 3 Social considerations community involvement  | yes |  |

## Table 14c

| Percent of area under forest management plan that is monitored annually | 0 |
|---|---|
|---|---|

## Tiers

| Category  | Tier for status |
|---|-----------------|
| Forest area with management plan  | Tier 3          |
| Percent of area under forest management plan that is monitored annually | Tier 3          |

## Tier criteria

| Category  | Tier for status   |
|---|---|
| Forest area with management plan  | <b>Tier 3</b> : Reports that describe national records 5 years old or less that contain long-term forest monitoring plans <b>Tier 2</b> : Industry or other records indicating the presence of a long-term forest management plan <b>Tier 1</b> : Other |
| Percent of area under forest management plan that is monitored annually | Tier 3 : Government documentation of monitoring extent Tier 2 : Reports from forest managers or other documental sources Tier 1 : Other   |

## **14.4 Comments**

| Category                         | Comments |
|----------------------------------|----------|
| Forest area with management plan | N/A      |
| N/A                              | N/A      |
| N/A                              | N/A      |

# Other general comments

# 15. How are stakeholders involved in the management decision making for publicly owned forests?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 15.1 Categories and definitions

| Category                | Definition  |
|-------------------------|---|
| Stakeholder involvement | Stakeholder involvement is defined as significant inputs into at least one aspect of forest management at the operational scale |

#### Table 15

| Please indicate the type of stakeholder involvement in forest management decision making required in your country |    |  |  |  |  |
|---|----|--|--|--|--|
| 1. Planning phase   | no |  |  |  |  |
| 2. Operations phase   | no |  |  |  |  |
| 3. Review of operations   | no |  |  |  |  |

#### Tiers

| Category                   | Tier for status |
|----------------------------|-----------------|
| Type of stakeholder inputs | Tier 3          |

#### Tier criteria

| Category                   | Tier for status  |
|----------------------------|--|
| Type of stakeholder inputs | <b>Tier 3</b> : Government (national or sub-national) documentation of stakeholder inputs <b>Tier 2</b> : Government (national or subnational) requirement but stakeholder inputs not documented <b>Tier 1</b> : Other |

#### 15.2 Comments

| Category | Comments |
|----------|----------|
| N/A      | N/A      |
| N/A      | N/A      |
| N/A      | N/A      |

| Other general | l comments |
|---------------|------------|
|---------------|------------|

# **16.** What is the area of forest under an independently verified forest certification scheme? Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

#### 16.1 Categories and definitions

| Category   | Definition   |
|--|--|
| FSC certification  | Forest area certified under the Forest Stewardship Council certification scheme  |
| PEFC certification   | Forest area certified under the Programme for the Endorsement of Forest Certification scheme   |
| Other international forest management certification                                    | Forest area certified under an international forest management certification scheme with published standards and is independently verified by a third-party, excluding FSC and PEFC certification. |
| Certified forest area<br>using a domestic forest<br>management certification<br>scheme | Area certified under a forest management certification scheme with published standards that are nationally recognized and independently verified by a thirdparty                                   |

#### **16.2 Data**

#### Table 16a

| International forest |                 | Forest area (000 ha) |      |      |      |      |      |      |
|----------------------|-----------------|----------------------|------|------|------|------|------|------|
| managemen            | t certification | 2000                 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| CFRQ                 | FSC             | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |
| CFRQ                 | PEFC            | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |
| CFRQ                 | Other           | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |
|                      |                 | 2007                 | 2008 | 2009 | 2010 | 2011 | 2012 |      |
| CFRQ                 | FSC             | 0                    | 0    | 0    | 0    | 0    | 0    |      |
| CFRQ                 | PEFC            | 0                    | 0    | 0    | 0    | 0    | 0    |      |
| CFRQ                 | Other           | 0                    | 0    | 0    | 0    | 0    | 0    |      |

#### Table 16b

| Domestic forest |                 | Forest area (000 ha) |      |      |      |      |      |      |
|-----------------|-----------------|----------------------|------|------|------|------|------|------|
| management      | t certification | 2000                 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| CFRQ            | N/A             | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |
| CFRQ            | N/A             | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |
| CFRQ            | N/A             | 0                    | 0    | 0    | 0    | 0    | 0    | 0    |

|      | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |  |
|------|------|------|------|------|------|------|--|
| CFRQ | 0    | 0    | 0    | 0    | 0    | 0    |  |
| CFRQ | 0    | 0    | 0    | 0    | 0    | 0    |  |
| CFRQ | 0    | 0    | 0    | 0    | 0    | 0    |  |

## Tier criteria

| Category                                      | Tier for status  |
|---|--|
| International forest management certification | Tier 3: International forest management scheme records maintained by the certifying organization for the reporting year Tier 2: International forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other                    |
| Domestic forest management certification      | Tier 3: National registry reports for domestic forest management certification maintained by the certifying organization for the reporting year Tier 2: Domestic forest management scheme records reported by the certifying organization for a period 2 years prior to the reporting year Tier: 1 Other |

## Tiers

| Category                                      | Tier for status |
|---|-----------------|
| International forest management certification | Tier 3          |
| Domestic forest management certification      | Tier 3          |

# 16.3 Comments

| Category  | Comments related to data definitions etc |
|---|--|
| Certified forest area using an international forest management certification scheme | N/A                                      |
| Domestic forest management certification  | N/A                                      |

# Other general comments

# 17. How much money do governments collect from and spend on forests?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 17.1 Categories and definitions

| Category                       | Definition   |
|--------------------------------|--|
| Forest revenue                 | <ul> <li>All government revenue collected from the domestic production and trade of forest products and services. For this purpose revenue include:</li> <li>Goods: roundwood; sawnwood; biomass; woodbased panels; pulp and paper and non-wood forest products.</li> <li>Services: including concession fees and royalties, stumpage payments, public timber sales revenue taxes and charges based on forest area or yield, taxes on domestic trade and export of forest products, special levies on forestry activities and payments into forest related funds, other miscellaneous inspection, licence and administrative fees levied by forest administrations, permit and licence fees for recreation and other forest related activities.</li> </ul> |
| Public expenditure on forestry | All government expenditure on forest related activities.   |

#### 17.2 National data

#### 17.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | Cambodia: Forestry Statistics 2006   | 5         | 2006  | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

#### 17.3 Data

Table 17

| Category                       | Revenues / expenditures (000 local currency) |         |      |  |
|--------------------------------|--|---------|------|--|
|                                | 2000   | 2005    | 2010 |  |
| Forest revenue                 | 44569223                                     | 5789281 | N/A  |  |
| Public expenditure on forestry | 1364496                                      | 4114936 | N/A  |  |
|                                | 2000   | 2005    | 2010 |  |
| Name of Local Currency         | Riel   | Riel    | N/A  |  |

## **17.4 Comments**

| Category                       | Comments related to data definitions etc |
|--------------------------------|--|
| Forest revenue                 | N/A                                      |
| Public expenditure on forestry | N/A                                      |
| Other general comments         | N/A                                      |

# 18. Who owns and manages the forests and how has this changed?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 18.1 Categories and definitions

| Category  | Definition   |  |  |
|---|--|--|--|
| Public ownership  | Forest owned by the State or administrative units of the public administration or by institutions or corporations owned by the public administration.  |  |  |
| of which owned by the state at national scale (sub-category)                    | rest owned by the State at the national scale or administrative units of the public administration or by titutions or corporations owned by the public administration.   |  |  |
| of which owned by the state at the sub-national government scale (sub-category) | Forest owned by the State at the sub-national government scale or administrative units of the public administration or by institutions or corporations owned by the public administration.   |  |  |
| Private ownership   | Forest owned by individuals, families, communities, private cooperatives corporations and other business entities, private, religious and educational institutions, pension or investment funds, NGOs, nature conservation associations and other private institutions.  |  |  |
| of which individuals (sub-category)   | Forest owned by individuals and families.  |  |  |
| of which private<br>business entities and<br>institutions (sub-category)        | Forest owned by private corporations cooperatives companies and other business entities as well as private nonprofit organizations such as NGOs nature conservation associations, and private religious and educational institutions etc.  |  |  |
| of which local tribal and indigenous communities (sub-category)                 | Forest owned by a group of individuals belonging to the same community residing within or in the vicinity of a forest area or forest owned by communities of indigenous or tribal people The community members are coowners that share exclusive rights and duties and benefits contribute to the community development. |  |  |
| Unknown ownership   | Forest area where ownership is unknown includes areas where ownership is unclear or disputed.  |  |  |
| Categories related to<br>management rights<br>of public forests                 | Definition   |  |  |
| Public Administration   | The Public Administration (or institutions or corporations owned by the Public Administration) retains management rights and responsibilities within the limits specified by the legislation.  |  |  |
| Individuals households  | Forest management rights and responsibilities are transferred from the Public Administration to individuals or households through long-term leases or management agreements.   |  |  |
| Private companies   | Forest management rights and responsibilities are transferred from the Public Administration to corporations, other business entities private cooperatives, private nonprofit institutions and associations, etc., through long-term leases or management agreements.  |  |  |
| Communities   | Forest management rights and responsibilities are transferred from the Public Administration to local communities (including indigenous and tribal communities) through long-term leases or management agreements.   |  |  |
| Other form of management rights   | Forests for which the transfer of management rights does not belong to any of the categories mentioned above.  |  |  |

#### 18.2 National data

#### 18.2.1 Data sources

|   | References to sources of information         | Variables         | Years | Additional comments                                  |
|---|--|-------------------|-------|--|
| 1 | Original data from Remote sensing            | Forest Cover 2005 | 2005  | Based on Remote Sensing and adequate ground truthing |
| 2 | Community Forestry<br>Statistics in Cambodia | N/A               | 2005  | N/A  |
| 3 | N/A  | N/A               | N/A   | N/A  |
| 4 | N/A  | N/A               | N/A   | N/A  |

#### 18.2.2 Classification and definitions

| National class | Definition |
|----------------|------------|
| N/A            | N/A        |

## 18.2.3 Original data

There is lack of proper demarcation of Cambodia forest estate. According to the forestry law all forest land belongs to the state. Community forestry is one categories of permanent forest reserve. The state shall recognized and ensure their traditional use right for the purpose of traditional customs, belief, religions and living.

Community Forestry Statistics in Cambodia 2005

| No             | Province/Citie  | Communities   | Area(ha) |
|----------------|-----------------|---------------|----------|
| 1              | Kampong Chhnang | ang 31 14,889 |          |
| 2 Kampong Cham |                 | 18            | 6,997    |
| 3              | 3 Kratie        |               | 17,831   |
| 4 Stung Trang  |                 | 15            | 22,150   |

| 5               | Mondul Kiri      | 3   | 3,104   |
|-----------------|------------------|-----|---------|
| 6 Kampot        |                  | 5   | 1,993   |
| 7 Koh Kong      |                  | 2   | 3,790   |
| 8               | Battambang       | 13  | 2,664   |
| 9               | Svay Rieng       | 2   | 525     |
| 10              | Kampong Speu     | 7   | 4,366   |
| 11 Kampong Thom |                  | 50  | 40,915  |
| 12              | Siem Reap        | 36  | 17,146  |
| 13              | Pursat           | 46  | 5,116   |
| 14              | Ratanak Kiri     | 6   | 14,599  |
| 15              | Preah Vihear     | 3   | 7,274   |
| 16              | Krong Pailin     | 7   | 2,250   |
| 17              | Otdor Meanchey   | 5   | 9,893   |
| 18              | Banteay Meanchey | 1   | 3,019   |
| 19              | Takeo            | 1   | 500     |
|                 | Total            | 264 | 179,021 |

# 18.3 Analysis and processing of national data

# 18.3.1 Adjustment

# 18.3.2 Estimation and forecasting

# 18.3.3 Reclassification

#### **18.4 Data**

Table 18a

|       | Categories  |          | Forest area (1000 hectares) |          |          |  |
|-------|---|----------|-----------------------------|----------|----------|--|
|       |   |          | 2000                        | 2005     | 2010     |  |
| CFRQ  | Public ownership  | 12944    | 11546                       | 10731    | 10094    |  |
| CFRQ  | of which owned<br>by the state at<br>national scale                       | 12944    | 11546                       | 10731    | 10094    |  |
| CRO   | of which owned<br>by the state at<br>the sub-national<br>government scale | 0        | 0                           | 0        | 0        |  |
| CFRQ  | Private ownership   | 0        | 0                           | 0        | 0        |  |
| CFRQ  | of which owned by individuals   | 0        | 0                           | 0        | 0        |  |
| CRO   | of which owned<br>by private business<br>entities and<br>institutions     | 0        | 0                           | 0        | 0        |  |
| CRO   | of which owned<br>by local, tribal<br>and indigenous<br>communities       | 0        | 0                           | 0        | 0        |  |
| CFRQ  | Unknown<br>ownership  | 0        | 0                           | 0        | 0        |  |
| TOTAL | •   | 12944.00 | 11546.00                    | 10731.00 | 10094.00 |  |

## Tiers

| Category          | Tier for status | Tier for reported trend |
|-------------------|-----------------|-------------------------|
| Public ownership  | Tier 3          | Tier 1                  |
| Private ownership | Tier 3          | Tier 1                  |
| Unknown ownership | N/A             | N/A                     |

# Tier criteria

| Category  | Tier for status   | Tier for reported trend   |
|-----------|---|---|
| Ownership | Tier 3: National forestry statistics registers of land titles or maps on land ownership or all forest area under one ownership category that is five years old or less. Tier 2:National forestry statistics registers of land titles or maps on land ownership or questionnaires that are more than five years old. Tier 1: Other | Tier 3: Estimate based on repeated compatible tiers 3 (tier for status) Tier 2: Estimate based on repeated compatible tier 2 or combination tier 3 and 2 or 1 (tier for status) Tier 1: Other |

Table 18b - Holder of management rights of public forests

| Catalogica            | Forest area (000 hectares) |      |        |        |  |
|-----------------------|----------------------------|------|--------|--------|--|
| Categories            | 1990                       | 2000 | 2005   | 2010   |  |
| Public Administration | N/A                        | N/A  | N/A    | N/A    |  |
| Individuals           | N/A                        | N/A  | N/A    | N/A    |  |
| Private companies     | N/A                        | N/A  | N/A    | N/A    |  |
| Communities           | N/A                        | N/A  | 179    | 179    |  |
| Other                 | N/A                        | N/A  | N/A    | N/A    |  |
| TOTAL                 | .00                        | .00  | 179.00 | 179.00 |  |

| Category              | Tier for reported trend | Tier for status |
|-----------------------|-------------------------|-----------------|
| Public Administration | N/A                     | N/A             |
| Individuals           | N/A                     | N/A             |
| Private companies     | N/A                     | N/A             |
| Communities           | Tier 1                  | Tier 1          |
| Other                 | N/A                     | N/A             |

## 18.5 Comments

| Category          | Comments related to data definitions etc | Comments on the reported trend |
|-------------------|--|--------------------------------|
| Public ownership  | N/A                                      | N/A                            |
| Private ownership | N/A                                      | N/A                            |
| Unknown ownership | N/A                                      | N/A                            |
| Management rights | N/A                                      | N/A                            |

|     | Other general comments to the table |
|-----|-------------------------------------|
| N/A |                                     |

# 19. How many people are directly employed in forestry?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 19.1 Categories and definitions

| Category                    | Definition   |
|-----------------------------|--|
| Full-time equivalents (FTE) | A measurement equal to one person working full-time during a specified reference period.   |
| Employment in forestry      | Employment in activities related to production of goods derived from forests. This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging). |

#### 19.2 National data

#### 19.2.1 Data sources

|   | References to sources of information   | Variables | Years | Additional comments |
|---|--|-----------|-------|---------------------|
| 1 | KKH. 2002. Cambodia:<br>Forestry Statistics to 2002                                | 2002      | N/A   | N/A                 |
| 2 | KKH. 2006. Cambodia:<br>Forestry Statistics to 2006                                | 2006      | N/A   | N/A                 |
| 3 | KKH. 2004. Ministry of<br>Agriculture, Forestry and<br>Fisheries (www.maff.gov.kh) | 2004      | N/A   | N/A                 |
| 4 | N/A  | N/A       | N/A   | N/A                 |

#### 19.2.2 Classification and definitions

| National class | Definition   |
|----------------|--|
| N/A            | There is no information on national classification and definitions relating to this table. |
| N/A            | N/A  |
| N/A            | N/A  |
| N/A            | N/A  |

# 19.2.3 Original data

# A. Employees in Forestry Administration

| Number of Employees in Department of Forest and Wildlife |      |      |      | er of Emp | oloyees ii | n Forestr | y                       |       |       |       |       |
|--|------|------|------|-----------|------------|-----------|-------------------------|-------|-------|-------|-------|
| 1997   | 1998 | 1999 | 2000 | 2001      | 2002       | 2003      | 2004 2005 2006 2007 200 |       |       | 2008  |       |
| 696  | 722  | 748  | 752  | 745       | 858        | 841       | 1,748                   | 1,722 | 1,667 | 1,606 | 1,600 |

The number of employees (993) in Provincial Forest Offices is only available for 2002.

## B. Employees in General Department of Rubber

| Primary employment in rubber production |                     |                  |        |  |  |  |
|---|---------------------|------------------|--------|--|--|--|
| Year                                    | Production Employee | Service Employee | Total  |  |  |  |
| 1996                                    | 17,220              | 471              | 17,691 |  |  |  |
| 1997                                    | 17,389              | 413              | 17,802 |  |  |  |
| 1998                                    | 16,588              | 354              | 16,942 |  |  |  |
| 1999                                    | 14,949              | 231              | 15,180 |  |  |  |
| 2000                                    | 14,823              | 226              | 15,049 |  |  |  |
| 2001                                    | 14,816              | 301              | 15,117 |  |  |  |
| 2002                                    | 14,422              | 299              | 14,721 |  |  |  |
| 2003                                    | 13,945              | 509              | 14,454 |  |  |  |

## **Estimation and forecasting**

It is assumed that

- 1. number of employees in provincial forest offices in 1990 and 2000 same as in 2002.
- 1. number of employees in department of forest and wildlife in 1990 same as in 1997.

- 1. number of employees looking after national parks etc. (conservation of biodiversity) is in proportion of the forest areas under conservation of biodiversity (Table 3) and it is roughly 25%. Further that this number represents employment through services.
- 1. number of employees in production and service relating to rubber production is counted against production. The number in 1990 is same as in 1996 and the number in 2005 is same as in 2003.

|                             | 1990   | 2000   | 2005   | estimation and forecasting |
|-----------------------------|--------|--------|--------|----------------------------|
| FA                          | 696    | 752    | 301    | (b)                        |
| Provincial                  | 993    | 993    | 1,421  | (a)                        |
| FA + Provincial             | 1,689  | 1,745  | 1,722  | (a) + (b)                  |
| of which<br>Protected area  | 422    | 436    | 431    | (c)=(a+b)*0.25             |
| of which others             | 1,267  | 1,309  | 1,292  | (a)+ (b)–(c)               |
| Rubber                      | 17,691 | 15,049 | 14,454 | (d)                        |
| Primary Production of Goods | 18,958 | 16,358 | 15,746 | (a)+ (b)–(c) +(d)          |

#### 19.3 Data

Table 19

| Category |                        | Employment (000 years FTE) |       |       |       |
|----------|------------------------|----------------------------|-------|-------|-------|
|          |                        | 1990                       | 2000  | 2005  | 2010  |
| CFRQ     | Employment in forestry | 18.96                      | 16.36 | 15.75 | 15.75 |
| CFRQ     | of which female        | N/A                        | N/A   | N/A   | N/A   |

#### **19.4 Comments**

| Category | Comments related to data definitions etc | Comments on the reported trend |
|----------|--|--------------------------------|
|----------|--|--------------------------------|

| Employment in forestry              | N/A | N/A |  |  |
|-------------------------------------|-----|-----|--|--|
| Other general comments to the table |     |     |  |  |
| N/A                                 |     |     |  |  |

# 20. What is the contribution of forestry to Gross Domestic Product (GDP)?

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## **20.1 Categories and definitions**

| Category  | Definition   |
|---|--|
| Gross value added from forestry (at basic prices) | This category corresponds to the ISIC/NACE Rev. 4 activity A02 (Forestry and logging). |

#### **20.2 Data**

Table 20 (Pre-filled data from UNdata/EUROSTAT)

| Category  | Million    | Currency | Year for latest available information |
|---|------------|----------|---------------------------------------|
| Gross value added from forestry (at basic prices) | 1370286.67 | riel     | 2011                                  |

#### **20.3 Comments**

| Category | Comments |
|----------|----------|
| N/A      | N/A      |

Other general comments

# 21. What is forest area likely to be in the future

Documents for this question:

- Guide for country reporting FRA 2015
- FRA 2015 Terms and Definitions

## 21.1 Categories and definitions

| Category   | Definition  |
|--|---|
| Government target/<br>aspiration for forest area | Government target/aspiration for forest area for a specific year.                           |
| Forests earmarked for conversion                 | Forest area that is allocated/classified or scheduled to be converted into non-forest uses. |

#### 21.2 National data

#### 21.2.1 Data sources

|   | References to sources of information | Variables | Years | Additional comments |
|---|--------------------------------------|-----------|-------|---------------------|
| 1 | N/A                                  | N/A       | N/A   | N/A                 |
| 2 | N/A                                  | N/A       | N/A   | N/A                 |
| 3 | N/A                                  | N/A       | N/A   | N/A                 |
| 4 | N/A                                  | N/A       | N/A   | N/A                 |

#### **21.3 Data**

#### Table 21a

| Category                                     | Forest area (000 ha) |      |  |
|--|----------------------|------|--|
| Category                                     | 2020                 | 2030 |  |
| Government target/aspiration for forest area | N/A                  | N/A  |  |

#### Table 21b

| Category                         | Forest area (000 ha) |  |
|----------------------------------|----------------------|--|
| Category                         | 2013                 |  |
| Forests earmarked for conversion | N/A                  |  |

#### **21.4 Comments**

| Category                                     | Comments |
|--|----------|
| Government target/aspiration for forest area | N/A      |

| Forests earmarked for conversion | N/A |  |
|----------------------------------|-----|--|
| Other general comments           |     |  |
|                                  |     |  |