

## Supplementary material

**Tab. S1** - Growth and yield data from *Tectona grandis* plantations in the Venezuelan Western Plains.

| Locality   | Plot number | Plot size (m <sup>2</sup> ) | Stand density (trees ha <sup>-1</sup> ) | Age (years) | Number of measurements |
|------------|-------------|-----------------------------|---|-------------|------------------------|
| Caparo 1   | 28          | 600-1600                    | 300–2500                                | 2 - 30      | 2 - 16                 |
| Caparo 2   | 28          | 250                         | 200–1200                                | 25-32       | 2                      |
| Ticoporo 1 | 57          | 250                         | 500–1200                                | 12-13       | 2                      |
| Caparo 3   | 44          | 1000                        | 700–1200                                | 8           | 2                      |
| Ticoporo 3 | 514         | 250                         | 300–1200                                | 17-24       | 2                      |
| Ticoporo 4 | 88          | 800                         | 500-1000                                | 5,7-9       | 4                      |
| Ticoporo 5 | 30          | 250                         | 300-1200                                | 17-19       | 2                      |
| Apure      | 92          | 250                         | 300–600                                 | 4-5         | 2                      |

**Tab. S2** - Parameter estimates for the growth and yield model.

| Parameter | Description   | Value   |
|-----------|---|---|
| $G_p$     | Maximum stand basal area  | 37.5 m <sup>2</sup> ha <sup>-1</sup> (site quality I)<br>32 m <sup>2</sup> ha <sup>-1</sup> (site quality II) |
| $m$       | Estimated basal area growth equation coefficient  | 0.05  |
| $k_a$     | Growth rate coefficient before thinning for initial stand density 1111 trees ha <sup>-1</sup> | 0.14  |
| $k_b$     | Growth rate before thinning for initial stand density 1600 trees ha <sup>-1</sup>             | 0.19  |

**Tab. S3** - Parameter estimates for calculating carbon storage in biomass

| <b>Parameter</b>               | <b>Value</b>            | <b>Source</b>                 |
|--------------------------------|-------------------------|-------------------------------|
| Basic density of teak wood     | 0.54 Mg m <sup>-3</sup> | Pérez & Kanninen (2005)       |
| Biomass expansion factor       | 1.33                    | Kraenzel <i>et al.</i> (2003) |
| Root-Shoot ratio               | 0.16                    | "                             |
| Carbon fraction in dry biomass | 0.495                   | "                             |

**Tab. S4** - Decomposition and anthropogen times for the woody biomass of teak trees (adapted from Hoen and Solberg, 1994)

| <b>Woody biomass categories</b> | <b>Anthropogenic time<br/>(<math>A_i</math>) (years)</b> | <b>Decomposition time (<math>D_i</math>)<br/>(years)</b> |
|---------------------------------|--|--|
| Roots                           | 0  | 6  |
| Deadwood, branches, stumps      | 0  | 16   |
| Bark                            | 0  | 2  |
| Debris                          | 0  | 1  |
| Short duration products         | 4  | 10   |
| Midterm duration products       | 30   | 14   |
| Long term duration products     | 60   | 16   |

**Tab. S5** - Proportion of product type by diameter categories of teak trees.

| Diameter category (cm) | Percentages (%)         |                           |                             |
|------------------------|-------------------------|---------------------------|-----------------------------|
|                        | Short duration products | Midterm duration products | Long term duration products |
| < 10                   | 0                       | 0                         | 0                           |
| [10 - 15)              | 57                      | 18                        | 0                           |
| [15 - 20)              | 40                      | 35                        | 0                           |
| [20 -24)               | 26                      | 32                        | 17                          |
| [25 - 29)              | 20                      | 30                        | 40                          |
| [30 - 39)              | 20                      | 25                        | 45                          |
| >= 40                  | 20                      | 20                        | 50                          |

**Tab. S6** - Roundwood prices of teak timber from Latin American plantations (2012).

| <b>Diameter category (cm)</b> | <b>Timber price (US\$ m<sup>3</sup>)</b> |
|-------------------------------|--|
| < 10                          | 0  |
| [10 - 15)                     | 53                                       |
| [15 - 20)                     | 77                                       |
| [20 -24)                      | 155                                      |
| [25 - 29)                     | 232                                      |
| [30 - 39)                     | 310                                      |
| >= 40                         | 400                                      |

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**Tab. S7** - Scenarios for determining the model's sensitivity to changes in required annual production quotas for the whole project. For each scenario (S1-S8), the production quota for a given period is changed in relation to the base scenario (changed quotas in bold).

| Period<br>(Years) | Base<br>scenario<br>(thousands m <sup>3</sup> ) | Annual production quotas (thousands m <sup>3</sup><br>yr <sup>-1</sup> ) |           |           |           |    |          |           |
|-------------------|---|--|-----------|-----------|-----------|----|----------|-----------|
|                   |   | S1   | S2        | S3        | S4        | S5 | S6       | S7        |
| 7-10              | 5   | <b>10</b>  | 5         | 5         | 5         | -  | 5        | 5         |
| 11-15             | 10  | 10   | <b>20</b> | 10        | 10        | 10 | <b>5</b> | 10        |
| 16-20             | 20  | 20   | 20        | <b>30</b> | 20        | 20 | 20       | <b>10</b> |
| 21-40             | 60  | 60   | 60        | 60        | <b>65</b> | 60 | 60       | 60        |