Product Category Rules (PCR)

(Approved PCR ID: PA-CC-02)

Wood, Wood Materials

Release date: October 3, 2011

The Carbon Footprint of Products Calculation and Labeling Pilot Program

NOTICE:
This English translation is provided for information purpose.

Use latest version for your calculation. Check the website if it is the newest one.
http://www.cfp-japan.jp/english/pcr/pcrs.html

* This approved PCR will expire at the end of the CFP Pilot Project (scheduled until March 31, 2012).
If this PCR is revised during the Pilot Project, the revised PCR will become effective.

(Provisional Translation)

Product Category Rule of "Wood, Wood Materials" (Approved PCR ID: PA-CC-02)

Foreword

- The contents provided in this PCR may be changed and revised as needed for further refinement, through PCR revision procedures, as a result of continued discussions with relevant stakeholders during the period of the Japanese CFP Pilot Project.
- This PCR will expire at the end of the Project (scheduled until March 31, 2012).

- This English translation of the original Japanese PCR is provided for information purpose.

No.	Items	Contents
1	Scope	This PCR prescribes rules, requirements and instructions for calculation and communication applicable to "wood or wood materials" under the CFP Pilot Project.
2	Definitions of products	
2-1	Descriptions of product category	- The products covered by this PCR are the following: > Wood; Lumber (121), Heat-treated woods (12419), and Chemical-treated woods (125), > Wood materials; Glue laminated timber (1242), Plywood (123), Laminated veneer lumber (12431), Particle board (1244), and Fiber board (135). (Number corresponds to the classification No. of the Japan Standard Commodity Classification) - Both virgin and recycled materials are included. - Products can be calculated as final goods or intermediate goods under this PCR, according to the actual use.
2-2	Components of products	- Wood or wood materials themselves - Packing materials (binding band, pallet, film, etc.)
3	Referenced Standards and PCRs	Referenced standards and PCRs are, <u>(1) Standards</u> *JAS (Japanese Agricultural Standards); - "*Crude wood materials"* (Notification No.1052 (pp.9) of MAFF (the Ministry of Agriculture, Forestry and Fisheries) of August 21, 2007) - "*Lumber*" (Notification No.1083 (pp.42) of MAFF of August 29, 2007) - "*Structural lumber for wood frame construction*" (Notification No.1035 (pp.46) of MAFF of July 9, 2010) - "*Finger-joint structural lumber for wood frame construction*" (Notification No.1036 (pp.9) of MAFF of July 9, 2010) - "*Glue laminated timber*" (Notification No.1152 (pp.37) of MAFF of September 25, 2007) - "*Plywood*" (Notification No.17521 (pp.37) of MAFF of December 2, 2008) - "*Laminated veneer lumber*" (Notification No.701 (pp.22) of MAFF of May 13, 2008) *JIS (Japanese Industrial Standards); - "*Wood Preservatives*" (JIS K1570: 2010, pp.46 (2010)) - "*Preservative treatments of wood products by pressure processes*" (JIS A9002: 2005, pp.3 (2005)) - "*Particleboards*" (JIS A5908: 2008, pp.12 (2008)) - "*Fiberboards*" (JIS A5905: 2008, pp.23 (2008))

		*Other standards - The "standards on performance of wood preservatives and wood preservatives/termiticides," (the 14th edition, 1992) (from the standards of the Japan Wood Preserving Associations) - "AQ certified wood products" (revised on May 15, 2009) (by the Japan Housing and Wood Technology Center) URL: http://www.howtec.or.jp/ninsyou/aq/taisyouhinmoku.pdf (See "Nov. 10, 2010".) (2) PCR (When referring these PCRs, use the latest edition downloaded from the CFP website.) - "PA-BB, *Paper containers, packaging and wrapping (intermediate goods)* - "PA-BC, *Plastic containers and packaging*
4	Terms and Definitions	(1) Lumber Refers to a member made by cutting raw woods, etc. and adjusting sizes. It is classified into board type, square type, and cylinder type according to shapes. It is also classified according to application and durability. (2) Heat-treated woods Refers to woods which achieved stability of size, durability, etc. by heat treatment. (3) Chemical-treated woods (by pressure processes) Refer to the following woods (including wood materials) treated to avoid deterioration due to decay, pest damage, or discoloration, etc.; - the woods which meet the JAS standards of preservative treatment (excluding K1) of lumber, - the woods with preservative treatment by pressure processes prescribed in "JIS A9002," by using wood preservatives prescribed in "JIS K1570" or by using wood preservatives for pressure processes certified by the Japan Wood Preserving Association, and - of among the products certified as quality wood product (AQ certified mark labeled product) by the Japan Housing and Wood Technology Center, the products treated with preservatives/termiticides (agents which are specified in the quality performance assessment standards) by pressure processes. (4) Glue laminated timber Refers to a member made by gluing sawn boards (called lamina), scantling, etc. together, having their grains in almost parallel to each other to the direction of thickness, width, and length. It is classified according to cross-section shape, strength, application, and so forth. (5) Plywood Three or more veneers (including scantling for heart wood), cut by rotary lathe or slicer, are glued together with adjacent plies having their grains at almost right angles to each other. Plywood is classified according to performance and application. (6) Laminated veneer lumber (LVL) Veneers, cut by rotary lathe, slicer, or other cutting machine, are glued together

		with adjacent piles having their grains in almost parallel to each other. In the case that veneers, whose grains are set to right angles, are used for the product, the total thickness of such veneers shall be less than 20% of the product thickness, and the ratio of the total number of such veneers shall be less than 30% of the product. (7) Particle board Refers to a plate-like board formed and hot-pressed after bonding wood particles (e.g., chips, flakes, wafer, and strand) together by using adhesive. It is classified according to properties of the front/back side of board, modulus of rupture, adhesive to be used, formaldehyde emissions amount, and flame resistance. (8) Fiber board Refers to a plate-like board made by foaming plant fibers mainly from woods, etc. Fiber board is broadly divided into insulation fiber board (IB), medium-density fiber board (MDF), and hard fiber board (HB), according to its density and manufacturing process. Furthermore, each classification is subdivided according to special treatment and properties on the front/back side of board, modulus of rupture, types of adhesive to be used, formaldehyde emissions amount, flame resistance, and application. (9) Unused thinned wood Refers to treetops generated after sawing a standing tree into a log in a forest land. (Previously refers to raw materials called “thinned woods which do not come down from a forest”.) (10) Wood residues Refers to raw materials which have possibilities to become raw materials of another product or raw materials to be disposed, generated from production phase of raw materials and products (e.g., “mill ends” from production phase, “chips” made by crushing those mill ends, and “sawdust” by machine from processing phase). (11) Waste wood - “Wood debris,” prescribed in the “Wastes Disposal and Public Cleansing Act”), - “waste woods from construction,” prescribed in the “Construction Material Recycling Act,” and - “tree branches pruned” and “tree barks,” etc., which are not included in (9) of No.4. (12) Precut Refers to processing of materials in the distribution stage before architectural members are processed and assembled in a construction site.
5	Range of assessment	
5-1	Calculation unit	- Use unit volume (/m^3) of sales unit. - If product is sold by other unit, the unit may be used.
5-2	Life cycle stages	Following life cycle stages shall be covered. - Raw material acquisition stage - Production stage

		- Distribution stage - Use and maintenance stage - Disposal and recycling stage In the case of intermediate goods, “distribution stage,” “use and maintenance stage,” and “disposal and recycling stage” shall be excluded.
6	General requirements applied to all stages	
6-1	Life cycle flow chart	- Life cycle flow charts are shown in Annex A (normative). - When calculating CFP, create a flow chart of the product studied, based on the closest flow chart selected from Annex A (normative). Calculation shall be based on the chart created.
6-2	Range of data collection	- Indirect department (e.g., clerical department, research department, etc.) shall be excluded. If it is difficult to separate only direct department from those indirect departments, indirect department may be included. - Capital goods such as facilities, etc. used for manufacturing products shall be excluded. - GHG emissions emitted except when equipments/facilities are used in each stage (e.g., manufacturing, maintenance, checkup, and disposal, etc., of equipments and facilities) are excluded from the assessment. - Consumables (sawing tools, cutting tools, grinding belt, lubricating oil, conveyor belt, etc.) are excluded from the assessment, since they make very small contributions to the total life cycle GHG emissions. - Locality shall not be considered.
6-3	Data collection period	- Primary data shall be collected over the most recent one year. - When the data of the most recent one year can not be collected, another time period may be used, but its validity shall be verified.
6-4	Allocation	- Physical quantity (weight, volume, etc.) shall be used. - When allocation is conducted based on economic value (amount of money), its validity shall be verified.
6-5	Cut-off criteria	Cut-off shall be conducted provided that it is difficult to use any scenarios, similar data, and estimated data. When conducting cut-off, GHG emissions to be conducted cut-off shall be within 5% of the total life cycle GHG emissions, and the range of the cut-off shall be clearly reported.
6-6	Others	[Rules on transport] - Fuel consumption associated with transport processes shall be calculated by the fuel consumption method, prescribed as the highest-accuracy and a standard method in the “Act on the Rational Use of Energy (enforced on April 1, 2006)”. - When adoption of the fuel consumption method is difficult, the fuel cost method should be used. When it is also difficult even by the fuel cost method, the improved ton-kilometer method can be used. GHG emissions from transport means shall be allocated only to transport of applicable cargo. When calculating GHG emissions by using the fuel consumption method or the fuel cost method, allocation shall be made on the basis of the ratio of transport amount of applicable cargo among the total transport amount. When calculating GHG emissions by using the improved ton-kilometer method, follow the method of Annex B.3 (normative). GHG emissions of “one-way” cargo shall be calculated and included.

		The data of transport distance shall be actually measured, but it may be obtained from navigation software. [Rules on on-site electricity generation and steam generation] When on-site electricity generation and/or steam generation is used for the production of the product, the input fuel amount shall be collected as primary data, and calculate the GHG emissions associated with the production and combustion. [Rules on assessment of wood residues and wastes] In the case of using wood residues as inputs, GHG emissions associated with its production and transport of them shall include the GHG emissions emitted after the processes for ones reading for the recycling preparations (e.g., regeneration processing, etc.) or the reusing (e.g., collection, cleaning, etc.). When wood residues or wastes discarded are recycled, calculate GHG emissions up to and including recycling preparation process. CO_2 emissions derived from biomass (e.g., woods) due to incineration shall not be included in GHG emissions since it is considered as carbon-neutral.
7	Requirements for raw material acquisition stage	
7-1	Range of the processes	- The following processes shall be covered. - When conducting CFP assessment of a specific product, select the processes actually used, and collect data on those processes. Processes related to (1) transport and up to and including production of “logs” (2) transport and up to and including production of “wood/wood materials to be used as raw materials of target product” (3) transport of “unused thinned woods,” “wood residues,” and “waste woods” (4) transport and up to and including production of “adhesive raw materials” or “adhesive” (5) transport and up to and including production of “raw materials for wood preserving chemicals” or “wood preserving chemicals” (6) transport and up to and including production of “other raw materials”
7-2	Data collection items	Collect the data on the processes selected in No.7-1. (1) Transport process and up to and including production processes of “logs” - Input amount of “logs” - Life cycle GHG emissions per unit associated with transport and up to and including production of “logs” (2) Transport process and up to and including production processes of “wood/wood materials to be used as raw materials of target product” - Input amount of “wood/wood materials to be used as raw materials of target product” - Life cycle GHG emissions per unit associated with transport and up to and including production of “wood/wood materials to be used as raw materials of target product” (3) Transport process of “unused thinned woods,” “wood residues,” and “waste woods” - Input amount of “unused thinned woods,” “wood residues,” and “waste woods”

		- Life cycle GHG emissions per unit associated with transport of “unused thinned woods,” “wood residues,” and “waste wood” (4) Transport process and up to and including production processes of “adhesive raw materials” or “adhesive” - Input amount of “adhesive raw materials” or “adhesive” - Life cycle GHG emissions per unit associated with transport and up to and including production of “adhesive raw materials” or “adhesive” (5) Transport process and up to and including production process of “raw materials for wood preserving chemicals” or “wood preserving chemicals” - Input amount of “raw materials for wood preserving chemicals” or “wood preserving chemicals” - Life cycle GHG emissions per unit associated with transport and up to and including production of “raw materials for wood preserving chemicals” or “wood preserving chemicals” (6) Transport process and up to and including production processes of “other raw materials” - Input amount of “other raw materials” - Life cycle GHG emissions per unit associated with transport and up to and including production of “other raw materials”
7-3	Primary data collection items	Data shall be collected as primary data, following No.7-2 data collection. (1) Transport process and up to and including production processes of “logs” - Input amount of “logs” - Life cycle GHG emissions per unit associated with transport of “logs” (2) Transport process and up to and including production processes of “wood/wood materials to be used as raw materials of target product” - Input amount of “wood/wood materials to be used as raw materials of target product” - Life cycle GHG emissions per unit associated with transport of “wood/wood materials to be used as raw materials of target product” (3) Processes related to transport of “unused thinned woods,” “wood residues,” and “waste woods” - Input amount of “unused thinned woods,” “wood residues,” and “waste woods” - Life cycle GHG emissions per unit associated with transport of “unused thinned woods,” “wood residues,” and “waste woods” (4) Transport process and up to and including production processes of “adhesive raw materials” or “adhesive” - Input amount of “adhesive raw materials” or “adhesive - Life cycle GHG emissions per unit associated with transport of “adhesive raw materials” or “adhesive” (5) Transport process and up to and including production processes of “raw materials for wood preserving chemicals” or “wood preserving chemicals” - Input amount of “raw materials for wood preserving chemicals” or “wood preserving chemicals” - Life cycle GHG emissions per unit associated with transport of “raw materials for wood preserving chemicals” or “wood preserving chemicals” (6) Processes up to and including production of “other raw materials,” and of its transport - Input amount of “other raw materials” - Life cycle GHG emissions per unit associated with transport of “other raw materials”

7-4	Primary data Collection method and Requirements	[Rules on procurement from multiple suppliers] Even if raw materials were procured from multiple suppliers, collect primary data from all the suppliers. However, if it is difficult, primary data collected for 50% or more of the total amount of the procured raw materials can be used as secondary data for the rest of the data. [Rules on method of collecting primary data] Either measuring method of primary data shall be used. (1) Collecting and adding up input amount and discharge amount of input/output items, per operation unit or per equipment/facility operation (e.g., operating hours per unit, 1 lot) necessary for process execution. (e.g., Operating time of machine x fuel consumption of machine = input amount of electricity) If a certain product other than the product targeted by this PCR is manufactured in the same plant, the same adding-up calculation shall be applied to the product, and it shall indicate that the grand total of the adding-up results of all outputs will not deviate greatly from the resultant value of the entire site. (2) Allocating the result of each operator in a specified period among outputs. (e.g., allocating total input amount of fuels in a year among products manufactured)
7-5	Scenario	For the transport of raw materials selected in No.7-3, applicable scenario described in Annex C (normative) may be used.
7-6	Other	[Exceptions on allocation method of lumber] - When allocation is conducted between lumber (main product) and chips, sawdust, and wood shavings, and the like (byproduct), it should be based on economic value. (Source: "*On the trial allocation in life cycle inventory of structural domestic lumber*" by HITOE Kyouichiro, HABUTO Masashi, NISHIMURA Yukihiro, NISHIMURA Hitoo, and HATTORI Nobuaki, from 5-(4) (pp.456-461) of "*Journal of Life Cycle Assessment*" (2009)) - When conducting allocation for the main product (lumber) based on other than economic value (= physical quantity), the validity of the reason shall be reported. - When conducting allocation for the byproduct based on other than physical quantity (= economic value, etc.), the validity of the reason shall be reported. [Rules on density] - When calculating GHG emissions associated with transport of "logs," "lumber," and "lamina" by using the ton-kilometer method, convert from wood volume (m^3) to weight (t) by using density in Annex D (normative). - As for tree species not described in Annex D (normative), primary data on weight shall be collected.
8	Requirements for the production stage	
8-1	Range of the processes	- The following processes shall be covered. - When conducting CFP assessment of a specific product, select the processes actually used, and collect data on those processes.

		Processes related to production of (1) “lumber” (2) “heat-treated woods” (3) “chemical–treated woods by pressure processes” (4) “glue laminated timber” (5) “plywood” (6) “laminated veneer lumber” (7) “particle board” (8) “fiber board” (9) Processes related to manufacture and transport of “packing materials” (10) “Shipping preparation” related processes (11) Processes related to transport and treatment of “wastes”
8-2	Data collection items	Data on the processes selected in No.8-1 shall be collected. (1) Processes related to production of “lumber” - Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “lumber” (2) Processes related to production of “heat-treated woods” - Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “heat-treated woods” (3) Processes related to production of “chemical-treated woods by pressure processes” - Input amount of “electricity” and “fuels” - Discharge amount of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “chemical-treated woods by pressure processes” (4) Processes of production related to “glue laminated timber” - Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “glue laminated timber” (5) Processes related to production of “plywood”

		- Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels’’ - Life cycle GHG emissions per unit associated with transport of “plywood” (6) Processes related to production of “laminated veneer lumber” - Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “laminated veneer lumber” (7) Processes related to production of “particle board” - Input amount of “electricity” and “fuels” - Discharge amount of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “particle board” (8) “Fiber board” related processes - Input amount of “electricity” and “fuels” - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with use of “electricity” and “fuels” - Life cycle GHG emissions per unit associated with transport of “fiber board” (9) Processes related to manufacture and transport of “packing materials” - Input amount of “packing materials” - Life cycle GHG emissions per unit associated with manufacture and transport of “packing materials” (10) “Shipping preparation” related processes - Input amount of “electricity” and “fuels” - Amount of “product” production - Discharge amounts of wood residues (remaining materials, wood debris, etc.) and wastes (e.g., defective items, losses from processing, etc.) - Life cycle GHG emissions per unit associated with shipping preparation of “products” (11) Processes related to transport and treatment of “wastes” - Amount of wastes - Discharge amount of waste water - Life cycle GHG emissions per unit associated with transport and treatment

		of wastes - Life cycle GHG emissions per unit associated with waste water treatment If transport between sites is conducted, the data on the following items shall be collected. - Cargo weight - Life cycle GHG emissions per unit associated with fuel consumption by transport
8-3	Primary data collection items	- Primary data shall be collected for the data on the processes selected in No. 8-2. - Data related to manufacture of packing materials shall be excluded.
8-4	Primary data Collection method and Requirements	Conform to (1) of No.7-4.
8-5	Scenario	- Scenario in Annex C (normative) may be used for GHG emissions associated with transport of “packing materials” and “wastes”. - Scenario in Annex E (normative) may be used for GHG emissions associated with treatment of “wastes”.
8-6	Other	[Exceptions when a process in the production stage is outsourced to external business] When products are produced in multiple sites, primary data on all the sites should be collected. If it is difficult, however, primary data collected for 95% or more of the total amount of the produced products can be used as secondary data for the GHG emissions of the rest of the data in the production stage. [Exceptions on allocation method of lumber] - When allocation is conducted between lumber (main product) and chips, sawdust, and wood shavings, and the like (byproduct), it should be based on economic value. (Source: “*On the trial allocation in life cycle inventory of structural domestic lumber*” by HITOE Kyouichiro, HABUTO Masashi, NISHIMURA Yukihiro, NISHIMURA Hitoo, and HATTORI Nobuaki, from 5-(4) (pp.456-461) of “*Journal of Life Cycle Assessment*” (2009)) - When conducting allocation for the main product (lumber) based on other than economic value (= physical quantity), the validity of the reason shall be reported. - When conducting allocation for the byproduct based on other than physical quantity (= economic value, etc.), the validity of the reason shall be reported.
9	Requirements for the distribution stage	
9-1	Range of the processes	The data on the following processes shall be covered. (1) Processes related to “product” transport to a site where the product will be used. (2) Processes related to “precut” (if “precut” is included)
9-2	Data collection items	The data on the following items shall be collected. (1) Processes related to transport of “products” - Weight of “products” transported - Life cycle GHG emissions per unit associated with transport of “products” (2) Processes related to “precut” - Wood volume of “product”

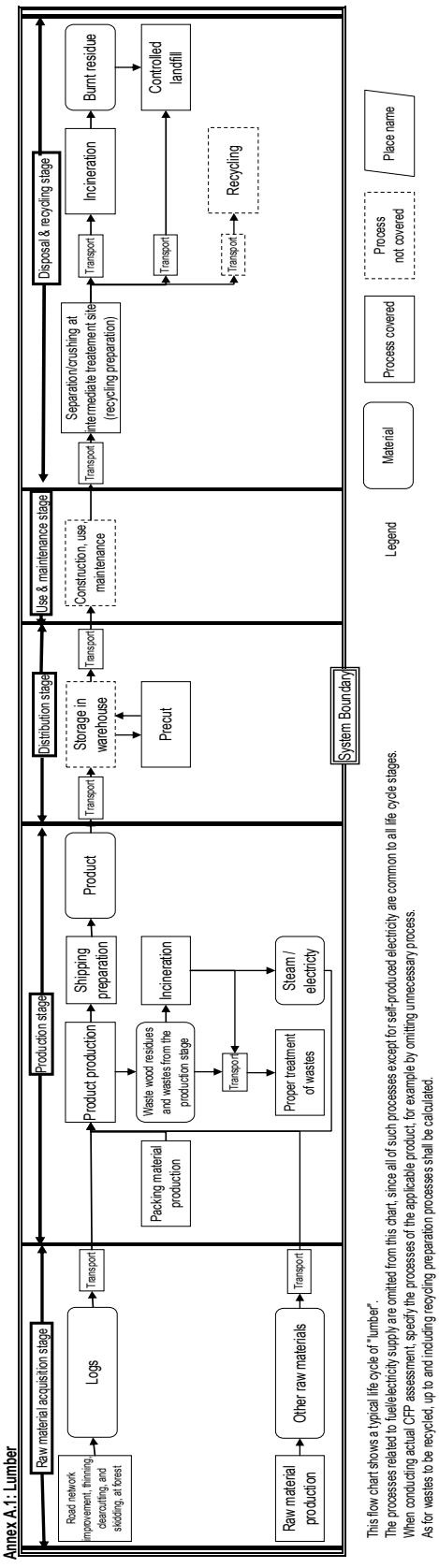
		- Life cycle GHG emissions per unit associated with “precut”
9-3	Primary data collection items	Primary data on the following items shall be collected. (1) Processes related to transport of “products” - Weight of “products” transported - Life cycle GHG emissions per unit associated with transport of “products”
9-4	Primary data Collection method and Requirements	Not stipulated.
9-5	Scenario	GHG emissions associated with transport of product, scenario in Annex C (normative) may be used.
9-6	Other	[Rules on density] - When calculating GHG emissions associated with transport of “lumber” and “glue laminated timber” by using the ton-kilometer method, convert from wood volume (m^3) to weight (t) by using density in Annex D (normative). - As for tree species not described in Annex D (normative,) primary data on weight shall be collected.
10	Requirements for the use and maintenance stage	
10-1	Range of the processes	- It is assumed that no GHG emitted from the use stage of wood/wood materials, since they do not consume any energy such as electricity and water when in use. - Calculations of GHG emissions from the maintenance stage shall be excluded, because the use stage of applicable product will end at the time of renovation of a house and then the product will enter the disposal and recycling stage, even if GHG emitted from the renovation process.
10-2	Data collection items	Excluded from the assessment.
10-3	Primary data collection items	Excluded from the assessment.
10-4	Primary data Collection method and Requirements	Excluded from the assessment.
10-5	Scenario	Excluded from the assessment.
10-6	Other	Not stipulated.
11	Requirements for the disposal and recycling stage	
11-1	Range of the processes	The following processes shall be covered. Processes related to (1) transport of used wood/wood materials to waste treatment facility (2) separation of used wood/wood materials in waste treatment facility (3) crushing of disposed wood/wood materials in waste treatment facility (4) incineration of disposed wood/wood materials in waste treatment facility (5) landfill of disposed wood/wood materials in waste treatment facility
11-2	Data collection items	The data on the following items shall be collected. (1) Processes related to the transport of used wood/wood materials to waste treatment facility - Weight of used wood/wood materials - GHG emissions associated with transport of used wood/wood materials to waste treatment facility (2) Processes related to separation of used wood/wood materials in waste treatment facility - GHG emissions associated with separation of used wood/wood materials in waste treatment facility

		(3) Processes related to crushing of disposed wood/wood materials in waste treatment facility - GHG emissions associated with crushing of disposed wood/wood materials in waste treatment facility (4) Processes related to incineration of disposed wood/wood materials in waste treatment facility - GHG emissions associated with incineration of disposed wood/wood materials in waste treatment facility (5) Processes related to landfill of disposed wood/wood materials in waste treatment facility - GHG emissions associated with landfill of disposed wood/wood materials in waste treatment facility
11-3	Primary data collection items	(1) Processes related to transport of used wood/wood materials to a waste treatment site - Weight of used wood/wood materials
11-4	Primary data Collection method and Requirements	Not stipulated.
11-5	Scenario	Scenario in Annex E (normative) shall be used.
11-6	Other	Not stipulated.
12	Items applied secondary data	- The data provided in the "Tentative Database of GHG Emission Factors for the CFP Pilot Project" (hereinafter called the "GHG Emission Factor Database"). - Of secondary data which is not included in the GHG Emission Factor Database, but the data prepared as "reference data" by the CFP Pilot Project Secretariat.
13	Communication requirements	
13-1	Unit to be displayed on the label	- Calculation unit shall be used. - The communication methods described in the "*Basic Guideline of the Carbon Footprint of Products*" and the "*Guide of Establishing Product Category Rules*" can be used. In this case, its appropriateness shall be verified.
13-2	Label position and Size	- Follow the "*Specifications of CFP Label and Displaying Other Information*". - In the case of final products, CFP label shall be displayed directly on the product. If the product cannot be seen from the outside (e.g. wrapped or bundled), CFP label may be displayed on a bundled or packed unit. Even in the case, the absolute-value of GHG emissions for each product shall be disclosed on the CFP website, and shall also be disclosed among on their websites, pamphlets, environmental reports, and such. - For intermediate goods, follow "*Specifications of CFP label and Displaying Other Information*". The indication of "Intermediate goods" shall be displayed.
13-3	Contents of additional information	- Amount of carbon content stored in applicable product, which is calculated in accordance with Annex F (normative), may be included in additional information. To communicate the GHG reduction efforts made by producers and businesses appropriately to consumers, as for the same or similar product by the same business, reduction amount of GHG emissions over years, GHG emissions for each process, GHG emissions for each usage method, and GHG emissions for each disposal, may be included in additional information.

		As for “chemical-treated woods by pressure processes” with its service life included in additional information, the GHG emissions for single-year (calculated by dividing the total life cycle GHG emissions by its service life) may be used as additional information. Service life means a time period that product functions have been maintained under the service conditions assumed for the woods in the product. Applicant shall define a service life of the product by referring to Annex G (informative) and its validity shall be verified by the CFP Verification Panel. - When the unit of display of the product is set as “per unit of wood volume,” the total CO_2 emissions per sales unit of the product shall be disclosed on the CFP website which is managed by the CFP Pilot Project Secretariat, to enable consumers to easily convert to a CFP value expressed in sales unit.

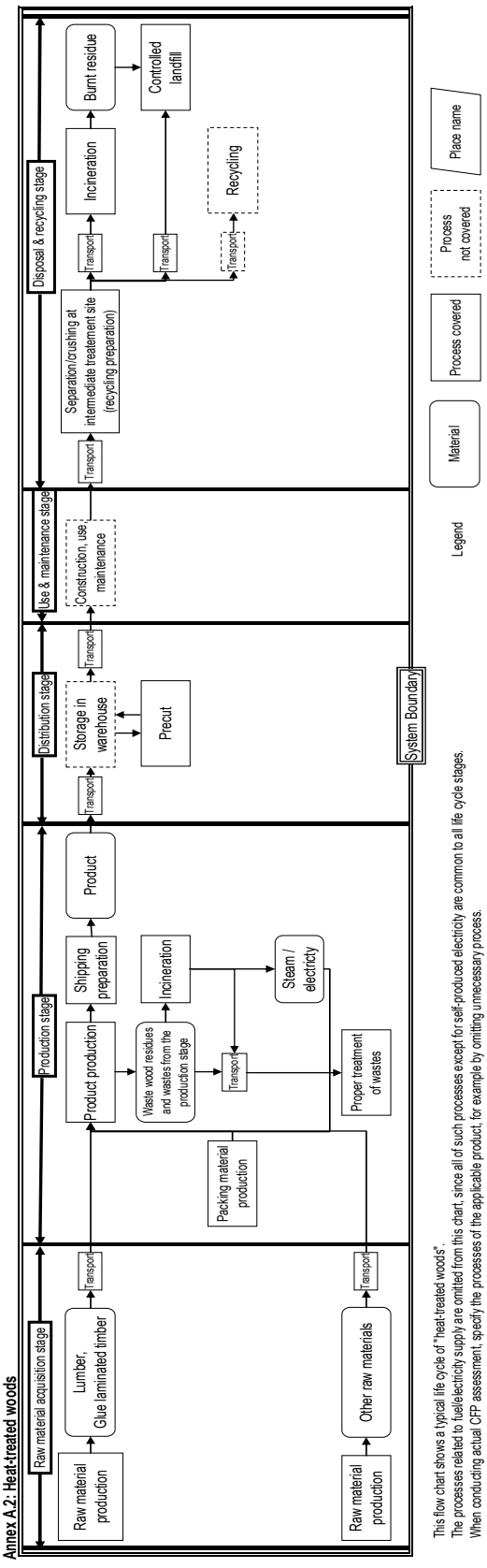
Annex A (normative): Life cycle flow chart

Note that “sales process” in the distribution stage is excluded from the assessment until the proper calculation method will be established, by the revision of the basic rules in July, 2010.



This flow chart shows a typical life cycle of "lumber".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

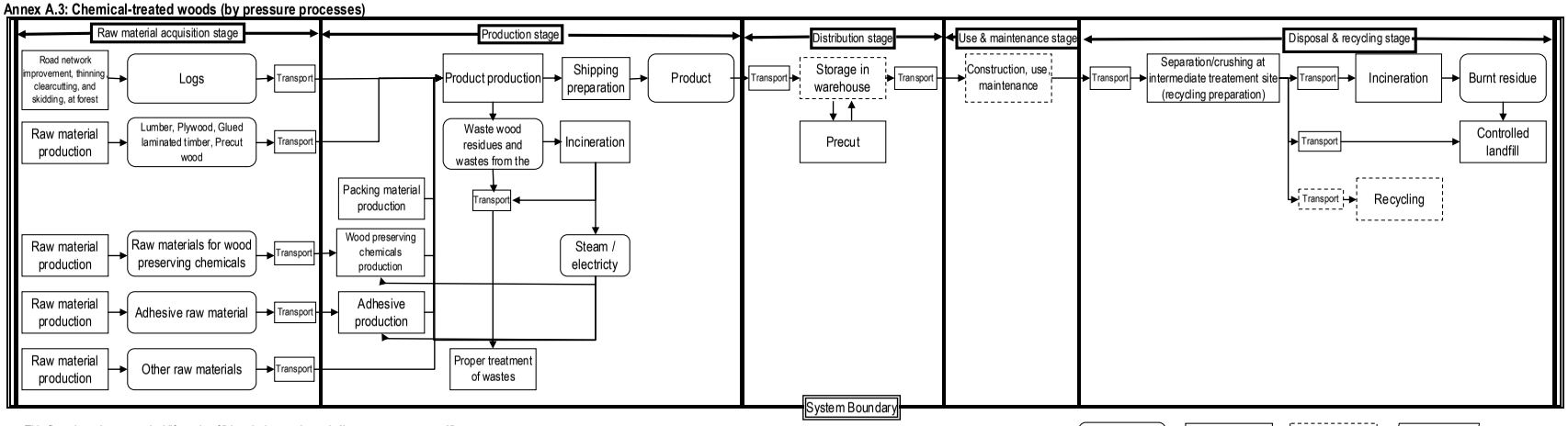
Chart 1: Life cycle flow chart of lumber



This flow chart shows a typical life cycle of "heat-treated woods".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

Chart 2: Life cycle flow chart of heat-treated woods

Annex A.3: Chemical-treated woods (by pressure processes)



This flow chart shows a typical life cycle of "chemical-treated woods (by pressure processes)".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

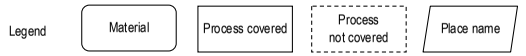
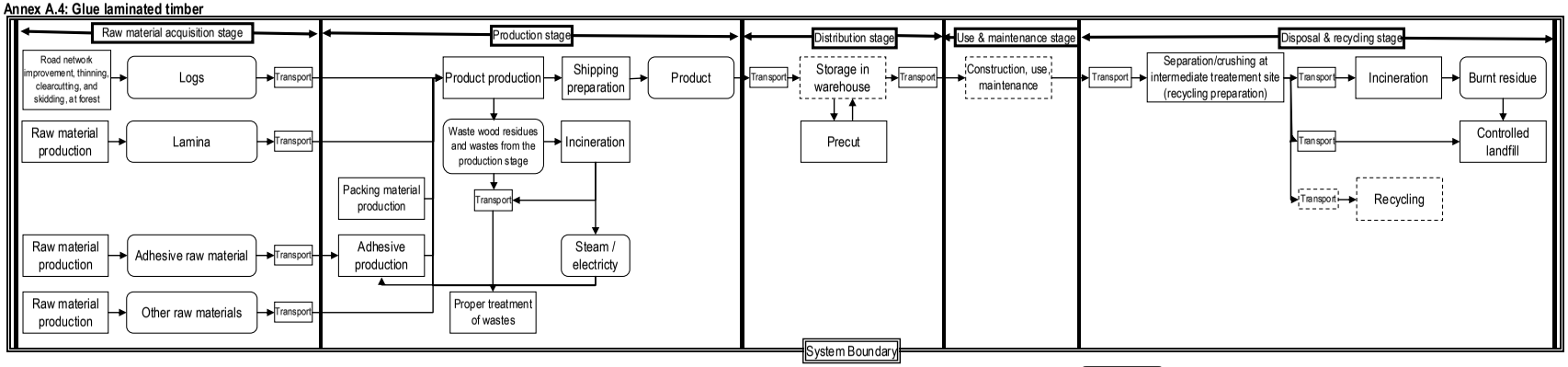


Chart 3: Life cycle flow chart of chemical-treated woods (by pressure processes)

Annex A.4: Glue laminated timber



This flow chart shows a typical life cycle of "glue laminated timber".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

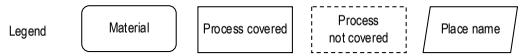
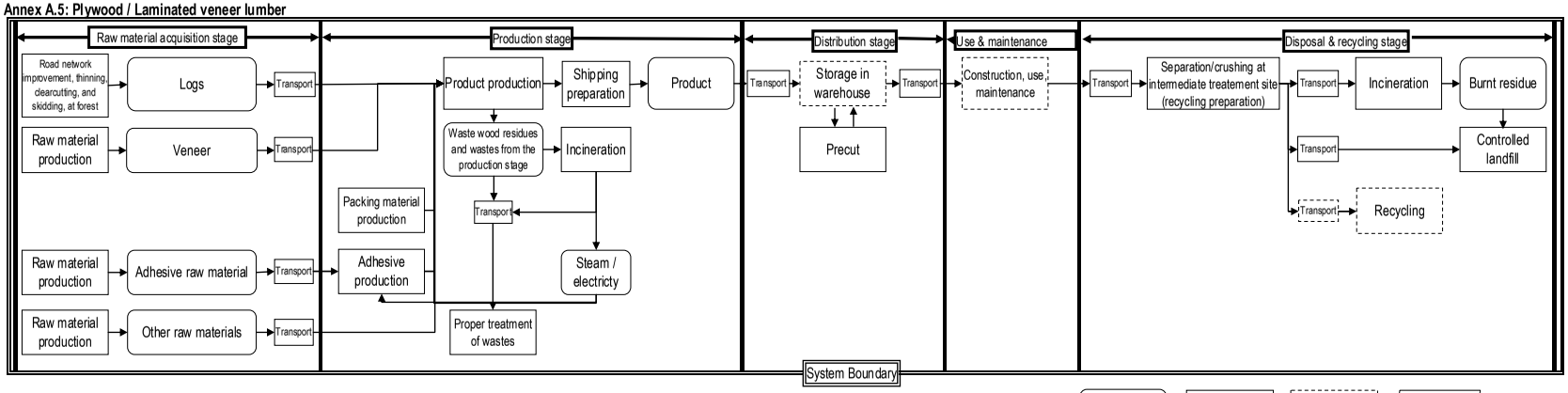


Chart 4: Life cycle flow chart of glued laminated timber

Annex A.5: Plywood / Laminated veneer lumber

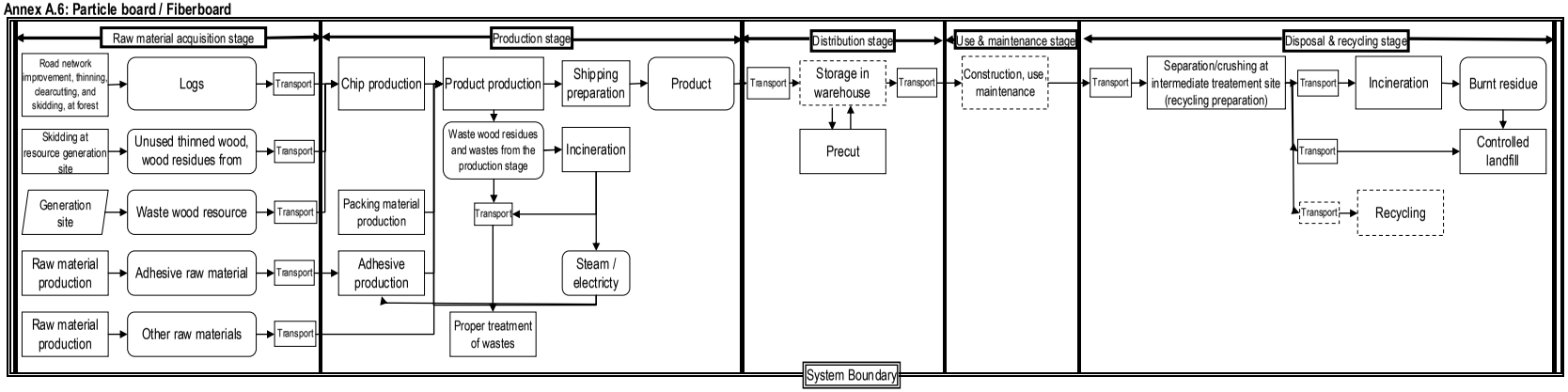


This flow chart shows a typical life cycle of "plywood / laminated veneer lumber".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

Legend: Material | Process covered | Process not covered | Place name

Chart 5: Life cycle flow chart of plywood / laminated veneer lumber

Annex A.6: Particle board / Fiberboard



This flow chart shows a typical life cycle of "particle board / fiberboard".
The processes related to fuel/electricity supply are omitted from this chart, since all of such processes except for self-produced electricity are common to all life cycle stages.
When conducting actual CFP assessment, specify the processes of the applicable product, for example by omitting unnecessary process.
As for wastes to be recycled, up to and including recycling preparation processes shall be calculated.

Legend: Material | Process covered | Process not covered | Place name

Chart 6: Life cycle flow chart of particle board / fiberboard

Annex B (normative): Calculation method for GHG emissions associated with fuel consumption during transport

B.1 Fuel consumption method

1) Collect data on "fuel consumption [L]" for each mean of transport.
2) Calculate GHG emissions [kg-CO_2e] by multiplying fuel consumption [L] by "life cycle GHG emissions related to supply and use of fuel" [kg-CO_2e/kg] (secondary data) for each type of fuel.

B.2 Fuel cost method

1) Collect data on "fuel cost [km/L]" and "transport distance [km]" for each mean of transport, and calculate fuel consumption [L] by using the following equation.
   Fuel consumption [L] = transport distance [km] / fuel cost [km/L]
2) Calculate GHG emissions [kg-CO_2e] by multiplying fuel consumption [L] by "life cycle GHG emissions related to supply and use of fuel" [kg-CO_2e/kg] (secondary data) for each type of fuel.

B.3 Ton-kilometer method

1) Collect data on loading ratio [%] and transport load (transport ton-kilometer) [t-km] for each mean of transport.
2) Calculate life cycle GHG emissions [kg-CO_2e] by multiplying the transport load (transport ton-kilometer) [t-km] by the "life cycle GHG emissions related to fuel consumption per transport ton-kilometer" [kg-CO_2e/t-km] (secondary data) for different transport loads for each mean of transport.

When calculating GHG emissions by the ton-kilometer method, select the closest loading ratio (%) to the actual usage, from secondary data of the applicable transport means listed in GHG Emission Factor Database. Then, use the corresponding GHG emissions, the weight of applicable product, and the transport distance, for the calculation.

Annex C (normative): Transport scenario

In this PCR, the transport scenario is created when no primary data is obtained from each life cycle stage of wood/wood materials. When calculating GHG emissions by using the fuel consumption method or the fuel cost method, however, the businesses shall collect or define the "ratio of transport amount of applicable cargo" among the "total transport amount transported by using applicable transport measure".

How to create a scenario

- For an incentive to provide primary data collection, transport distance is set to a little longer than the average.
- As for transport within Japan, "truck transport" is assumed for an incentive to take CO_2 reduction measures in distribution such as modal shift.
- The size of ship is set based on the sizes of ships actually entered into Japanese ports.
- As for loading ratio of transport by truck, the values are used in Table 1, "Calculation method for energy consumption of cargo transport by cargo distributor," by the Notification of the Ministry of Economy, Trade and Industry (METI).

C.1 Transport scenario for domestic transport

(1) Transport within a city or not across adjacent cities
<Transport distance> 50 km
[Assumption] The distance from a prefectural center to a prefectural border is assumed.
<Means> 10-ton truck
<Loading ratio> 62 %

(2) Transport within a prefecture
<Transport distance> 100 km
[Assumption] The distance from a prefectural border to another side of the border is assumed.
<Means> 10-ton truck
<Loading ratio> 62 %

(3) Transport possibly across prefectural border to another side of the border is assumed.
<Transport distance> 500 km
[Assumption] The distance from Tokyo to Osaka is assumed.
<Means> 10-ton truck
<Loading ratio> 62 %

(4) Transport from producer to consumer (a site consumed the product is not limited in a specific area) is assumed.
<Transport distance> 1,000 km
[Assumption] The distance a little longer than half Honshu (the main island of Japan: 1,600 km) is assumed.
<Means> 10-ton truck
<Loading ratio> 62 %

C.2 Transport scenario for international transport

(1) In the case of importing logs or unused thinned woods into Japan
<Transport distance from logging area to export port> 500 km
<Means> a trailer dedicated to 30 m^3 of raw wood, or a towable raft
Use secondary data of "20-ton truck" for a trailer dedicated to 30m^3 of raw wood,
and "pusher barge" for a towable raft.
[Assumption] Major imported log (North American lumber) is assumed.
<Loading ratio> 62 %

(2) In the case that logs are produced overseas and sawed to make them lumbers, then they are imported into Japan

(i) Transport from logging area to lumbering site

<Transport distance > 100 km

<Means> a trailer dedicated to 30 m^3 of raw wood, or a towable raft

Use secondary data of "20-ton truck" for a trailer dedicated to 30m^3 of raw wood, and "pusher barge" for a towable raft.

[Assumption] Major imported lumber (North American lumber) is assumed.

<Loading ratio> 62 %

(ii) Transport from lumbering site to export port

<Transport distance > 400 km

<Means> railway

[Assumption] Major imported lumber (North American lumber) is assumed.

(3) Transport from abroad

<Transport distance from export port to import port> Use either the navigate distance from a departing port to an arriving port or "reference data" provided by the Pilot Project Secretariat.

<Means> Other bulk carrier (80,000 DWT or less)

(4) Transport from production site of other raw materials to export port

<Transport distance > 100 km

<Means> 10-ton truck

<Loading ratio> 62 %

C.3 Transport scenario of wastes and wood residues

<Transport distance> 50 km

[Assumption] The distance from a prefectural center to a prefectural border is assumed.

<Means> 10-ton truck

<Loading ratio> 62 %

Table 1: Set values of loading ratio

Vehicle Type	Fuel	Maximum Load (kg)		When loading ratio is unknown	
				Average loading ratio	
			Median	For household	For business
Light, compact and ordinary trucks	Gasoline	Light trucks	350	10%	41%
		1,999 or less	1,000	10%	32%
		2,000 or more	2,000	24%	52%
Compact and ordinary trucks	Light oil	999 or less	500	10%	36%
		from 1,000 to 1,999	1,500	17%	42%
		from 2,000 to 3,999	3,000	39%	58%
		from 4,000 to 5,999	5,000	49%	62%
		from 6,000 to 7,999	7,000		
		from 8,000 to 9,999	9,000		
		from 10,000 to 11,999	11,000		
		from 12,000 to 16,999	14,500		

Source: "Calculation method for energy consumption of cargo transport by cargo distributor," by METI

Annex D (normative): Quality of log, green lumber, and air-dried density

Table 2: Quality and green density of logs

Tree species	Forest land	breast-height diameter		Stump, tree age		Average annual ring width		Heart wood ratio (%)		Water content of green lumber (%)					Bulk density (kg/m³)			Green density	Air-dried density
		Trees measured	cm	Trees measured	Year	Trees measured	mm	Trees measured	Average	Trees measured	Spa wood	Trees measured	Heart wood	Average	Trees measured	Average	Standard Deviation	(kg/m³)	(kg/m³)
Japanese yew	Nagawa, Minamiazumi-gun, Nagano	7	22	7	138	153	1	6	80	-	-	-	-		153	454	51.7	Unknown	540
Sakhalin fir	Monbetsu, Chitose-city, Hokkaido	5	43	5	80	91	3.9	-		-	-	-	-		91	329	36.7	Unknown	420
Larch	Miyota, Kitasaku-gun, Nagano	26	37	26	65	279	2.5	3	79	18	80	18	43	51	279	444	49.8	669	530
Whitewood	Shintoku, Kamikawa-gun, Hokkaido	21	46	21	155	250	1.7	2	50	18	169	18	57	113	250	314	24.7	669	430
Japanese red pine	Iwate, Iwate-gun, Iwate	43	25	43	52	478	2.5	4	23	24	143	24	36	118	478	369	55.3	806	530
Japanese red pine	Harutomo, Hitachioota-city, Ibaraki	24	32	24	60	207	3.1	3	18	18	130	10	53	116	207	441	40.9	953	
Japanese red pine	Jouge, Kounu-gun, Hiroshima	33	34	33	65	567	2.2	-		-	-	-	-		567	424	64.6	Unknown	
Japanese black pine	Takajyo, Kitamorokata-gun, Miyazaki	5	7	5	38	125	5	5	5	-	-	-	-		125	452	61.9	Unknown	570
Japanese cedar	Kyowa, Senboku-gun, Akita	21	31	21	61	285	3.2	-		-	-	-	-		285	299	27.4	Unknown	380
Japanese cedar	Tatsuyama, Iwata-gun, Shizuoka	23	32	23	66	326	2.3	3	39	18	130	10	53	100	326	321	29.2	642	
Japanese cedar	Takajyo, Kitamorokata-gun, Miyazaki	48	27	48	48	160	3.1	3	49	25	159	21	129	144	160	333	39.7	814	
Japanese cypress	Uematsu, Nishichikuma-gun, Nagano	16	47	16	254	586	0.9	3	70	18	203	18	43	91	586	339	45.1	647	410
Japanese evergreen oak	Mimata, Kitamorokata-gun, Miyazaki	21	39	21	87	197	1.5	3	27	12	58	12	102	70	197	725	59.1	1,232	920
Japanese oak	Shintoku, Kamikawa-gun, Hokkaido	19	51	19	217	334	1.1	3	75	18	81	18	81	81	334	537	39.9	972	670
Japanese oak	Monbetsu, Chitose-city, Hokkaido	16	50	16	157	299	1.3	3	73	18	91	18	90	90	299	520	30.6	989	
Japanese oak	Towadako, Kamikita-gun, Aomori	8	54	8	191	156	1.6	-		-	-	-	-		156	547	49.8	Unknown	
Japanese oak	Kiyomi, Oono-gun, Gifu	15	54	15	199	173	1	3	75	16	79	18	69	72	173	544	59.1	933	
Zelkova	Ueno, Tano-gun, Gunma	17	45	17	140	255	1.5	3	60	18	87	18	78	82	255	492	40.5	893	620
Japanese ash	Monbetsu, Chitose-city, Hokkaido	20	30	20	69	373	1.8	3	48	21	51	9	83	66	373	492	55.9	818	650
Beech	Kamiiso, Oshima-gun, Hokkaido	22	34	22	99	202	1.6	-		18	89	5	96	89	202	520	36.8	Unknown	630
Beech	Towadako, Kamikita-gun, Aomori	12	55	12	196	394	1.3	-		24	73	24	78	73	396	484	59.0	Unknown	
Beech	Kiyomi, Oono-gun, Gifu	24	37	24	148	168	1.4	-		18	78	5	93	78	168	570	30.0	Unknown	
Beech	Wakasa, Yazu-gun, Tottori	15	51	15	211	164	1.5	-		-	-	-	-		164	507	51.8	Unknown	
Beech	Ueno, Tano-gun, Gunma	20	37	20	149	218	1.2	-		18	85	18	79	85	218	456	3.5	Unknown	
Japanese Judas tree	Monbetsu, Chitose-city, Hokkaido	4	49	4	181	99	1.6	4	43	-	-	-	-		99	414	25.3	Unknown	490
Magnolia	Monbetsu, Chitose-city, Hokkaido	5	48	5	154	125	1.5	-		-	-	-	-		125	386	25.6	Unknown	480
Painted maple	Monbetsu, Chitose-city, Hokkaido	5	47	5	142	110	1.6			-	-	-	-		110	519	50.2	Unknown	670
Japanese linden	Shintoku, Kamikawa-gun, Hokkaido	5	45	5	155	147	1.3	-		-	-	-	-		147	369	47.1	Unknown	480

Source: > (Branch ratio, timber ratio, stem tapering grade, crown height ratio, heart wood ratio, water content of greem lumber, average annual ring width, and bulk density are excerpted from,)
the materials 47-3, "*Nature of major Japaneses tree species* (Nov. 1972)," by the forest experiment station department of the Ministry of Agricultural and Forestry (the predecessor of MAFF)
> (Air-dried density is excepted from) "*300 species of valuable world woods - nature and applications* (pp.126 (1975)),"
eddited by the editorial committee on 300 species of valuable world woods, by the Wood Technological Association of Japan

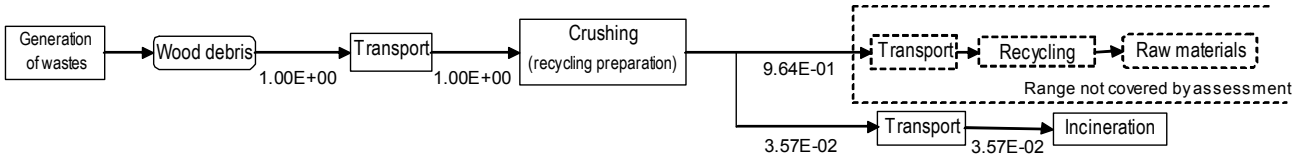
Annex E (normative): Disposal and recycling scenario after using wood/wood materials

The following shall be used for disposal and recycling scenario of wood/wood materials.

- How to create a scenario -

The scenario was created based on the "result of survey on construction byproduct under actual condition (HY 2008)". According to the survey results, about 9% of wood generated from construction is directly landfilled. Almost of those directly-landfilled woods are, however, eliminated roots. Therefore, in this scenario, wastes of wood/wood materials are assumed not to be directly landfilled.

The flow chart of the "disposal and recycling scenario of wood/wood materials" created is shown the Chart 7 below.



Each numerical values shows weight of input and transport to each process when one unit of wood debris is generated.

Chart 7: Disposal and recycling scenario of wood/wood materials

That is to say, after wastes of wood/wood materials are crushed in intermediate treatment site (= recycling preparation), 96.4% of such wastes is recycled, and 3.57% is incinerated.

Annex F (normative): Amount of carbon content stored in wood/wood materials

As for woody biomass, "CO_2" that tree leaves absorbed from the atmosphere and "water" absorbed through the roots are converted into "sugar (glucose)" through photosynthesis, then the glucose is changed into high molecule such as cellulose, hemicellulose, and lignin, through various biosynthesis pathways, and finally those high molecules are stored in cell walls, etc. of trees. That is to say, "CO_2" from the atmosphere is assumed to be fixed as "C (carbon)" in woods.

Though ratio of cellulose, hemicellulose, and lignin in a wood are slightly different by wood species, it is said roughly, 2: 1: 1. Weight composition of elements comprising a wood is assumed to be 50% for "C," 6% for "H," 43% for "O," and 1% for other elements.

According to an interim report, "the quantitative assessment of contribution to the environment by wood usage," the amount of carbon content stored in a wood can be obtained by the following equation, and the result value may be used as the amount of carbon content stored.

Amount of carbon content stored (kg-C) = total weight of dried wood among wood/wood materials (kg-wood) x 0.5

To convert the "amount of carbon content stored" into the "amount of CO_2 in the atmosphere," use the following equitation:
Amount of carbon content stored x 44/12
The "44" in the equitation above means molecular weight of "CO_2," and "12" means "C".

Annex G (normative): Assumptions of service life of preservative-treated woods

G.1 In the case of "exterior materials" and "civil engineering materials" treated with the K3 or higher level of preserved/anti-termite treatment

Service life: 10 years

G.2 In the case of "structural materials" treated with the K3 or higher level of preserved/anti-termite treatment

Service life: 30 years

Assumption

As for preservative-treated woods, many field exposure tests have been conducted and the durability has been assessed. According to the result of the field stake test, conducted by Mr. Momohara and his colleagues, the service life of non-treated wood is 2.8 years, while the service life of preservative-treated wood is 10 or more years.[1)]

According to the result of the field test under ungrounded conditions, conducted by Mr. Obuchi and his colleagues, the service life of non-treated wood is from 4 to 5 years, while the service life of preservative-treated wood is 10 or more years.[2)]

Actually, the preservative-treated woods, which have been used as intrusion prevention stakes for 10 years in the field of the Tama Shinrin Kagaku Park, keep necessary strength.[3)]

Thus, treating woods with preservatives can substantially prolong the service life of woods.

According to the results of tests and surveys conducted by Mr. Momohara,[1)] Mr. Obuchi,[2)] Mr. Katoh,[3)] and their colleagues, about 10 years is reasonable for the assumption of the "service life of preservative-treated woods" whose application is for "exterior materials" (e.g., decks, fences, and exterior walls, etc) under the service conditions directly exposed to the rains, and for "civil engineering materials" (e.g., earth retaining, channel works, and guard fences, etc.) under the service conditions constantly exposed to soil, water, or seawater.

As for the service life of preservative-treated structural materials (e.g., ground sill) under the service conditions not directly exposed to rainfalls, under the "Housing Performance Indication System" enacted based on the "Housing Quality Assurance Act,"[4)] in order to meet the standards on the level 3 of wooden house taking anti-deterioration measures,[5)] frame works and the like for exterior wall or ground sills are required that the K3 or higher level (in the performance category of wood preservatives prescribed in the structural lumber standards) of preserved/anti-termite treatment is applied (these treatment include the following: the treatment at plant to ensure the K3 or higher level of wettability and absorption amount of chemicals, and the treatment which has the equivalent performance, by using wood preservatives prescribed in JIS K1570 or by using the equivalent chemicals; hereinafter called the "K3 or higher level of preserved/anti-termite treatment").

The "level 3 of wooden house taking anti-deterioration measures" indicates the standard of measures, requiring for keeping a house through 3 generations or longer until it is considered a serviceability limit state.[5)]

In the "Housing Performance Indication System," the duration of one generation is set from about 25 to 30 years, and three generations are therefore assumed to be about 75 to 90 years.[5)]

According to those mentioned above, it is assumed that from 75 to 90 years is appropriate for the service life of preservative-treated woods of structural materials (e.g., ground sills) with the K3 or higher level of preserved/anti-termite treatment prescribed in JAS or quality wood products certification.

However, there are often the cases that houses in Japan are demolished before they reach their physical service life ends because of social or economic needs.[6)] When demolished a house, structural materials which have been used are not often be reused.[7)] Concerning this point, in this PCR, service life of preservative-treated structural materials is set to 30 years as well as the average lifetime of houses.

"30 years as an average lifetime" is set by referring to the MLIT material released in 2008, which says that the average time period of house from construction to obsolescence is 30 years.[8)]

However, it is supposed that average lifetime of house will become longer in the future, because the Basic Plans for Living under the Basic Act for Housing aims to establish a society that houses will be used more carefully and for a longer time, and also sets a target that average time period of house from construction to obsolescence can be prolonged to about 40 years in 2020, and concrete measures for achieving them will be implemented.[9] There is a report that the average lifetime of housing has been prolonged since 1980. Therefore, average housing lifetime should be set based on the latest materials released by government agencies such as MLIT when applying CFP.

Bibliography

1) "*Summary of the 54th Annual Meeting of the Japan Wood Research Society in Sapporo (2004)*," p.385.
by MOMOHARA Ikuo, NISHIMURA Takeshi, and OHMURA Wakako

2) "*Summary of the 59th Annual Meeting of the Japan Wood Research Society in Matsumoto (2009)*", p.77.
by OBUCHI Yoshiteru, SYOHO Shinichi, and YAMAGUCHI Akio

3) "*Summary of the 58th Annual Meeting of the Japan Wood Research Society in Tsukuba (2008)*," p.146.
by KATO Hideo, MOMOHARA Ikuo, MAKITA Akira, ISHIDA Hideo, SHIRAISHI Tetsuji, TEZUKA Daisuke, YAMAGUCHI Akio, and MAEDA Satoshi

4) The "Housing Quality Assurance Act" (promulgated on June 23, 1999, and revised on April 1, 2007)
by MLIT (the Ministry of Land, Infrastructure, Transport and Tourism),
URL: http://www.mlit.go.jp/jutakukentiku/house/jutakukentiku_house_tk4_000016.html [Refer to February 8, 2011]

5) The standards of assessment method (revised on April 1, 2009),
Notification No.1347 of MLIT of 2011, Final revision of Notification No. 354 of MLIT of 2009;
URL: http://www.mlit.go.jp/common/000052960.pdf [Refer to Feb. 11, 2011] (p.48-50)

6) "*Nikkan Kogyo Shimbun*," (appeared in November 21, 2005) by KOMATSU Yukio
URL: http://www.f.waseda.jp/ykom/nks20061121.pdf [Refer to March 26, 2011]

7) "*Wood preservation* Vol.30-2," p.46-50 (2004) by SUZUKI Shigehiko

8) "Reference materials 4 of the 14th Sectional meeting for housing and building land by the Panel of Infrastructure Development (2008)," MLIT
URL: http://www.mlit.go.jp/jutakukentiku/house/singi/syakaishihon/bunkakai/14bunkakai/14bunka_sankou04.pdf [Refer to March 25, 2011] (p.2)

9) "Basic Plans for Housing" (decided by the cabinet meeting on March 13, 2009), MLIT
URL: http://www.mlit.go.jp/jutakukentiku/house/torikumi/jyuseikatsu/hyodai.html [Refer to "March 27, 2011"]

10) "*Architectural Institute of Japan (580)*" (2004) p.169-174 by TSUTSUMI Hiroki

[PCR revision histories]

Approved PCR ID	Release date	Contents revised
PA-CC-02	October 3, 2011	(1) Added “Heat-treated woods” to the product covered in this PCR. (2) Adapting the contents to the new PCR draft template. (3) Simplified the contents described.