

Product Category Rules (PCR)

(Approved PCR ID: PA-BB-02)

Paper Containers, Packaging and Wrapping (intermediate goods)

Release date: September 8, 2010

The Carbon Footprint of Products Calculation and Labeling Pilot Program

NOTICE: Use latest version for your calculation. Check the website if it is the newest one.

<http://www.cfp-japan.jp/english/pcr/pcrs.html>

**Product Category Rule of
“Paper Containers, Packaging and Wrapping (intermediate goods)”
(Approved PCR ID: PA-BB-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 can be used as a “referenced PCR” for final consumer goods’ PCR with necessary modifications.
 - 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	<ul style="list-style-type: none">- This PCR prescribes rules, requirements and instructions applicable to “Paper Containers, Packaging and Wrapping” under the CFP Pilot Project.- This PCR prescribes products to be covered, specification of assessment range, unit of greenhouse gas (GHG) emission values to be displayed, and range covered at each life cycle stage.- This PCR treats “paper containers, packaging and wrapping” as intermediate goods (B2B products).
2	Definitions of products	
2-1	Descriptions of product category	<p>“Paper containers, Packaging and Wrapping” is defined as “container and packaging mainly made of paper, paperboard, or pulp”. “Mainly” means that paper, paperboard, or pulp is the heaviest material contained in a certain good.</p> <p>[Functions and characteristics] “Containers, Packaging and Wrapping” refers to the products that are used to protect the value and condition of the goods to be packaged while they are distributed, sold, stored, and so on, but become useless while or after using products. Packaging of individual (packaging of individual products,) inner (packaging inside a product package) and outer (package wrapping a packaged product) are included.</p> <p>[Materials, structure, and form] Construction of materials are, <ul style="list-style-type: none">- a simple or single-layer construction composed of a sole paper, paperboard, or pulp- a composite or laminated construction composed of more than one paper or paperboard of the same type or different types and- a composite or laminated construction composed with other materials such as resin, plastic film, or metallic foil.</p> <p>Printing, coating, lamination, sheeting, die cutting and creasing, folding, pressing, body jointing, bottom creation, or tube creation processes are done on the materials mentioned above, and shaped into such forms as sheet, bag, box, tray, or cup so that they can function appropriately according to the characteristics of the product.</p> <p>[Usage] “Paper Containers, Packaging and Wrapping” are provided in the “packaging process” in the production stage of “final goods,” and used for filling and sealing products therein by using a filling and packaging machine. In the “packaging process,” the filling and sealing of goods may be performed simultaneously with the shaping of the form of containers and packaging by using an integrated molding, filling and packaging machine (implantation system).</p>
2-2	Components of products	Components are a) Materials specified in 2-1;

		<p>b) Printing ink, coating agent, adhesive, and the like that are essential to the construction of “Paper Containers, Packaging and Wrapping”;</p> <p>c) Stopper, lid, cap and the like; divider, cushion and the like; label, sticker and the like; and handle, string and the like that are attached to “Paper Containers, Packaging and Wrapping” for the purpose of making them more functional;</p> <p>d) Packing materials used to transport “Paper Containers, Packaging and Wrapping” to the production stage; and</p> <p>e) “Paper Containers, Packaging and Wrapping” for “attachments” and “giveaways”.</p> <p>Following items are excluded from the components of this PCR:</p> <ul style="list-style-type: none"> - Attachments itself (such as a spoon attached to a cup of yogurt); and - Giveaways itself (such as a small toy enclosed in a box of candy)
3	Referenced Standards and PCRs	<p>Any of the following standards, TS and PCR referred to in this PCR shall constitute a part hereof:</p> <ul style="list-style-type: none"> - PA-AF-02: Pre-Sensitized Plates for Lithographic Printing (revised edition) - JIS P 0001: 1998 Paper, board and pulp - Vocabulary - JIS Z 0108: 2005 Glossary of Terms for Packaging; - JIS Z 0112: 2008 Packaging - Environmental terminology; - TS Q0010: 2009 General Principles for the Assessment and Labeling of Carbon Footprint of Products
4	Terms and Definitions	<p>See terms listed below and in “Annex C (normative): Terms and Definitions” for terms and definitions of this PCR.</p> <p>(1) Containers and packaging Containers and packaging for a product, which will be no longer needed when the product is used or when such containers and packaging are separated from the product. This expression was introduced for the first time by the "Law for the Promotion of Sorted Collection and Recycling of Containers and Packaging (Container and Packaging Recycling Law)." [JIS Z 0108: 2005, JIS Z 0112: 2008]</p> <p>(2) Individual packaging A technique to package individual items of goods using appropriate materials, containers, etc. in order to enhance their commercial values or to protect each of them; or the condition where such technique has been performed. It also serves as a medium of communicating information such as product labeling. [JIS Z 0108: 2005]</p> <p>(3) Inner packaging A technique to package goods inside the packaged freight using appropriate materials, containers, etc. in order to protect them from the adverse effects caused by water, humidity, light, heat, shocks, etc.; or the condition where such technique has been performed. [JIS Z 0108: 2005]</p> <p>(4) Outer packaging A technique to put bulk or packaged goods into containers such as boxes, bags, barrels and cans or to bind them together without using such containers, and thereafter, to print symbols, shipping marks and other descriptions on such containers or goods bound together as necessary; or the condition where such printing has been performed. It is also called “packing”. [JIS Z 0108: 2005]</p> <p>(5) Paper Paper is made by conglutinating plant fibers and other types of fibers. Broadly speaking, as a material, it includes a synthetic paper manufactured using synthetic macromolecular substances and a type of paper formulated with inorganic fibrous materials.</p>

		<p>[JIS P 0001: 1998]</p> <p>(6) Board or paperboard It is a collective term to express thick paper formulated with wood chemical pulp or recycled paper. A paperboard machine is used to manufacture it. It is hard and elastic. There is corrugated cardboard and white paperboard. It is most often used as a packaging material. [JIS P 0001: 1998]</p> <p>(7) Pulp Pulp is an aggregate of cellulose fibers extracted through mechanical or chemical processing from wood or other types of plants. It is categorized into mechanical pulp and chemical pulp depending on the manufacturing method, and it is categorized as paper pulp and dissolving pulp depending on the purpose. [JIS P 0001: 1998]</p> <p>(8) Sealing - A technique to put the goods or packaged goods into containers or packaging, and close the openings to protect the goods inside. - Sealing methods include mechanical sealing or bundling, sealing with tapes, sealing with adhesives, sealing with stamps, and heat-sealing. [JIS Z 0108: 2005]</p> <p>(9) Roll products Thin and flat products in sheet or film form which are wound into roll form so that they can be transported easily and safely. They are also called "reel products". [JIS P 0001: 2008]</p> <p>(10) Containers and packaging waste General waste that used to be containers and packaging. This expression was introduced for the first time by the "Law for the Promotion of Sorted Collection and Recycling of Containers and Packaging (Container and Packaging Recycling Law)." Note that containers and packaging waste is included in the packaging waste category. [JIS Z 0112: 2008]</p> <p>(11) Appropriate treatment An act of properly treating wastes in accordance with applicable laws. [JIS Z 0112: 2008]</p> <p>(12) Recycling An act of collecting by-products generated from used products or during product manufacturing, using the by-products as raw material (material recycling), or using them as waste incineration heat energy (thermal recycling). [JIS Z 0108: 2005 and JIS Z 0112: 2008]</p> <p>(13) Open recycling Recycling of waste products as materials or raw materials for products of different types from the original ones. It is also called "cascading" or "downgrade recycling". [Refer to "How to Register Product Environmental Loads Generated in Recycling and Reuse in the Ecoleaf Program" by the Japan Environmental</p>
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		<p>Management Association for Industry (2004)]</p> <p>(14) Closed recycling Reuse of waste products as recycled materials for products of the same type as the original ones. [Refer to "How to Register Product Environmental Loads Generated in Recycling and Reuse in the Ecoleaf Program" by the Japan Environmental Management Association for Industry (2004)]</p> <p>(15) Carbon neutral A plant-like life cycle characteristic in which a material that absorbed carbon dioxide in the air through photosynthesis (biomass) will not affect the volume of carbon dioxide when it is incinerated. [JIS Z 0112: 2008]</p> <p>(16) Corrugated cardboard A fluted inner sheet with a liner or liners on one or both sides. There is single-faced corrugated cardboard, double-faced corrugated cardboard, double wall corrugated cardboard, and triple wall corrugated cardboard. Depending on the purpose, there is corrugated cardboard for outer packaging, inner packaging, and individual packaging. It is also called a corrugated cardboard sheet. [JIS Z 0104: 1990]</p> <p>(17) Corrugated cardboard container, box, case It is a box created with corrugated fireboard. Depending on the purpose, there are corrugated cardboard boxes for outer packaging, inner packaging, and individual packaging. [JIS Z 0104: 1990]</p> <p>(18) Paper container for liquids A liquid container made mainly of paper. A plastic film or aluminum foil is glued on the paper. It can be roof-shaped, rectangular (brick shaped), or paper cup shaped. [JIS Z 0108: 2005 and JIS Z 0112: 2008]</p>
5	Range of assessment	
5-1	Calculation unit	Sales unit. (unit of delivery)
5-2	Life cycle stages	<ul style="list-style-type: none"> - As this PCR treats intermediate goods (B2B products), life cycle stages to be covered are, the raw material acquisition stage (7) and the disposal and recycling stage (11). - However, this PCR divides the raw material acquisition stage (7) into the following three stages: <ul style="list-style-type: none"> (1) "Containers, packaging and wrapping" raw material acquisition stage (2) "Containers, packaging and wrapping" production stage (3) "Containers, packaging and wrapping" transport stage
6	General requirements applied to all stages	
6-1	Life cycle flow chart	<ul style="list-style-type: none"> - Life cycle flow chart is provided in Annex A (normative). The chart is conceptual chart intended to make it easy to identify the "processes covered by each life cycle stage". - When calculating GHG emissions, a detailed life cycle flow chart for "Paper Containers, Packaging and Wrapping" shall be created. It is recommended that the charts in Annex A are used as the basis for such detailed chart, but it is not limited to this chart only. - Annex B (informative) shows an example of a flow chart.

6-2	Range of data collection	Indirect departments (e.g., clerical department, research department, etc.) shall be excluded. If it is difficult to exclude indirect departments, indirect departments may be included.
6-3	Data collection period	<ul style="list-style-type: none"> - Activity data shall be collected from the most recent and consecutive one-year period. - If data is not collected on the above condition, assure the accuracy of the data. - Locality shall not be considered. - Seasonality is eliminated by collecting primary data as annual data.
6-4	Allocation	<ul style="list-style-type: none"> - Weight ratio shall be used. - If any other allocation method is used due to the characteristics of the product, the allocation method used and its validity shall be verified.
6-5	Cut-off criteria	<ul style="list-style-type: none"> - Cut-off shall not be conducted unless data collection is difficult. - When conducting cut-off, the range of cut-off shall be within 5% of the total life cycle GHG emissions, and the range shall be clearly reported. Cut-off shall, however, be conducted, provided that it is difficult to use any scenarios, similar data, and estimated data.
6-6	Others	<p>[Rules related to transport]</p> <p>(1) Domestic transport:</p> <ul style="list-style-type: none"> - Either by the fuel consumption method, the fuel cost method, or the ton-kilometer method. - When there are multiple supplier or delivery designations, weighted averages may be used for the data from them. - See “Annex D: Grounds for setting the transport scenario for each life cycle stage”. - See “Annex I: Collection of fuel consumption data and calculation of GHG emissions for truck transport” for more information. <p>(2) International transport is involved: Primary data shall be collected conforming to rules described in (1) domestic transport. If any rules on transport are prescribed by the authorities or private sectors in a country, data on the overland transport within the country may be collected according to the rules.</p> <p>[Rules related to wastes]</p> <ul style="list-style-type: none"> - Of materials constituting “Paper Containers, Packaging and Wrapping,” “paper” and “corrugated cardboard” shall be assumed to be composed of 100% of biomass-derived raw materials, and GHG emissions associated with incineration of them shall not be considered, based on concepts of carbon neutral. - As for construction materials other than “paper” (resin such as polyethylene laminated), calculate GHG emissions associated with incineration. When using secondary data of “general-waste incineration (other than garbage-derived CO₂),” GHG emissions derived from resin shall be calculated from the amount of carbon content in each material, and shall be added to calculation. - As for GHG emissions associated with waste treatment, the following processes shall be covered. <ul style="list-style-type: none"> a) GHG emissions associated with transport of wastes b) GHG emissions associated with treatment of waste - When using secondary data of “general-waste incineration (other than garbage-derived CO₂),” GHG emissions derived from waste plastics, waste ink, or waste solvents, etc., shall be calculated from the amount of carbon content in these individual items, and shall be added to calculation. <p>[Rules related to recycling]</p> <ul style="list-style-type: none"> - In the case of products to be recycled, the GHG emissions associated with the processes from transport to preparation for recycling (pretreatment) shall be included. - “Thermal recycling” shall be handled in the same manner as “incineration disposal,” and the GHG emissions associated with transport and incineration shall be calculated.

		<ul style="list-style-type: none"> - As for “used paper containers, packaging and wrapping” and “used paper containers for liquids (without aluminum foil),” assume that no closed recycle is performed. - As for “used corrugated cardboard,” assume that no open recycle is performed. - Indirect impact by recycling shall not be calculated.
7	Requirements for raw material acquisition stage	
7-1	Range of the processes	<p>The following processes shall be covered.</p> <p>(1) “Containers, packaging and wrapping” raw material acquisition stage</p> <ul style="list-style-type: none"> a) Processes related to manufacture of raw materials (including intermediate processed goods) and components procured and proper treatment of waste. b) Processes related to domestic/international transport of raw materials from suppliers to production sites. c) Processes related to manufacture and procurement of packing materials used for transport of “paper containers, packaging and wrapping” <p>Note: When calculating GHG emissions, calculation may be made only for applicable raw materials for each of “targeted paper containers, packaging and wrapping”.</p> <p>(2) “Containers, packaging and wrapping” production stage</p> <ul style="list-style-type: none"> a) Processes related to manufacture, inspection, and packing, etc. of paper containers, packaging and wrapping”(including transport between production sites). b) Processes related to wastewater treatment, transport of waste, and proper treatment of wastes, from each production processes. <p>Note: When calculating GHG emissions, calculation may be made only for applicable raw materials for each of targeted paper containers, packaging and wrapping”.</p> <p>(3) “Containers, packaging and wrapping” transport stage</p> <ul style="list-style-type: none"> a) Processes related to domestic/international transport of paper containers, packaging and wrapping” from shipping point to delivery destination (e.g., manufacturing site of products, etc.).
7-2	Data collection items	<p>Data on the following items shall be collected.</p> <p>(1) “Containers, packaging and wrapping” raw material acquisition stage</p> <ul style="list-style-type: none"> a) GHG emissions (kg-CO₂e) per unit of the processes from resource mining to production, and GHG emissions (kg-CO₂e) per unit and input amount of the processes associated with proper treatment of wastes, for all raw materials which are input to the following each process. <ul style="list-style-type: none"> 1) Preparation process 2) Plate making / press plate processes 3) Printing process 4) Surface treatment process 5) Lamination process 6) Punching / cutting processes 7) Suck / bag making processes 8) Packing / storage processes 9) Inspection process 10) Other processes b) GHG emissions (kg-CO₂e) per unit and input amounts of all packing materials used for procurement in the processes above from 1) to 10) in a) during their life cycle from resource mining through manufacturing to waste treatment. c) GHG emissions (kg-CO₂e) related to the procurement transport of the materials in the processes above from 1) to 10) in (a). <p>(2) “Containers, packaging and wrapping” production stage</p>

		<p>a) Consumption amount of fuel and electricity, and GHG emissions associated with them. When it is difficult to measure electricity consumption, rated electricity of processing machine used, etc. may be used, provided that the reason for difficulty of primary data collection by measurement shall be stated.</p> <p>b) Consumption amount or input amount of water, and GHG emissions associated with it. If groundwater is used for water, collect fuels used for pumping and electricity consumption.</p> <p>c) Wastewater treatment, types of wastes, and their discharge amounts from each production process, and GHG emissions associated with the transport and their proper treatment.</p> <p>d) In printing process, lamination process, etc., and when “used solvents” are combusted using “exhaust gas treatment devices” and released into the air, calculate the GHG emissions based on the collected data of the input amount of solvent in the “containers, packaging and wrapping” raw material acquisition stage.</p> <p>(3) “Containers, packaging and wrapping” transport stage a) Weight of “paper containers, packaging and wrapping” transported. b) GHG emissions associated with fuel consumption.</p>
7-3	Primary data collection items	Primary data shall be collected on the items in No.7-2.
7-4	Primary data Collection method and Requirements	If self-produced electricity is used, collect amount of fuels used for the generation shall be collected for each type of fuels.
7-5	Scenario	<p>[Transport scenario]</p> <p>If primary data collection is difficult, the following scenarios may be used</p> <p>(1) Transport for raw material acquisition, and transport of intermediate products, etc. between production sites</p> <p>a) Domestic transport:</p> <p>1) When only land transport is involved:</p> <ul style="list-style-type: none"> - Means: 10-ton truck; - Distance: 500 km (one way); - Loading ratio: 25% <p>2) When marine transport is involved:</p> <p>i) Domestic transport (from raw material production site or supplier's site to port)</p> <ul style="list-style-type: none"> - Means: 10-ton truck, - Distance: 100km (one way), - Loading ratio: 25% <p>ii) Domestic marine transport (from port to port)</p> <ul style="list-style-type: none"> - Means: container ship (4,000TEU or less), - Distance: 1,500km (one way) <p>iii) Domestic transport (from port to production site of products)</p> <ul style="list-style-type: none"> - Means: 10-ton truck, - Distance: 100km (one way), - Loading ratio: 25% <p>b) International transport</p> <p>The same scenario as “Domestic transport” shall be used. The distance by international marine transport will be provided by the CFP Pilot Project Secretariat as reference data.</p>

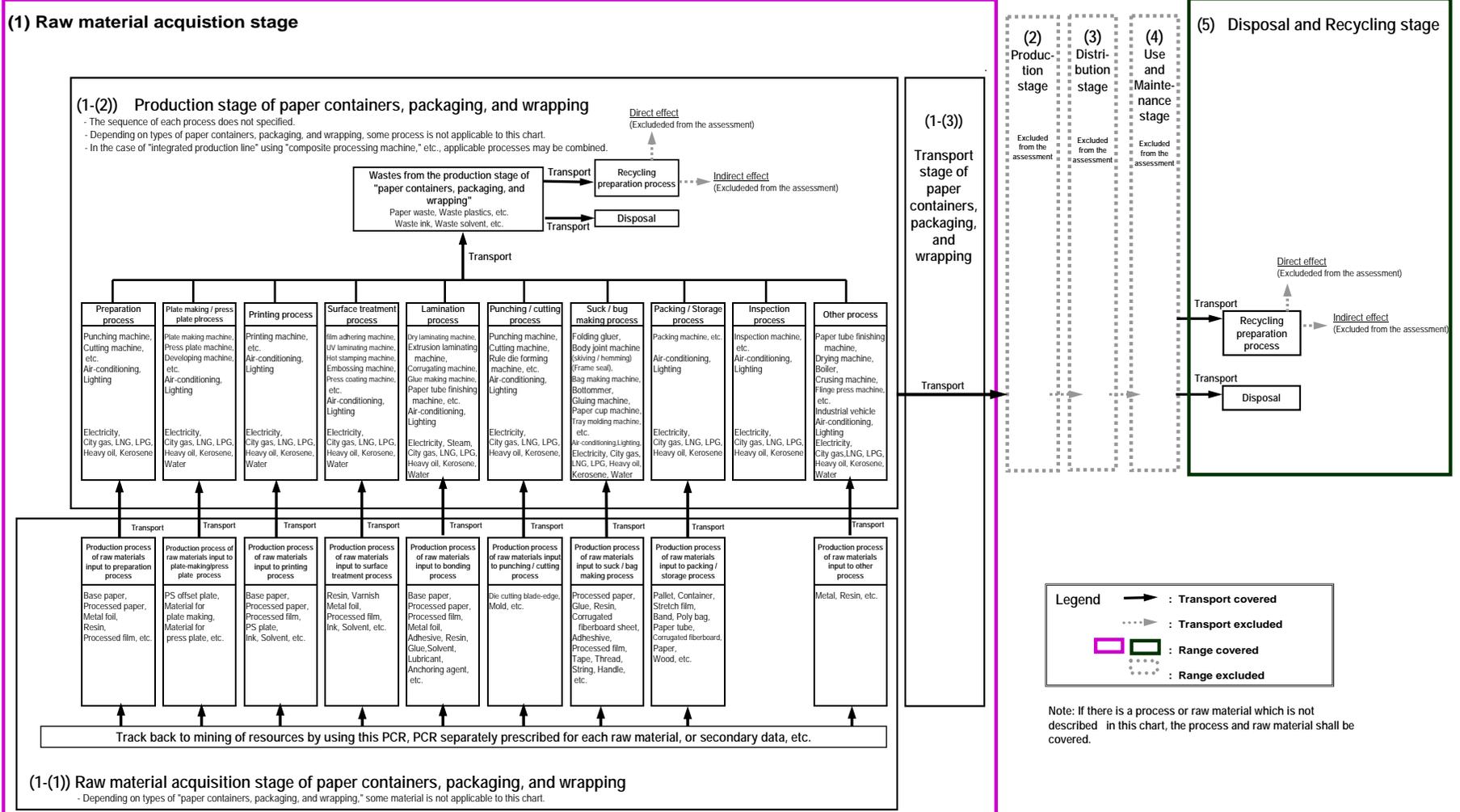
		<p>(2) Transport of wastes Refer to Annex D: Grounds for setting the transport scenario for each life cycle stage”.</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 100 km (one way); - Loading ratio: 25% <p>(3) Transport of paper containers, packaging and wrapping</p> <p>a) Domestic transport scenario</p> <p>1) Roll products</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 1,000 km (one way); - Loading ratio: 50% <p>2) Product other than roll products</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 500 km (one way); - Loading ratio: 50% <p>b) International transport scenario Use the scenario of “(1) Transport for raw material acquisition, and transport of intermediate products, etc. between production sites” in No.7-5.</p> <p>(4) Transport of corrugated cardboards Refer to “Annex E: Scenario setting for transport of “corrugated cardboard”.</p> <p>a) Corrugated cardboard case transport</p> <p>1) Within a prefecture</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 100 km (one way); - Loading ratio: 25% <p>2) Within a city</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 40 km (one way); - Loading ratio: 25% <p>b) Corrugated cardboard sheet transport</p> <ul style="list-style-type: none"> - Means: 4-ton truck; - Distance: 60 km (one way); - Loading ratio: 25% <p>[Scenario of waste treatment] As for waste treatment, if primary data collection is difficult, the following scenario may be used.</p> <ul style="list-style-type: none"> - Waste paper: 100% is incinerated. - Waste metal: 100% is recycled. - Waste plastics, waste ink and waste solvents: 100% is incinerated.
7-6	Other	<p>[Recycled materials procurement] - When recycled materials are procured, GHG emissions associated with transport process of materials ready to be recycled and the subsequent processes (e.g., transport from pretreatment site, recycling processing, etc.) shall be calculated.</p> <p>[When primary data collection is difficult]</p>

		<p>- Secondary data may be used, provided that its reason shall be clearly stated. Input amount of raw materials shall be reported inclusive of yield.</p> <p>[Procurement from multiple suppliers]</p> <p>- Primary data shall be collected from all the suppliers. If this is difficult, 50% or more primary data collected from major suppliers may be used as the secondary data of other suppliers.</p> <p>[Data collection method of manufacturing at multiple production sites]</p> <p>- When there are multiple sites and equipments performing the same process by the same manufacturer (incl. outside contractor), primary data shall be collected from all of them. However, when the primary data on a specific equipment in a specific site account for 50% or more of the entire data, such data may be used as the secondary data of other sites/equipments, except in cases where the capacity of the equipments differ from one another substantially and such data substitution as secondary data is not considered appropriate.</p> <p>[Raw material procurement from overseas]</p> <p>- Primary data associated with processes from resource mining to manufacture shall be collected by using the same method of domestic procurement.</p>
8	Requirements for the production stage	
8-1	Range of the processes	Excluded from the assessment.
8-2	Data collection items	Excluded from the assessment.
8-3	Primary data collection items	Excluded from the assessment.
8-4	Primary data Collection method and Requirements	Excluded from the assessment.
8-5	Scenario	Excluded from the assessment.
8-6	Other	Excluded from the assessment.
9	Requirements for the distribution stage	
9-1	Range of the processes	Excluded from the assessment.
9-2	Data collection items	Excluded from the assessment.
9-3	Primary data collection items	Excluded from the assessment.
9-4	Primary data Collection method and Requirements	Excluded from the assessment.
9-5	Scenario	Excluded from the assessment.
9-6	Other	Excluded from the assessment.
10	Requirements for the use and maintenance stage	
10-1	Range of the processes	Excluded from the assessment.
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	Excluded from the assessment.
11	Requirements for the disposal and recycling stage	
11-1	Range of the processes	<p>The following process shall be covered.</p> <p>- Processes related to transport and proper treatment of “used Paper</p>

		Containers, Packaging and Wrapping”.
11-2	Data collection items	Data on the following items shall be collected. a) Weight of “used paper containers, packaging and wrapping”; “used corrugated cardboard”; and “used paper containers for liquids (without aluminum foil)” b) Ratios of “used paper containers, packaging and wrapping,” “used corrugated cardboard,” and “used paper containers for liquids (without aluminum foil),” that are recycled (resource recovery ratio), incinerated, or landfilled. c) GHG emissions associated with transport of disposed “used paper containers, packaging and wrapping,” “used corrugated cardboard,” and “used paper containers for liquids (without aluminum foil)” to treatment facility. d) GHG emissions associated with incineration at waste treatment facility (other than CO ₂ emissions derived from “used paper containers, packaging and wrapping” “used corrugated cardboard,” and “used paper container for liquids (without aluminum foil)”) e) GHG emissions derived from “used paper containers, packaging and wrapping,” “used corrugated cardboard,” and “used paper container for liquids (without aluminum foil),” that are incinerated. f) GHG emissions associated with landfill disposal at treatment facility. g) GHG emissions associated with the processes from “transport for recycling” up to and including recycling preparation (pre-processing).
11-3	Primary data collection items	Primary data shall be collected on the items provided in No.11-2.
11-4	Primary data Collection method and Requirements	All “used paper containers, packaging and wrapping”; “used corrugated cardboard”; and “used paper containers for liquids (without aluminum foil)” may be assumed to be disposed/recycled, and then the weight of the data in the product specifications may be used.
11-5	Scenario	[Transport scenario] If primary data collection is difficult, the following scenario may be used. - Means: 2-ton truck, - Distance: 50km (one way), - Loading ratio: 25% [Scenarios for waste treatment] When collection of primary data is difficult, the following scenarios may be used. a) “Used paper containers, packaging and wrapping” Refer to “Annex F: Scenario setting for disposal and recycling of “paper containers, packaging and wrapping””. - Incineration: 96% - Recycling: 4% b) “Corrugated cardboard” Refer to “Annex G: Scenario setting for disposal and recycling of “corrugated cardboard””. - Incineration: 4% - Recycling: 96% c) “Used paper container for liquids (without aluminum foil)” Refer to Annex H: Scenario setting for disposal and recycling of a used paper container for liquids (without aluminum foil). - Incineration: 69% - Recycling: 31%
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 “GHG Emission Factor Database”). - Of secondary data which is not included in 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	<p>- 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. However, in this case, its appropriateness shall be studied on the CFP verification panel.</p> <p>[Details of the way of communication] Information may be placed on invoices, delivery notes and transport packaging (shipping cartons). To avoid confusion with CFP labeling, however, no labeling may be made on paper containers, packaging and wrapping itself. It is permitted that an entity calculating the GHG emissions posts the information in its catalog or on its website.</p>
13-2	Label position and Size	<p>Follow the “Specifications of CFP Label and Displaying Other Information”. Labeling shall be accordance with the indication of "Intermediate Goods" in the specification.</p>
13-3	Contents of additional information	<ul style="list-style-type: none"> - To communicate the GHG reduction efforts made by the entity calculating amount of GHG emissions appropriately to consumers, reduction amount of GHG emissions over years, GHG emissions for each process, etc. may be provided to entity calculating CFP value of “final products”. - To be included in displaying, the specific details of additional information shall be approved as appropriate by the CFP Verification Panel.

Annex A (normative): Life cycle flow chart
 (This is a life cycle flow chart of "paper containers, packaging and wrapping" from a standpoint of user.)



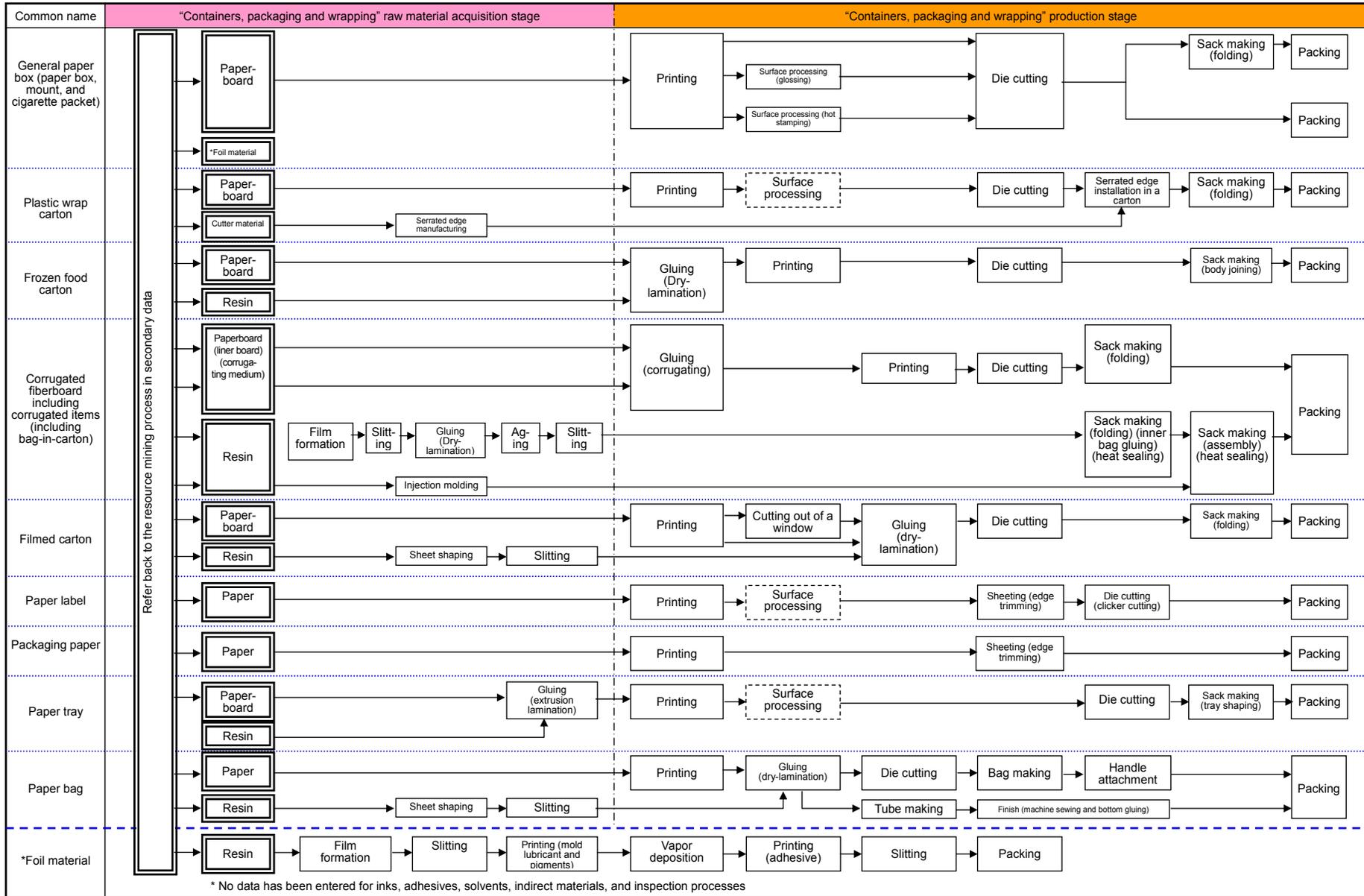
(1) Raw material acquisition stage

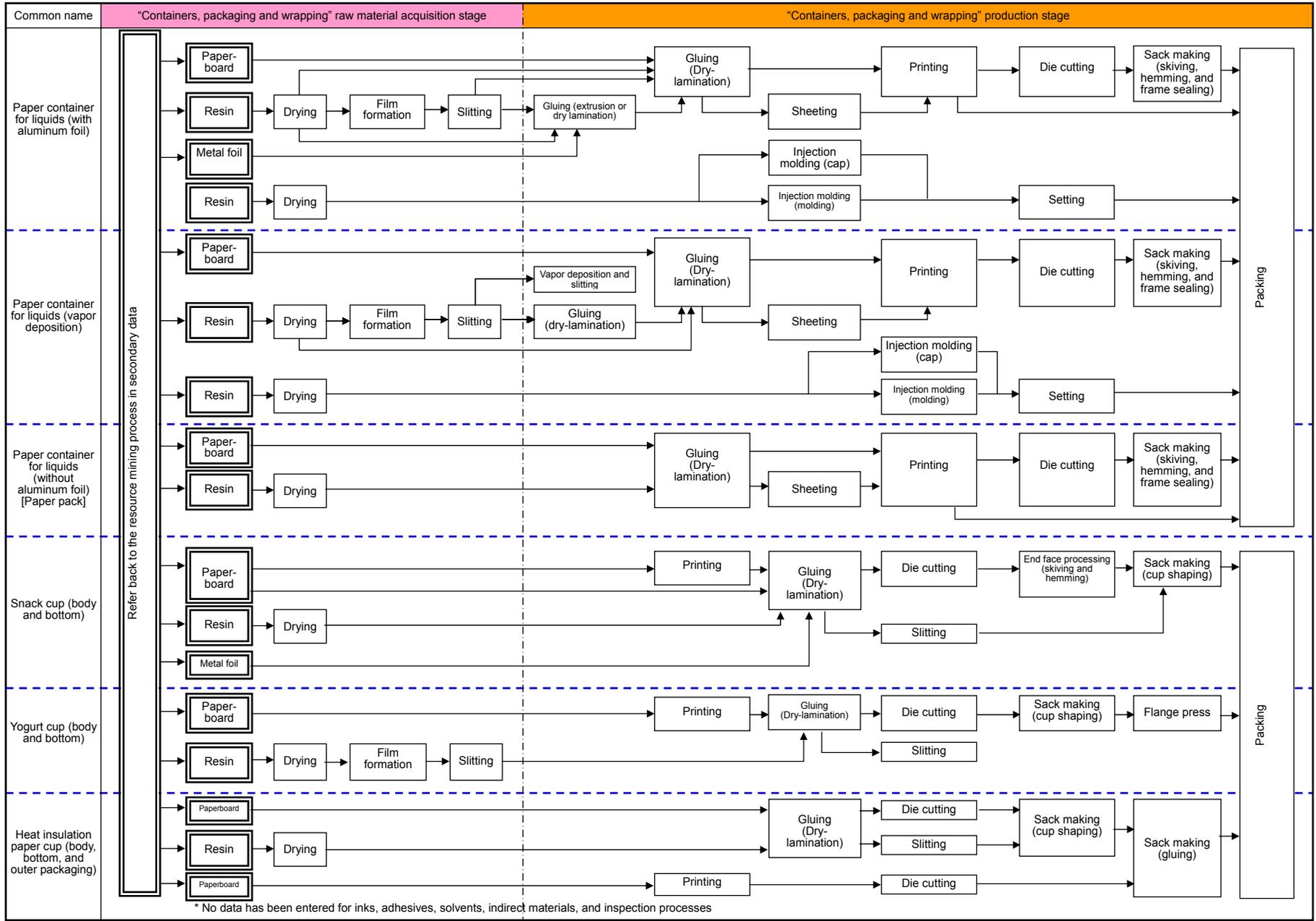
Range covered



Range covered

Annex B (reference): representative conceptual flow chart of production processes of “paper containers, packaging and wrapping”





Refer back to the resource mining process in secondary data

Packing

Packing

Packing

Annex C (normative): Terms and Definitions

No.	Term	Definition	Source/reference
1	Package	A collective term for packaging, container, packaged goods, and transported goods.	JIS Z 0108 (2005)
2	Container	A collective term for an item that holds goods or packaged goods. There is: a) a case used when packaging or shipping goods; and b) a container. Also, depending on the desired structure, mode of use, or purpose, there is an inner container, outer container, and combined container.	JIS Z 0108 (2005)
3	Packaging	A technique or a state in which such a technique has been applied wherein an appropriate material or goods are stored in a container in order to maintain the value and state of the content when it is transported, stored, traded, or used. Packaging can be roughly divided into individual packaging, inner packaging, and outer packaging. The packaging here also includes a set of container and its packaging.	JIS Z 0108 (2005) JIS Z 0112 (2008)
4	Paper container	A collective term for a container that is made of paper or paperboard. Note that a corrugated cardboard container for external packaging is not included.	JIS Z 0108 (2005) JIS Z 0112 (2008)
5	Carton	A box made with paperboard. It may also mean just a paperboard or corrugated cardboard box.	JIS Z 0108 (2005)
6	Composite paper container	A container made with a material produced by combining paper or paperboard, a plastic film, and/or metal foil. It may be a paper container for liquids such as a milk carton, a composite can, a bag in box, or a bag in carton.	JIS Z 0112 (2008)
7	Bag in box	A double container made of a corrugated cardboard having inside a plastic bag or a molded container with a spout. It is called a bag in carton when the outer casing is made of a paperboard.	JIS Z 0108 (2005)
8	Tray	A shallow container having no lid and made of a relatively rigid material such as paper, pulp, plastic, or aluminum.	JIS Z 0108 (2005)
9	Sack; bag, pouch	A container made of a flexible material having a spout.	JIS Z 0112 (2008)
10	Flat bag	A bag produced using a rotary bag machine. Its shape is almost the same as an envelope, but the flap is facing the opposite way (the flap for a flat bag is designed to be folded to the front side of the bag).	"Latest Paper Processing Handbook" by Tec Times (1988)
11	Gaset bag	A paper or plastic film bag having creases on both sides or at the bottom.	JIS Z 0112 (2008)
12	Kraft paper sack	A paper bag designed for holding powder, particles, or blocks to transport or store them. In general, a bag is reinforced with two or more layers of kraft paper sheets or by stacks of extensible kraft paper sheets.	JIS Z 0102 (2004)
13	Wrapping	A package in which goods are covered and wrapped with a flexible packaging material.	JIS Z 0112 (2008)
14	Extensible kraft paper (flakt)	Unbleached kraft paper that is extensible in the width direction of the paper.	JIS P 3401 (2000)
15	Bleached kraft paper	Kraft paper produced from bleached kraft pulp (pulp obtained by bleaching kraft pulp using chlorine dioxide or chlorine).	JIS P 0001 (1998)
16	Core paper (board)	Tough and sized paper used when manufacturing a spindle or reel to wind paper, or a plastic film, foil, or woven fabric. Its thickness varies with the size. It is cut to be suitable for flat or	JIS P 3401 (2000)

		spiral winding.	
17	Bottom cap	A sheet of paper that is put on top of a glued bottom part of a bag. It may have a tear tape for opening the bag.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
18	White lined board	Paperboard made with a surface layer and a white paper material. The surface layer is made of bleached chemical pulp. Recycled paper or mechanical pulp can be a raw material of other layers. A manila board and white lined chipboard are types of white lined board. They can be either coated or non-coated.	JIS P 0001 (1998)
19	White lined chipboard	Paperboard made with a surface layer and other layers underneath. The surface layer is made with bleached pulp. The layer immediately under the surface layer is in general made with deinked used newspaper. The middle and the bottom layers are made with used newspaper or magazines.	JIS P 0001 (1998)
20	Chip board	Paperboard made mainly with low grade used paper such as used magazines. It is used to make a laminated box.	JIS P 0001 (1998)
23	Fiberboard	Paperboard used to make corrugated cardboard. It can be a liner board or a corrugating medium.	JIS Z 0104 (1990)
24	Liner board	Paperboard used as front and back surfaces of a corrugated cardboard, a middle liner board of a double wall corrugated cardboard, or a middle liner board of a triple wall corrugated cardboard. Depending on the purpose, there is a liner board for outer packaging, inner packaging, and other packaging. Also, depending on the main raw material, it can be a kraft liner board or a jute liner board.	JIS Z 0104 (1990)
25	Corrugating medium	Paperboard used for the purpose of creating corrugation of a corrugated cardboard.	JIS Z 0104 (1990)
26	Milk-carton board	A base paper laminated with polyethylene. It is used to create a container for holding liquids such as milk, juice, and alcohol.	JIS P 0001 (1998)
27	Resin	The term resin is a short form of synthetic resin and it is different from natural resin such as pine resin. Resin (synthetic resin) quite often means plastic.	JIS Z 0108 (2005)
28	Plastic film Plastic sheet	A plastic tube or a plastic film thinner than 0.25mm. A plastic sheet has a thickness of 0.25mm or more.	JIS Z 0108 (2005) JIS Z 8123 (1995)
29	Aluminum foil	Aluminum or an aluminum alloy (aluminum: 99.3% or more) repeatedly rolled to a thickness of 0.006 to 0.2mm. It can be hard or soft. An aluminum foil usually is a soft foil.	JIS Z 0108 (2005)
30	Vapor deposition film	A film with a thin film formed on a surface. This thin film is made of metal aluminum or ceramics that is heated or plasma-treated in a vacuum and then deposited (vapor deposition) on the base film.	JIS Z 0108 (2005)
31	Composite film	A collective term for a film made by combining and processing two or more different types of plastic film or by combining a film with plastic, paper, or aluminum. It can be made by gluing single films or by combining films by coextrusion.	JIS Z 0108 (2005)
32	Pre-sensitized offset plate	An offset plate supplied by a plate material manufacturer. The plate is coated with a photosensitive layer when supplied.	JIS Z 0108 (2005)
33	Machine plate	A machine plate to be used in printing. It is attached to a printer and is different from a printing film. It is also known as a press plate.	"Japanese to English Packaging Dictionary" by the Overseas Packaging

			Study Group (1997)
34	Printing ink	A collective term for a fluid or paste material used when applying substances that create an image in printing. It is made of a coloring agent, medium, auxiliary agent, and solvent. Types of each component change with the printing method or item subject to printing.	JIS Z 0108 (2005)
35	Damping solution; fountain solution	A solution to make a plate surface wet in order to avoid adhesion of printing inks to non-image areas in planographic printing. It is also called an alcoholic damping solution because a solution with less than 5% isopropyl alcohol is often used.	JIS Z 8123 (1995) "Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
36	Anchoring agent	A basecoat material used to increase adhesion and binding of an ink, resin, or glue in printing, resin coating, or gluing on a base packaging material (paper, synthetic resin film, or aluminum foil). An anchoring agent can be of the polyethylenimine series, a two-component urethane adhesive, or of the organotitanium series. It is also known as an AC agent or a primer.	"Food Packaging Dictionary" by the Science Forum (1993)
37	Lubricant	An additive to improve smoothness or slipperiness of a plastic surface. It is also known as a slipping agent.	"Japanese to English Packaging Dictionary" by the Overseas Packaging Study Group (1997)
38	Adhesive	An agent used to put two surfaces of the same or different type of solid items together. For packaging purposes, a cold glue, a hot melt glue, or a pressure-sensitive glue can be used.	JIS Z 0108 (2005)
39	Adhesive for corrugated cardboard	An adhesive used in corrugated cardboard production. Starch is most often used.	JIS Z 0104 (1990)
40	Cutting die for corrugated cardboard	A die for cutting out a corrugated cardboard or a processed paperboard item. It is a flat plate, curved plywood, or a steel plate with a cutter and ruled lines.	JIS Z 0104 (1990)
42	Paper string band	A paper string attached to the opening of a kraft paper bag for crops. After the bag is filled with the content, the band is rolled with the bag opening to seal it.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
43	Creped tape	A creped paper tape that covers stitching made by a sewing machine on a kraft paper bag.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
44	Poly-ethylene tape	A polyethylene tape used in packing items.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
45	Poly-propylene band	A polypropylene band used in bundling items.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
46	Inserting paper	A sheet of paper to be inserted between pallets or put on a pallet in pallet packing to prevent loads from shifting.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
47	Cushioning material	A material to be put around package content in order to reduce the physical shock to the content during the logistics process.	JIS Z 0108 (2005)

48	Corner pad	A protection material to be put on corners of a pallet in pallet packing.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
49	Shrink film	A film for being put around an item and then shrunk by heat in pallet packing. It is also used when integrating packed items.	JIS Z 0108 (2005)
50	Stretch film	A stretchy film to be put on side walls of a pallet in pallet packing. It is also used when integrating packed items.	JIS Z 0108 (2005)
51	Tape	A base material such as paper, plastic, or metal foil with an adhesive layer on top. There is an adhesive tape that is adhesive as it is and a packing tape which is dampened before use. They are used to seal a container.	JIS Z 0108 (2005)
52	Pallet	An item that has been used to promote the concept of unit loads. A certain number of items are put together as a unit and put on the surface of a pallet such that it can be loaded/unloaded, transported, or stored. Some pallets have an upper structure.	JIS Z 0108 (2005)
53	Label	A small flat piece that is affixed to the surface of packaging in order to identify the content, advertise the product, and/or show legal description of the product. It is a collective term for stickers, labels, patches, and tags. It can be made of just a base paper or can have a composite structure consisting of a base paper, release paper, and an adhesive layer in between. The adhesive type applies to a Paper Container and Packaging.	JIS Z 0108 (2005) "Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
54	Mill wrapper; wrapping paper	A collective term for paper to pack a product at a paper, printing, or thread processing factory.	JIS Z 0108 (2005)
55	Graphics, printing	A collective term for a process involving printing film making and processing for a printed matter. In a narrow sense, it is a collective term for a technique in which: printing inks are applied to a printing plate made from a manuscript including images or letters, the information in the manuscript is transferred to a sheet of paper, and multiple copies of the manuscript are created.	JIS Z 8123 (1995)
56	Offset printing	A printing method in which inks on a printing plate are transferred to a transcriptional body such as a blanket and then re-transferred to a sheet of paper. A lithographic printing plate is generally used.	JIS Z 8123 (1995)
57	Gravure printing	An intaglio printing method in which: a printing plate created by the photoengraving or mechanical engraving process is used; inks on non-image areas of the printing plate are scraped off by a doctor blade; printing pressure is applied to the inks remaining in depressed image areas; and the inks are transferred to a sheet of paper.	JIS Z 8123 (1995)
59	Flexography	A printing method in which a relief printing plate made of rubber or resin, for example, and fluid printing inks are used.	JIS Z 8123 (1995)
60	Lamination	A method of gluing two or more sheets of paper or film using an adhesive or by thermocompression bonding.	JIS Z 8123 (1995)
61	Dry lamination	A method of lamination in which: an adhesive is applied to the surface of a material; the surface is dried if it contains a solvent; the other materials are heated and thermocompressed; and all the materials are stacked in layers.	"The Latest Lamination Processing Handbook" by the Converting Technical Institute (1989)
62	Wet lamination	A method of lamination in which: a water-based adhesive is	"The Latest

		applied to the surface of a material to be glued; the surface of another material (paper, paperboard, aluminum foil, cloth, cellophane, or synthetic film) is glued to the first surface before the adhesive dries; and the web of glue is dried.	Lamination Processing Handbook" by the Converting Technical Institute (1989)
63	Extrusion lamination	A collective term for processing in which a thermoplastic resin is poured through a T-shaped die and made into a film, the film is then pressure-bonded with the surface of a material, such as paper, synthetic resin film, or metal foil, between a coherent metal roll and rubber roll, and finally, the obtained item is cooled. An extrusion coating (EC) is also used in this processing.	"The Latest Lamination Processing Handbook" by the Converting Technical Institute (1989)
64	Corrugation	A processing method in which a corrugated cardboard is produced using a liner board and a corrugating medium. This is an expression unique to corrugated cardboard.	"Corrugated cardboard Handbook"
65	Slitting	A processing method in which a web of a sheet of paper or paperboard is divided lengthwise into two or more webs.	JIS P 0001 (1998)
66	Cutting; sheeting	A processing method in which a web of a sheet of paper or paperboard is cut to create a sheet.	JIS P 0001 (1998)
67	Surface machining (gloss)	A coating method in which a varnish made of vinyl acetate or acrylic resin is applied to a printed surface in order to make it glossy, friction-resistant, and water-resistant. It is also known as vinyl coating. There is also a processing method called press coating. In this processing, in order to make a vinyl coated printed surface glossier, a mirror-finished steel band is heated and is compressed and bonded with the finished surface. The band is removed after it cools down.	"Printing Dictionary (Expanded Edition)" by the Japanese Society of Printing Science And Technology (1994)
68	UV lamination coating	A processing method in which, without using a solvent, resins are hardened by UV rays and made glossy. This method is used as a way to apply an in-line water-based varnish coating to a high-grade paper container which is must be highly glossy.	"Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
69	Hot stamping	A processing method in which, a printing plate with letters or images engraved is heated, pressured, compressed, from the backside of a rolled cellophane or polyester film on which gold or silver foil is vapor-deposited or on which a removal color film is applied, against a non-printed surface to transfer images.	"Food Packaging Dictionary" by the Science Forum (1993)
70	Embossing	A processing method in which a male or female mold is used to texture a cardboard surface.	JIS Z 8123 (1995)
71	Die cutting and creasing	A processing method in which pressure is applied to corrugated cardboard or processed paperboard using a cutter formed with a blade and ruled lines in order to punch out a specified development figure and make creases.	JIS Z 8123 (1995) "Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
72	Suck making	A processing method in which a Paper Container and Packaging is made. The external surface often needs printing. It is also often the case that processes ranging from die cutting and assembly are all automated by a sack maker and printing is carried out together with this process.	"Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)

73	Body joint	It means to create a body of a box by gluing four upright surfaces. There is stack gluing in which tabs are glued one on top of the other, inner-tab gluing in which the inner side of a tab is glued to the inner side of another tab, and edge-to-edge gluing in which, since there are no tabs, edges of the surfaces are put together with packing tape.	"Food Packaging Dictionary" by the Science Forum (1993)
74	Install the serrated edge in the carton	A process in which a serrated edge is attached to a paper container such as a plastic film or aluminum foil container. A serrated edge material (tin, resin, or resin impregnated paper) is first die-cut by a die set of an edge attaching machine. Then, the edge is swaged to fit to a paper container, glued by an adhesive, or attached by ultrasonic adhesion.	Industry Terminology for Paper Containers and packaging
75	Skiving and hemming	A processing method in which one half of the edge of an inner paper of a paper container for liquids or a paper cup is cut off by a cutter called a skiver and folded to cover the edge in order to prevent the content from seeping from that edge (inner container surface). The part that is folded is adhered through thermal adhesion or using an emulsion adhesive.	Industry Terminology for Paper Containers and packaging
76	Flange press	A processing method in which a flange (curled opening) of a cup is pressed and flattened. This process is necessary to stably heat-seal a lid of a paper cup, such as a yogurt cup, so that a lid is easy to open.	Industry Terminology for Paper Containers and packaging
77	Bag making	A processing method in which a bag is created using paper, films, or a combination of both. It can be made by gluing of a material using an adhesive or by heat-sealing.	"Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
78	Heat seal	A processing method in which the same or different types of thermoplastic films or sheets are joined by heat.	JIS Z 0108 (2005)
79	Corrugating machine	A series of corrugated cardboard manufacturing equipment having a single-faced corrugated cardboard machine, double-faced corrugated cardboard machine, and cutter.	"Packaging Dictionary" by the Japan Packaging Institute
80	Coater, coating machine	A processing machine for applying a coating fluid (agent) on a base paper to create a thin film. Depending on the application style, there is a roll coater, gravure coater, and extrusion coater.	JIS P 0001 (1998) "Practical Printing Terminology" by the Japan Federation of Printing Industries (2002)
81	Folder gluer, folding box machine	A processing machine for creating a folded box in which a cut and creased material is folded by a belt or chain, and glued into a specified shape. It is also called a sack gluer. Hide glue, synthetic resin, and hot melt resin are examples of adhesive used. Recently, there is thermal adhesion in which parts to be glued are heated by a gas flame prior to adhesion.	"Printing Dictionary (Expanded Edition)" by the Japanese Society of Printing Science And Technology (1994)
82	Folding gluer	A processing machine that folds paperboard and glues it together to make a box. It is also called a folding box machine or sack machine.	"Japanese to English Packaging Dictionary" by the Overseas Packaging Study Group (1997)
83	Bottommer	A processing machine that creates the bottom part of a bag as the finishing step.	Survey by the Japan Kraft Paper Sacks Association (April 2007)
84	Gluing machine	A processing machine that uses an adhesive to make a	"Packaging

		corrugated cardboard box.	Dictionary" by the Japan Packaging Institute
85	Paper tube machine	A machine to produce a cylindrical, rectangular or conical paper tube product. Depending on the production method, this can be a spiral paper tube, planospiral paper tube, or conical paper tube.	"Paper Tube Glossary (1st Edition)" by the Japan Paper Tube Industrial Association (June 2004)
86	Paper tube finishing machine	A process in which a paper tube product is cut, chamfered, creased, its corners are rounded, its edge is processed, or a cap is attached to it, depending on customer request. Or, equipment for carrying out the processes listed above.	"Paper Tube Glossary (1st Edition)" by the Japan Paper Tube Industrial Association (June 2004)
87	Paper cup machine	A machine to laminate a paper cup with polyethylene to make the paper water-resistant.	"Japanese to English Packaging Dictionary" by the Overseas Packaging Study Group (1997)
88	Paper sheet type bag machine	A processing machine that makes a bag using a printed base planographic paper and that shapes the bottom of the bag into a square after joining a body part together. In some machines the body joining and bottom creation processes are two separate processes.	"Latest Paper Processing Handbook" by Tec Times (1988)
89	Rotary paper bag machine	A processing machine that successively prints a stencil, attaches a plastic handle, joins a body, cuts the body at a specified length, creates the bottom part, counts the number of bags, and packs the bags for each base paper roll.	"Latest Paper Processing Handbook" by Tec Times (1988)
90	Packaging waste	Disposed used packaging materials or containers. Waste packaging materials include waste containers and packaging material (containers and packaging waste).	JIS Z 0108 (2005) JIS Z 0112 (2008)

Annex D (reference): Grounds for setting the transport scenario for each life cycle stage

In this PCR, transport scenarios have been created in the “paper containers, packaging and wrapping” raw material acquisition, production, transport, and disposal/recycling stages, in case the primary data is difficult to be collected. The way of setting scenarios is described below. Note that separate scenario has been created for transport of corrugated cardboard.

D.1 Transport Distance

D.1.1 Domestic transport

For an incentive to provide primary data collection, transport distance is set to a little longer than the average at possible.

- a) Transport within a city or not across adjacent cities: 50km

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

- b) Transport within a prefecture: 100km

[Assumption] The distance from a prefectural border to another side of the border is assumed.

- c) Transport possibly across prefectural border to another side of the border is assumed: 500km

[Assumption] The distance from Tokyo to Osaka is assumed.

- d) Transport from a raw material manufacturer to a manufacturer of containers, packaging and wrapping, manufacturing site is not limited within a specific area): 1,000km

[Assumption] The distance a little longer than half Honshu (the main island of Japan: 1,600km) is assumed.

D.1.2 Transport from abroad

Transport from a production site to a port: 500 km

[Assumption] Assuming that transport is from the center to the border of a state

D.1.3 International transport

As for international marine distance, use the data prepared by the CFP Pilot Project Secretariat as "reference data."

D.2 Means of transport

D.2.1 Domestic transport

It is assumed that transport is done by trucks in order to generate incentives for modal shift to allow distribution cost and CO₂ emission reduction. In this scenario, it is assumed that a logistics service provider uses a large truck and other service providers use a smaller truck for transport.

- a) Transport by distributor: 10-ton truck
- b) Transport by other types of service providers: 2 to 4-ton truck

D.2.2 International transport

All international transport shall be assumed to be marine transport using container vessel (4,000 TEU or lower).

D.3 Loading ratio

The loading ratio is set to one of the lowest possible values instead of an average loading ratio in order to generate incentives for collecting primary data.

Annex E (reference): Scenario setting for transport of “corrugated cardboard”

Corrugated cardboard transport scenarios applied to this PCR are created as shown below.

E.1 Transport distance

Distance was calculated based on the 2007 LCI Study Result (data from 56 companies) published by the National Corrugated Box Industry Association.

E.2 Transport of corrugated cardboard cases

E.2.1 Transport within a prefecture (wide-area territory)

The transport distance was set to be the mean value $+1\sigma$ instead of an average distance in order to generate incentives for collecting primary data.

For a 4-ton truck, the average transport distance was 65 km (standard deviation: 31 km). The transport distance for the scenario therefore was 100 km.

E.2.2 Transport within a city (small-area territory)

The transport distance was set to be the mean value -1σ .

For a 4-ton truck, the average transport distance was 65 km (standard deviation: 31 km). The transport distance for the scenario therefore was 40 km.

E.3 Transport of corrugated cardboard sheets

The transport distance was set to 60 km, which is the difference between the transport within a prefecture and the transport within a city.

E.4 Loading ratio

The average load that a 4-ton truck carries was 1,730 kg ($3,000 \text{ m}^2 \times$ average basis weight 0.577 kg/m^2) and the loading ratio was 43%. The loading ratio for the scenario was set to 25% since it needed to be lower than the obtained loading ratio.

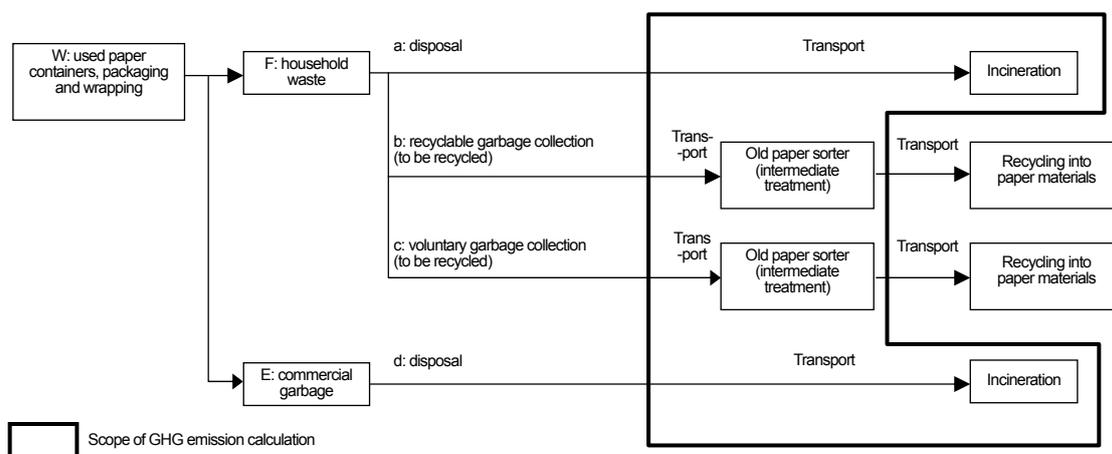
Annex F (reference): Scenario setting for disposal and recycling of “paper containers, packaging and wrapping”

Setting of scenarios applied to this PCR is described below. Note that separate scenarios have been prepared for disposal and recycling of corrugated cardboard and used paper container for liquids (without aluminum foil) (refer to Annex G and Annex H).

F.1 Disposal and recycling scenarios

Ratios of “used paper containers, packaging and wrapping” that were disposed of or recycled (collection ratio, disposal ratio) are based on the data provided in “Estimation of Container and Packaging Material Flow (reference data used at the 15th Containers & Packaging Recycling Working Group, Waste Prevention and Recycling Subcommittee, Environment Committee, Industrial Structure Council, Ministry of Economy, Trade and Industry).” In accordance with the “used paper containers, packaging and wrapping” disposal and recycling flow as shown below, GHG emissions were then calculated from the data obtained in FY2003.

F.2 Disposal and recycling flow of “used paper containers, packaging and wrapping”



W: “used paper containers, packaging and wrapping”: amount of “used paper containers, packaging and wrapping” used in product consumed in household (1,758,000 tons)

F: household waste: amount of “paper containers, packaging and wrapping” used in products that are consumed in household (1,186,000 tons)

a: disposal: among the amount of garbage generated in homes, the amount of garbage handled by the municipality (1,116,000 tons) (the amount of garbage obtained by subtracting b and c below from the overall household waste)

b: recyclable garbage collection: among the amount of garbage generated in homes, the amount that is sorted and collected by the municipality (70,000 tons)

c: voluntary garbage collection: among the amount of garbage generated in homes, the amount that is sorted and collected by entities other than the municipality (0 tons) (Newspapers, corrugated cardboard, and magazines are the major types of household garbage that are collected by private collectors. Therefore, it is assumed that “paper containers, packaging and wrapping” will not be collected.)

E: commercial garbage: an estimated value obtained by subtracting the amount of containers and packaging consumed in homes from the domestic shipment by container and packaging suppliers (572,000 tons)

d: disposal: there has been no record of recycling; therefore, it is assumed that all commercial garbage is disposed of.

Annex G (reference): Scenario setting for disposal and recycling of “corrugated cardboard”

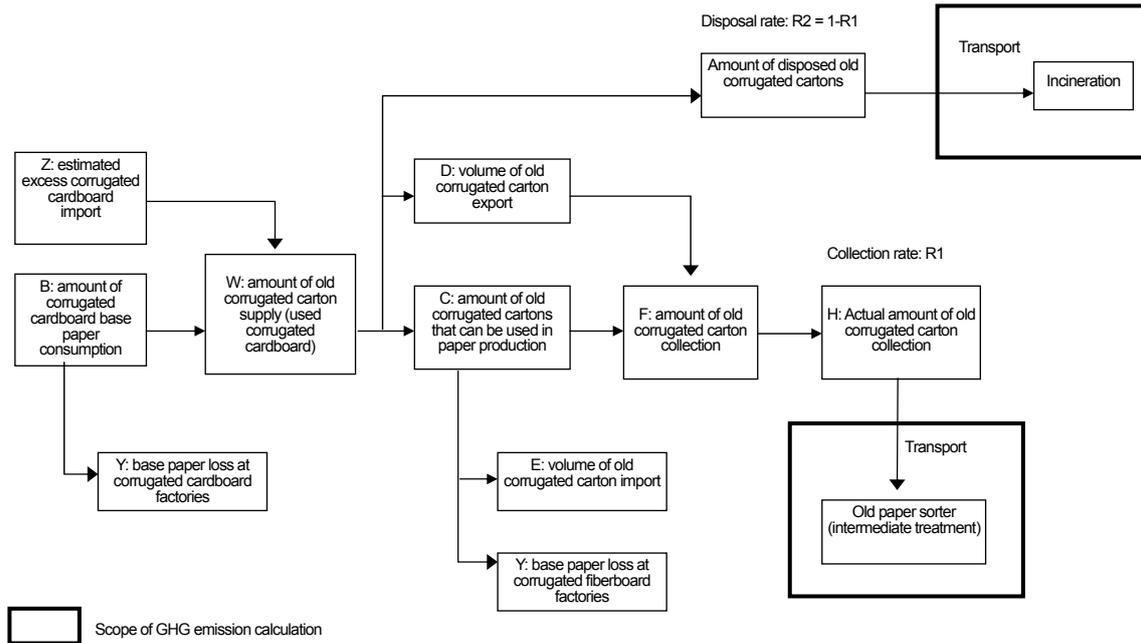
Setting of scenarios applied to this PCR is described below.

G.1 Disposal and recycling scenarios

Percentages of used corrugated cardboard that is disposed of or recycled are based on the collection rate calculation method provided in "Voluntary Action Plans for Corrugated cardboard Recycling (by the National Corrugated Box Industry Association)."

In accordance with the used corrugated cardboard disposal and recycling flow as shown below, GHG emissions were then calculated from the actual data obtained in FY2008.

G.2 Disposal and recycling flow of used corrugated cardboard



- * Data B and C is based on "Paper, Printing, Plastic Products and Rubber Products Statistics (Ministry of Economy Trade and Industry)."
- * Data D, E, and Z is based on "Paper Recycling Promotion Center Data."
- * Data G is based on the "Paper & Paperboard Statistics Yearbook (Japan Paper Association)."
- * Data Y is based on "Overview of Corrugated cardboard LCI Calculation (National Corrugated Box Industry Association)."

G.3 Ratio of used corrugated cardboard that was disposed of or collected

Amount of old corrugated carton supply: $W = B + Z - Y$

Actual amount of old corrugated carton collection: $H = (C + D - E - Y) \times (B/G) \times 0.988$

- Collection rate: $R1 = H/W$
- Disposal rate: $R2 = 1 - R1$

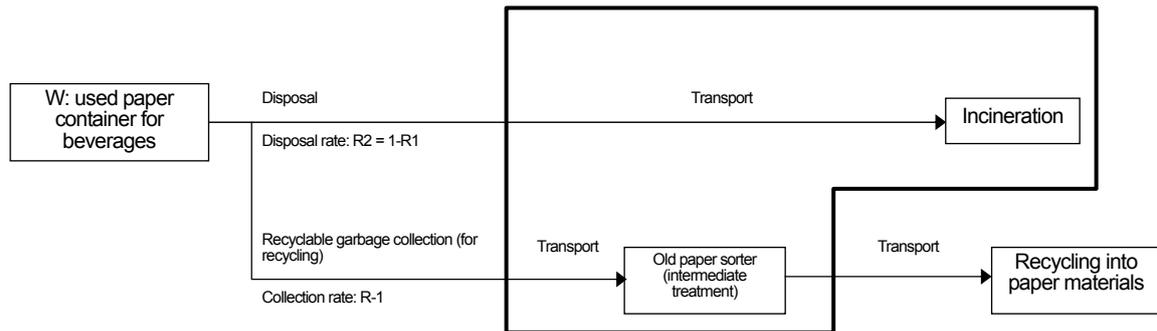
Annex H (reference): Scenario setting for disposal and recycling of a used paper container for liquids (without aluminum foil)

Setting of scenarios applied to this PCR is described below.

H.1 Disposal and recycling scenarios

Ratios of used paper container for liquids (without aluminum foil) that were disposed of or recycled are based on the used paper pack collection rate calculation method provided in the "Report on the Basic Survey on the Current Status and Trends in Recycling of Paper Containers for Beverages (FY2008 edition published by the Committee for Milk Container Environmental Issues)."

H.2 Disposal and recycling flow of used paper container for liquids (without aluminum foil)



- W:** generated amount of used paper containers for liquids (without aluminum foil)
- R:** rate of collection of used paper containers for liquids (without aluminum foil)
- R2 = 1 – R1:** rate of disposal of used paper containers for liquids (without aluminum foil)

: Scope of GHG emission calculation

Annex I (reference): Collection of fuel consumption data and calculation of GHG emissions for truck transport

I.1 Fuel consumption method

I.1.1 Collect data on fuel consumption for each transport mean, and convert the unit of fuel consumption from “L” to “kg”.

$$\text{Fuel consumption (kg)} = \text{Fuel consumption (L)} \times \text{Fuel density } \gamma \text{ (kg/L)}$$

$$\text{Fuel density of gasoline: } \gamma = 0.75 \text{ kg/L}$$

$$\text{Fuel density of light oil: } \gamma = 0.83 \text{ kg/L}$$

I.1.2 Calculate GHG emissions by multiplying fuel consumption (kg) by secondary data for each type of fuel.

I.2 Fuel cost method

I.2.1 Collect data on fuel cost (km/L) and transport distance (km) for each transport mean, and calculate fuel consumption by using the following equation.

$$\text{Fuel consumption (kg)} = \text{Transport distance (km)} / \text{Fuel efficiency (km/L)} \times \gamma \text{ (kg/L)}$$

I.2.2 Calculate GHG emissions by multiplying fuel consumption (kg) by secondary data for each type of fuel.

I.3 Improved ton-kilometer method

I.3.1 Collect data on maximum loading capacity: “Z” (kg), loading ratio: “Y” (%) and GHG emissions by transport: “W” (ton-km) for each transport means. (Data on loading capacity shall be collected in principle, but may be omitted in inevitable cases).

I.3.2 If loading ratio “Y” (%) is unknown, the scenario provided in the pertinent articles of this PCR may be used.

I.3.3 Multiply transport load (transport ton-kilometer) by secondary data of each transport means broken down by loading ratio (Y (%)).

Annex J (reference): Bibliography

J.1 Guidelines of CFP (Carbon Footprint of Products) system (revised edition):

The CFP rules study committee (July 16, 2010)

J.2 Standards of PCR (Product Category Rules) development (revised edition):

The CFP rules study committee (July 16, 2010)

J.3 Specifications of CFP Label and Displaying Other Information:

The Ministry of Agriculture, Forestry and Fisheries, the Ministry of Economy, Trade and Industry, the Ministry of Land, Infrastructure, Transport and Tourism, and the Ministry of the Environment (August 3, 2009)

J.4 Tentative Database of GHG Emission Factors for the CFP Pilot Project:

The CFP Pilot Project Secretariat (Japan Environmental Management Association for Industry) (August 18, 2009)

J.5 Estimation of Container and Packaging Material Flow:

The 15th Containers & Packaging Recycling Working Group, Waste Prevention and Recycling Subcommittee, Environment Committee, Industrial Structure Council, Ministry of Economy, Trade and Industry (February 28, 2005)

J.6 Overview of corrugated cardboard LCI calculation:

The National Corrugated Box Industry Association (November 2008)

J.7 Energy Factor and CO₂ Emission Factor in Corrugated Cardboard Manufacturing:

The National Corrugated Box Industry Association (November 2008)

J.8 Report on the Basic Survey on the Current Status and Trends in Recycling of Paper Containers for Beverages:

The Committee for Milk Container Environmental Issues (FY2008)

J.9 JIS K 6900: 1994 Plastics - Vocabulary

J.10 JIS P 3401: 2000 Kraft papers

J.11 JIS Z 0102: 2004 Kraft paper sacks - Vocabulary and types

J.12 JIS Z 0104: 1990 Glossary of terms used in the corrugated cardboard industry

J.13 JIS Z 1507: 1989 Types of corrugated cardboard boxes

J.14 JIS Z 8123: 1995 Graphic arts - Glossary - Fundamental terms

J.15 "MET/MLIT Guideline for CO₂ Emission Calculation in the Logistics Field Ver. 3.0:

The Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism (March 2007)

[PCR revision histories]

Approved PCR ID	Release date	Contents revised
PA-BB-02	September 8, 2010	<p>(1) Changed corresponding to the revisions of the basic rules.</p> <p>(2) Adapting the contents to the new PCR draft template.</p> <p>(3) For handling of recycling of the wastes discharged from each stage (other than the disposal and recycling stage), up to and including recycling preparation process shall be calculated. (It applies to “No.2-(7): Handling of recycling standards” provided in the “Guide of Establishing Product Category Rules (PCR)”.)</p> <p>(4) For handling of the wastes collected for value, up to and including the recycling preparation process shall be calculated. (It applies mutatis mutandis to “No.2-(7): Handling of recycling standards” provided in the “Guide of Establishing Product Category Rules (PCR)”.)</p>