GREEN CHOICE PHILIPPINES
NELP-GCP 20170002
TISSUE PAPER PRODUCTS

I. BACKGROUND

Like other paper, tissue paper uses cellulosic fibers. The fiber may be 100% virgin, 100% recycled or mixed. The main source of recovered fiber is office paper collection for recycling. The virgin fiber is mostly kraft fiber which is produced from softwood or hardwood.

There are several types of tissue paper depending on use. They can also be of different colors, with or without decorations and patterns, different textures; it can be perfumed or moistened.

Toilet Tissue
Toilet paper, the product that climate-friendly criteria will be developed for, is the most purchased tissue product by consumers. The quality of tissue paper can be determined by the number of plies, durability, coarseness and fiber quality. Toilet paper typically contains the lowest grade of paper.

Paper Towels
Paper towels are the second largest tissue product. Generally, it is the most durable of all tissue paper products. Its strength depends mostly on the fiber quality used, and the wet end chemicals used to improve its properties. While this type of paper ranges from one to two plies, on the average most paper towels are of the one-ply variety. The average weight of paper towels is about 20 to 24 grams per square meter.

Facial Tissue
Facial tissues are thin, soft, absorbent, smooth and disposable paper which is used for facial cleaning and is usually made from virgin pulp.

Table Napkins
Table napkins are used in dining tables. They vary from one to two plies in a variety of quality, sizes, folds, colors and patterns depending on use and fashion.

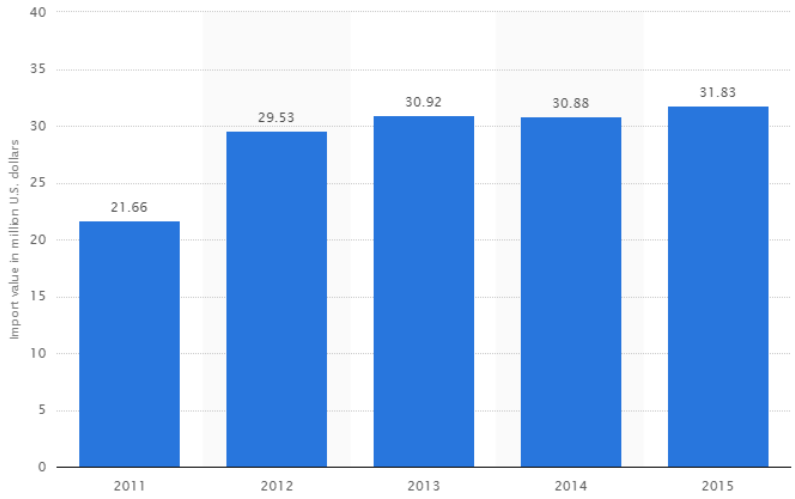
A. MARKET DESCRIPTION

It is estimated that around 40,000 MT of tissue paper is consumed per year in the Philippines (Tissue World Magazine, Oct-Nov 2012). The following graph shows the tissue paper market growth from 2007 to 2012. The market has been steadily growing by around 3% from 2010 to 2012. Correspondingly, the production of towel and tissue paper for 2012 is around 20,000-25,000 MT/year (Tissue World Magazine, Oct-Nov 2012). This makes the Philippines the smallest T&T producing nation in Southeast Asia.

Source: 1 Tissue World Magazine, Oct-Nov 2012

According to Euromonitor, the retail tissue industry had slower growth in terms of consumption in 2015 compared to 2014 with consumers prioritizing price over brand. Domestic brands and private labels thus have an advantage if this trend continues to develop. Despite this, the forecast for the retail tissue industry is positive. High penetration of toilet paper within households means that this product has increased maturity. On the other hand, there are also some consumers who may have become indifferent to toilet paper brands because of its high usage and may switch to local brands or private labels (i.e., SM Bonus) which are cheaper, but does not compromise quality.

The following graph shows the import value of tissue paper from 2011 to 2015. While the graph shows a slight decline in import value from US$ 30.92 million to US$ 30.88 million. This could be attributed to the increased maturity of toilet paper in the market and to consumers who may have become indifferent to imported brands. However, imports increased to US$ 31.83 million in 2015 which could be indicative of economic growth and in turn high disposable income for consumers. This may in turn mean that consumers may be more willing to purchase more expensive toilet papers with newer technologies such as scent infusion, improved aesthetics, and even may be environmentally friendly products such as those layered with recycled grade paper (Statista, 2017).



Source: 2 Import value of toilet paper and tissues to the Philippines from 2011 to 2015 (in million U.S. dollars) (https://www.statista.com/statistics/657470/philippines-toilet-paper-tissue-imports/)

Sanitary Care Products Asia, Inc. (SCPA) is the dominant leader in the tissue paper market with 23% share despite seeing a slight decline.

B. ENVIRONMENTAL IMPACTS AND INITIATIVES

The impact of the pulp and paper industry to the environment is significant. The extraction of virgin pulp can contribute to deforestation. The manufacturing process also contributes to water pollution, and air pollution. The paper product itself can also contribute to solid wastes. While recycling mitigates this impact, the energy consumed by the process (manufacturing, transporting, reprocessing) is not.

Bleaching which makes the paper whiter also has serious environmental impacts. They use different chemicals, some of which are reduced and replaced because they release toxic pollutants to the environment.
Greenhouse gas emissions from the pulp and paper industry come from the combustion of fossil fuels required for raw material production and transportation, operation of wastewater treatment facilities, power from manufacturing operations, product transportation, and disposal and recycling. Paper

disposed in landfills breakdown and produce methane which also adds to the carbon footprint of paper products.

Environmental initiatives within the pulp and paper industry have mainly been focused in the use of recovered fiber. While the use of recycled paper is expensive, it does have environmental benefits aside from the obvious one of reducing logging for fiber. These include 1) energy conservation, 2) water conservation, 3) reduction of air and water pollution, and reduction of greenhouse gases (GHG). Recycling paper instead of disposing in landfills can reduce the global warming potential by 15 to 25%. The US EPA also has found that using recycled paper causes 35% less water pollution and 74% less air pollution that using virgin pulp.

Fiber mix in Philippine mills is already biased towards using recycled pulp. This strong base in using recovered fiber aids in the Philippine cost position. From the Figure (2012) below, the Philippine is already using around 80% recovered fiber for its toilet and tissue paper, while overall local paper production is already using 95% recycle paper (2015). This 95% translates to 0.9 million tons of local wastepaper.

Figure 5

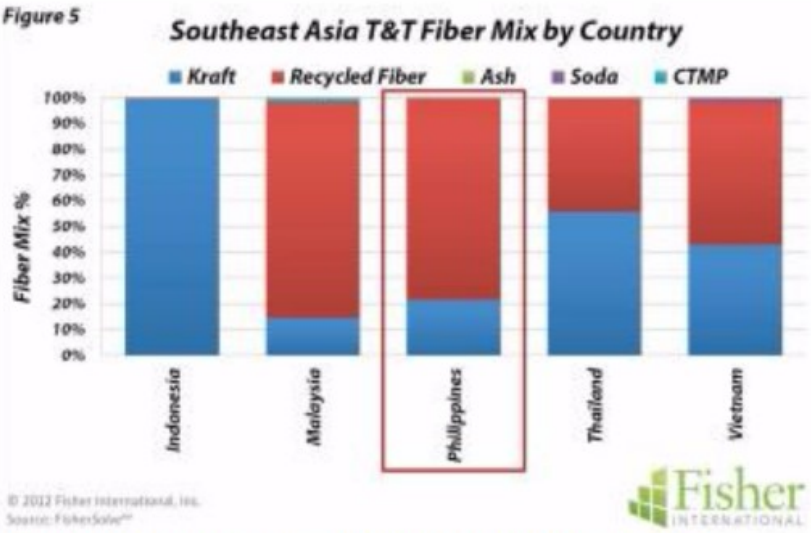


Figure 5 Fibre mix comparison for Southeast Asia's T&T producing countries.

With regards to the bleaching process, the move to non-elemental chlorine has reduced the emission of carcinogenic organochlorines. Chemicals that produced totally chlorine free (TCF) paper are now also being used.

In 2015, the Philippine Paper Manufacturers Association, Inc. (PPMAI) presented a roadmap for the "greening" of the Philippine pulp and paper industry. Their initiatives mainly focus on establishing a kraft pulp mill that will be based on sustainably-managed tree plantations. The mill will have modern and environmentally-friendly technologies in wood fiber pulping, bleaching and water use. Its energy will be from biomass and waste and it will be compliant with ISO standards. It will also seek international certification from the Programme for the Endorsement of Forest Certification (PEFC) and the Forest Stewardship Council (FSC).

II. ACRONYMS USED AND DEFINITION OF TERMS

1. Alkylphenol ethoxylates (APEOs)- synthetic surfactants found in detergents, cleaning products, pesticides, lubricants, hair dyes and other hair care products and even spermicides. APEs bio accumulate in waterways and aquatic sediments that may have adverse health effects.

2. Air Dry Tonne (ADT) or Air Dry Metric Ton (ADMT)- means 90% dry matter content of pulp
3. Bleaching- Chemical process carried out on pulp to decrease the color of pulp so that it becomes whiter
4. Chemical Oxygen Demand (COD)- a laboratory test used to indirectly measure the amount of organic compounds in water
5. Elemental Chlorine Free (ECF)- a technique that uses chlorine dioxide for the bleaching of wood pulp
6. Facial Tissue – a tissue paper used especially as a disposable handkerchief, such as for removing cosmetics and dirt from the face.
7. Fluorescent whitening agent – a chemical additive that fluoresces in sunlight and visually enhances the whiteness of paper.
8. Halogenated Hydrocarbons- derivatives of hydrocarbons (that is, organic compounds that only contain carbon and hydrogen atoms) which include some halogen atoms within their chemical structure. The most commonly encountered halogens in halogenated hydrocarbons are fluorine and chlorine, but sometimes bromine or iodine occur, or combinations of any of these.
9. Industrial tree plantation – any forest land exclusively planted to tree crops primarily to supply the raw material requirements of existing or proposed wood processing plants and related industries.
10. Safety Data Sheets (SDS), Material Safety Data Sheet (MSDS), Product Safety Data Sheet (PSDS)- document that contains information on the potential hazards and how to work safely with the chemical product.
11. Percent recycled pulp – the percentage ratio of recovered fiber to total pulp material (virgin plus recycled pulp)
12. Post-consumer- refers to material generated by households, or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose
13. Recovered fiber (recycled fiber or secondary fiber) refers to Post-consumer fiber such as paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-use as a consumer item; all paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste; and manufacturing waste such as dry paper and paperboard waste generated after completion of the papermaking process; and repulped finished paper and paperboard from obsolete inventories of paper and paperboard. It also includes recovered waste paper. Any fibrous material that has already undergone a manufacturing process and is being recycled as the raw material for another manufactured product, excluding wood residues and sawmilling residues, which has been repulped or reintroduced into the paper manufacturing process and make it into a product or form usable in the manufacture of a product.
14. Suitable packaging material – material that can maintain the homogeneity of the packaged product. It shall be hygienic and can be recycled.
15. Surfactants- compounds that are intended to lower the surface tension thereby helping water to remove dirt or staining from surfaces
16. Sustainable forest management – the system of managing forest land and resources to secure productivity for the present without undue undesirable effects on the physical and social environment that would jeopardize tomorrow's resources.
17. Table Napkin – a tissue paper used at tables during meals to wipe fingers and protect clothes.
18. Tissue paper – a thin, soft absorbent paper, made from cellulose fibrous material with close and even formation, and intended for sanitary purposes.
19. Toilet/Bathroom Tissue – a tissue paper intended for sanitary use in toilets/ bathrooms.
20. Total Chlorine Free (TCF)- a process in which bleaching is carried out without any chemicals containing chlorine
21. Virgin pulp – fibrous material separated from wood or other plant material by chemical or mechanical means for the manufacture of paper and paperboard.
22. Wet strength – ability of paper to retain its strength when wet.

III. SCOPE

These Criteria apply to tissue paper products such as toilet tissue, table napkin, and facial tissue.

IV. GREEN CHOICE PHILIPPINES REQUIREMENTS

To carry the *Green Choice Philippines* seal, a product must meet the following requirements.

Criteria	Evaluation/Validation Method
A. Packaging	
1. Each roll or packing unit shall be fully wrapped with paper or other suitable packaging materials in the same type/class and size.	Visual inspection of actual packaging and documentation and certification provided by applicant company
2. Each roll or packing unit shall contain the total number of sheets or total length of roll not less than the defined number on the label.	Documentation and certification provided by applicant company
3. The core (if any) of a roll of tissue shall be made from 100% recovered fiber Recovered fiber refers to Post-consumer fiber such as paper, paperboard, and fibrous materials from retail stores, office buildings, homes, and so forth, after they have passed through their end-use as a consumer item; all paper, paperboard, and fibrous materials that enter and are collected from municipal solid waste; and manufacturing waste such as dry paper and paperboard waste generated after completion of the papermaking process; and repulped finished paper and paperboard from obsolete inventories of paper and paperboard.	Documentation and certification provided by the applicant company
4. Packaging must NOT be made from chlorine-based plastics and they must be suitable for recycling.	Documentation and certification provided by the applicant company
B. Marking and Labeling	
1. On the packaging may appear “Made from __ % ___. Please dispose of your waste properly.” Each roll or packing unit shall inform the consumers in letters, numbers or symbols about the following: • Intended use (e.g. toilet/bathroom tissue, table napkin or facial tissue) • Type/class • Sheet size (width x length) in millimeters • Total number of sheets per roll or pack • Manufacturer’s name or plant name or trademark including company address, phone number and/or e-mail address • Manufacturing country It can also include whether the product uses sustainable fiber, and has low water and air pollution impact, and GHG) emission and electricity use	Visual inspection of actual labels.

Criteria	Evaluation/Validation Method
C. Common Criteria	
1. If virgin wood fibers are used, they should come from sustainably managed forests which have been certified by independent third party schemes.	Provide a policy on sustainable wood and fiber procurement and a system to trace and verify the origin of wood and they must all have documentation that all are legally sourced. Virgin pulp must be certified under FSC or AS 4708-2007 (AFS)F
2. Carbon dioxide emissions should be less than 1,500 ppm (1,500 kg of carbon dioxide per ton of product) for non-renewable sources and carbon dioxide fossil per kg of ADT of product The fuels used for converting the tissue paper into a product and transport in distributing this product, pulps or other raw materials shall not be included in the calculations.	Provide computations which must include emissions from all pulp and paper production processes, and laboratory analysis of samples and results. Information on CO_2 of different fossil fuels are provided in Section VII
3. Alkylphenol ethoxylates or other alkylphenol derivatives shall not be added to cleaning chemicals, de-inking chemicals, foam inhibitors, dispersants or coatings.	Declaration and certification provided by the applicant and documentation (including SDS/MSDS/PSDS) of chemicals used
4. The chemical oxygen demand (COD) in the water discharge from both pulp and paper production shall not exceed 20kg/ton of paper produced.	Review COD laboratory test reports and by on-site factory visits. COD shall be determined using the method in ISO 60610, APHA 5220 or equivalent
5. Applicant should meet the most recent PNS on Tissue paper and tissue products: • PNS 73 Toilet tissue paper • PNS 72 Facial tissue paper	Data from recognized testing laboratories by DTI-Philippine Accreditation Bureau (PAB) showing conformity of the products with the specified property standards or the corresponding standards (Philippine National Standards) shall be submitted.
6. The applicant must meet all government regulations on safety, health and the environment	No documentation is necessary but the Mark may be revoked if the ecolabelling board finds out that it did not meet the regulations through available public information
7. The total consumption of electricity related to the tissue-paper products shall be calculated as the sum of electricity used in the pulp and the tissue paper production stages and must not exceed 2,200 kWh electricity per air dry ton (ADT) of paper produced. The applicant shall calculate all inputs of electricity used during the production of pulp and tissue paper, including the electricity used in the de-inking of waste papers for the production of recycled paper. The electricity calculation does not include energy consumed in transporting raw materials or in converting and packaging. Electricity means net imported electricity coming from the grid and internally generated electricity measured as electric power. Electricity used for waste-water treatment and air cleaning need not be included.”	Provide detailed calculations showing compliance together with all related documentation which should include total electricity consumption, and per ton of ecolabelled product. Calculation should be Total Electricity=Internally produced Electricity + purchased Electricity – sold Electricity

Criteria	Evaluation/Validation Method
8. Solvents used in the cleaning of production equipment shall be free of halogenated hydrocarbons	Documentation (to include SDS/MSDS/PSDS) and certification provided by applicant company
9. All producers should have a system for the handling or waste and residual products.	Applicants will be required to provide a description of the waste management system for the sites concerned and a declaration of compliance
10. Volume of fresh water used in the production shall not exceed 60 cu. m. /ton of tissue paper products.	Certification provided by applicant company. Documentation will be derived from Criteria C.11.
11. Paper manufacturer must have a water management system in place which outlines at least: a. all categories/ areas of water use that are being measured (with details on how these are measured, e.g., flow rate, meter readings, etc.) and those which are not currently being measured; and b. all categories/ areas of known emissions to wastewater that are measured (with details on how these are measured, e.g., flow rate, meter readings, etc.) and those which are not currently being measured.	Applicants will be required to provide a description of the water management system for the categories/areas that are being measured including flow rate, meter readings, etc. They should be able to show/calculate the volume of water used in the production of the product, and the volume of effluent discharged to the environment.
D. Bathroom and Toilet Tissue	
12. The fiber sources must meet at least one of the following criteria: a. Shall be made of not less than 90% recovered fiber with at least 50% post-consumer content b. At least ninety percent from sawdust/wood chips and/or waste wood from wood processing operations, forest harvesting waste (including thinnings) and/or untreated demolition and/or recovered fiber waste sources. All waste wood should come from sustainably managed forests. The remaining 10% can be from post-consumer content or virgin fiber c. 100% virgin fiber from sustainable managed forests	The paper producer must provide information (including third party certification) and data that will certify the percentage of recycled paper in the pulp mixture. The Chief Executive Officer (CEO) or an authorized representative of the company must also provide a written statement on compliance signed by the and supported by documentation
d. The paper shall not be bleached with any of the following: • chlorine (All tissue papers shall be at a minimum Elemental Chlorine Free (ECF) or Totally Chlorine Free (TCF)) • halogenated bleaching agents (including NaCl) • Optical brighteners • Ethylenediamine tetraacetic acid (EDTA) or its derivatives	Declaration and certification provided by the applicant and documentation (including SDS/MSDS/PSDS) of chemicals used
e. If surfactants are used in manufacturing, they should be readily biodegradable.	Declaration and certification provided by the applicant and documentation (including SDS/MSDS/PSDS) of chemicals used
E. Table Napkins	
1. The product shall be made of not less than 60 % recovered fiber.	The paper producer must provide information and data that will certify the

Criteria	Evaluation/Validation Method
	percentage of recycled paper in the pulp mixture Conformance shall be demonstrated by providing a written statement on compliance signed by the Chief Executive Officer (CEO) or an authorized representative of the company and supported by documentation
2. The product shall have the following physical/chemical properties: PH Level: 4.5, min. Wet tensile strength: 0.04 kN/m, min. Grammage: for single ply – 20 g/m^2 For two & three ply – 14 g/m^2 per ply	Data from recognized testing laboratories showing conformity of the products with the specified property standards or the corresponding standards (Philippine National Standards) shall be submitted.
F. Facial Tissues	
1. The virgin pulp material shall come from industrial tree plantations and/or sustainably managed forest.	Provide a policy on sustainable wood and fiber procurement and a system to trace and verify the origin of wood and they must all have documentation that all are legally sourced.

V. PERIOD OF VALIDITY

The product criteria is valid for three years from the date of its approval unless otherwise revised or withdrawn by the NELP-GCP Board, if proven necessary at any period of time.

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VII. CARBON DIOXIDE OF DIFFERENT FOSSIL FUELS AND GRID ELECTRICITY

This section is taken from Annex 1 of the User's Manual for the Application for Tissue Paper for the European Ecolabel Scheme.

Fuel	Carbon Dioxide Fossil Emission	Unit
Coal	95	g $CO_{2,\ fossil}$ /MJ
Crude Oil	73	g $CO_{2,\ fossil}$ /MJ
Fuel Oil 1	74	g $CO_{2,\ fossil}$ /MJ
Fuel Oil 2-5	77	g $CO_{2,\ fossil}$ /MJ
LPG	62 (standard) 40 (high efficiency)	g $CO_{2,\ fossil}$ /MJ
Natural Gas	56	g $CO_{2,\ fossil}$ /MJ
Grid Electricity (European Average)	400	g $CO_{2,\ fossil}$ /MJ

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