



**PROJECT “STIMULATING THE DEMAND AND SUPPLY OF SUSTAINABLE PRODUCTS
THROUGH SUSTAINABLE PUBLIC PROCUREMENT AND ECOLABELLING” (SPPEL)**

MARKET READINESS ANALYSIS REPORT



**Tran Nam Binh
Nguyen Duc Trung**

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Table of Contents

I. INTRODUCTION	3
1.1. Rationale	3
1.2. Objectives of the market readiness analysis	5
1.3. Methodology of the market readiness analysis	6
II. IDENTIFICATION OF SUB-CATEGORIES OF SUSTAINABLE PRODUCTS & SERVICES, AND ELABORATION OF A PRELIMINARY COMPENDIUM OF SUSTAINABILITY CRITERIA AND MEANS OF VERIFICATION	7
2.1. Prioritisation Exercise results	7
2.2. Identification of available sub-categories of sustainable products	9
a. Office Paper	10
b. Laptops.....	15
c. Compact fluorescent lamps (CFL)	19
d. LED lights	23
III. MARKET ANALYSIS FOR PAPER	26
3.1. Supply of office paper	26
3.2. Demand of office paper	31
IV. MARKET ANALYSIS FOR LAPTOPS	33
4.1. Supply of laptops.....	33
4.2. Demand analysis for laptops	35
V. MARKET ANALYSIS FOR CFL AND LED BULBS	36
5.1. Supply of compact fluorescent and LED lamps	36
5.2. Demand analysis of compact fluorescent and LED lamps	43
VI. VALIDATION OF SUSTAINABILITY CRITERIA FOR EACH SUB-CATEGORY OF PRODUCT WITH THE MARKET AND THE STATE AGENCIES	44
6.1. Paper	46
6.2. CFL bulbs	47
6.3. LED bulbs.....	48
VII. CONCLUSIONS AND RECOMMENDATIONS	50
7.1. Conclusions.....	50
7.2. Recommendations.....	51

I. INTRODUCTION

1.1. Rationale

In the past decade, Viet Nam has achieved significant results in terms of socio-economic development. The country maintained a good growth rate, with an average 7% over the 2006-2010 5-year period; the national GDP in 2010 doubled in comparison with the year of 2000. Viet Nam was officially recognised as a middle-income country, and successfully withdrew from a low development state. In January 2007, Viet Nam also became a member of the WTO. The living conditions of Vietnamese people improved, as the poverty rate decreased significantly.

The 5-year socio-economic development plan for the period 2011 to 2015 defined the following as Viet Nam main objectives:

- the need for **rapid and sustainable economic development**, in line with renovation of the growth model and economic restructuring towards increasing quality, effectiveness and competitiveness;
- ensuring social utilities and security, enhancing and improving living conditions of people;
- creating a firm foundation to make Viet Nam become a modern, industrial country by 2020.

Recently, Viet Nam has been developing and implementing various policies, laws and regulations relating to environmental protection. Ensuring environmental sustainability has been mentioned in many **National Target Programmes (NTPs)**. The government also expressed the concern to develop **Sustainable Consumption and Production (SCP)**, and carried out initial activities in the early 90s. In 2009, the “**National Strategy on Cleaner Production in Industry to 2020**” was developed by the Ministry of Industry and Trade (MOIT). At a higher level, the “**National Action Plan on Sustainable Consumption and Production for the period 2010 – 2020**” has been developed, and is currently being implemented. As an effort to restructure the economy toward increasing quality, resource effectiveness and competitiveness,

Viet Nam has developed and approved the “**Green Development Strategy**” for the period 2011-2020, with a vision to 2050.

In 2012, the total value of public procurement in Viet Nam was estimated at USD 21.9 million, which represents a share of **16 percent of Viet Nam’s GDP**. Economic statistics issued by the Ministry of Planning and Investment for 2007-2012 show that Viet Nam’s GDP has grown over 2007-2012, from USD 71 billion to USD 156 billion, but the **value of government procurement has increased two-fold** (in share of GDP), from nearly **9 per cent to 22 per cent of the GDP** during this period. The total number of procurement contracts awarded has risen, as well as the total value of contracts awarded, with the latter increasing substantially, from USD 6.22 million to USD 21.9 million during 2007-2012.

Table 1 Economic Indicators of Viet Nam 2007 – 2012

Indicators	2007	2008	2009	2010	2012
Gross Domestic Product (US\$ billion)	71.1	89.8	92	104.6	156
GDP growth rate (%)	8.48	6.2	5.3	6.78	5,03
Total contract awarded value (US\$ million)	6.22	20.03	26.84	23.05	21.9
Ratio of total value awarded to GDP (%)	8.75	22.3	29.2	22.04	15.86

Source: SPP Legal Review Report (VEA, 2016)

Due to this significant share of Public procurement in national GDP, Sustainable Public Procurement can therefore act as a **significant lever to contribute to Sustainable Consumption and Production**.

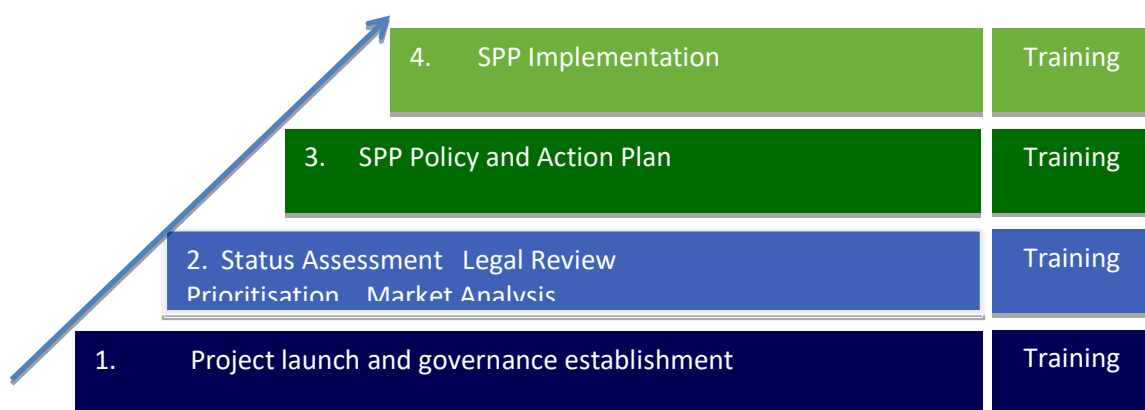
UN Environment provides support to countries to develop and implement Sustainable Public Procurement (SPP) policies by increasing awareness and building the capacities of policy makers and procurement managers.

This report is developed in the framework of the project “**Stimulating the Demand and Supply of Sustainable Products through Sustainable Public Procurement and Eco-labelling**” (SPPEL) funded by the European Commission and implemented by UN Environment (United Nations Environment Programme). Through this project, UN Environment provides support to 13 countries to develop and implement SPP policies by increasing awareness and building the capacities of policy makers and procurement managers. In 4 of them with established ecolabelling programmes - including Viet Nam, the aim is to implement SPP combined with a proactive use of ecolabels.

The methodology applied at the country level is the “UN Environment SPP Approach”, which is conceived as a series of steps followed by governments to first design, and then implement an SPP action plan. One of the key steps of the UN Environment SPP Approach is to undertake a market analysis, which is developed based on the findings of the Legal Review and the Prioritization Exercise reports.

After the completion of the Prioritisation Exercise, this Market Readiness Analysis was conducted to analyse the market for the three types of products selected in the earlier prioritisation step.

1.2. Objectives of the market readiness analysis



The market readiness analysis is conducted to understand the current **demand and supply** of the prioritised products in the public procurement context of Viet Nam, and

to analyse the **potential market** for sustainable alternatives, with respect to the three types of products selected in the earlier prioritisation step.

More specifically, the purpose of the Market Analysis is to:

- Identify specific **sub-categories** of sustainable products which will be purchased during the pilot tenders
- Assess the existing **productive capacities** and responsiveness of the market to SPP tenders targeting the prioritized products;
- Identify potential **threats/opportunities** which SPP might create for SMEs and for the local market;
- Define **sustainability criteria** for each sub-category of product and identifying relevant certification instruments, or references to an ecolabel scheme.
- Recommend measures to **develop the local supply of sustainable products** and increase suppliers' competitiveness. In countries with an existing ecolabelling scheme such as Viet Nam, it shall also include recommendations on the measures to ensure the **supply of products certified under the national ecolabelling scheme**.

1.3. Methodology of the market readiness analysis

The market study was carried out by a consultant group assigned by the Viet Nam Environment Administration in 2016. A desk review with secondary data collected from previous reports and studies was carried out. Qualitative methods were used to undertake the analysis. Since there is limited information on the procurement volume and budget at central level, and insufficient market information regarding the prioritised products, an interview protocol was developed to gather the information from representatives of both public and private sectors. The objective of the interview was to detect the respondents' general views on sustainable development and to gather information about the possible or expected sustainable criteria for each product, as well as the challenges faced with respect to the procurement of sustainable goods.

II. IDENTIFICATION OF SUB-CATEGORIES OF SUSTAINABLE PRODUCTS & SERVICES, AND ELABORATION OF A PRELIMINARY COMPENDIUM OF SUSTAINABILITY CRITERIA AND MEANS OF VERIFICATION

2.1. Prioritisation Exercise results

Based on the suggested 15 product categories listed on the European Union (EU) GPP portal website¹, the consultants team discussed with the members of the Steering Committee and two experts from the Viet Nam Green Label Office and Department of Procurement Management, to identify preliminary product categories. 15 product categories were identified, including 44 products, as described in the table below.

Table 2- Preliminary product categories

Type of products	Product
1. Cleaning products and services	1. Office cleaning services
	2. Glass cleaning liquid
	3. Hand dish-washing liquid
	4. Soap bars
2. Paper	1. Office paper
	2. Material paper/paper pulp ²
	3. Cover paper
3. Drinks and foods	1. Fruits
	2. Catering services
	3. Purified water
	4. Beverage vending machine
4. Furniture	1. Wooden chairs
	2. Wooden tables
	3. Plastic chairs
	4. Plastic tables
	5. Document cupboard
5. Gardening, landscape services	1. Outdoor trees and lawn

¹ http://ec.europa.eu/environment/gpp/eu_gpp_criteria_en.htm

² material paper or paper pulp purchased by state-owned companies to produce paper products

	2. Indoor trees
	3. Landscape services
6. Printing devices	1. Printer/ Photocopy machine
	2. Ink cartridge
	3. Printing services
7. Indoor light system	1. Incandescent lamps
	2. Fluorescent lamps
	3. LED lights
8. Office IT devices	1. Desktop computers
	2. Monitors
	3. Laptops
	4. Tablets
9. Batteries	1. Batteries
10. Paint	1. Outdoor paint
	2. Interior paint
11. Textile/garment products	1. Office uniforms
	2. Safety uniforms
12. Public lighting	1. Public lighting system
	2. Traffic lights
13. Transport	1. Cars (automobile)
	2. Motor-cycles
	3. Other vehicles
	4. Transportation/express service
14. Office electric appliance	1. Televisions
	2. Water kettles
15. Fan, air-con	1. Electric fans
	2. Air-conditioners

The consultant applied the methodological tools provided by UN Environment, adjusted by the Consultant and the Steering Committee to prioritise the 44 preliminary products. After following the prioritisation steps, in close consultation with other experts from

different stakeholder groups, the consultant came up with the final 3 product groups, including 1) office paper, 2) laptops, and 3) fluorescent lamps.

In addition, with the suggestion from UN Environment and the commitment of the Viet Nam Green Label Office, the consultant team agreed to include LED as one “exceptional” prioritised product, in order to promote the production and consumption of these products, especially in the public procurement system.

Following a discussion among the members of the Steering Committee, the Consultant and the Project Management Board, the four products proposed for inclusion in the market readiness analysis are **1) office paper, 2) laptops, 3) fluorescent lamps, and 4) LEDs light.**

2.2. Identification of available sub-categories of sustainable products

In this section, specific sub-categories of sustainable products & services (from prioritized types of products and services) are identified, so as to be used for pilot tenders, in the course of SPP implementation.

Sustainable products are those products that provide environmental, social and economic benefits, while protecting public health and environment over their whole life cycle, from the extraction of raw materials to their final disposal. Therefore, the study aims to define categories of sustainable paper, taking into account a combination of environmental, social and economic sustainability considerations. For each selected type of product & service, available sub-categories of sustainable products are identified below.

At the moment, the Viet Nam Green Label Office has **already developed criteria for: A4 printing paper CFL bulbs.** Meanwhile, the criteria to certify **LED products** are **under development** with the support of UN Environment.

a. Office Paper

Office paper is defined by the Viet Nam Environment Administration (VEA) as paper used for printing, copying, writing, and other stationery paper in offices, schools, and factories.

Environmental sustainability: Environmentally sustainable paper can be defined as any effort undertaken to reduce deforestation resulting from paper production, as well as consuming lower amounts of energy and water, producing fewer emissions and avoiding certain substances in paper production and bleaching. Currently, paper is made in many environmentally responsible forms. Paper can be manufactured from partly to fully recycled materials using pre- and post-consumer waste. It can also be derived from sustainable forests, where trees are grown specifically for paper production. Paper can be produced without chlorine bleaching. Finally, paper can be produced from plant fibers other than timber such as cotton, hemp, bamboo or sugar cane. A4paper is sub-categorized in terms of environmental sustainability as follows:

- Paper produced from sustainable fibre sources: Virgin fibre paper is most commonly used and comes directly from native forests. Virgin fibre paper contains the strongest fibre but has the most immediate impact on the forests. However, that impact is diminished if paper is produced from virgin fibre stemming from legally-harvested woods and from sustainably-managed forests.
- Recycled Paper: Generally, it is applied to any sort of environmentally-friendly paper. It can be made from paper used by the consumer (post-consumer recycling) or from scraps from paper mills which were not used in making finished paper (called post-production or pre-consumer recycling).
- Consuming lower amounts of energy and water: Water and energy consumption levels can vary depending on the different paper production. Many studies show that the production of recycled paper requires less energy and water than those for paper based on virgin fibre.
- Chlorine free: Chlorine or chlorine substances and other chemicals (such as ozone or hydrogen peroxide) can be used in the bleaching process in order to obtain a final product with a high whiteness level. The usage of chlorine in the paper making process is extremely harmful to the environment. There are three

types of sustainable bleaching: process chlorine free (PCF), elemental chlorine free (ECF), and totally chlorine free (TCF).

- Avoiding other chemical substances: Some of the synthetic polymers, colorants, dyes and other chemical that can be used in pulp and paper production have adverse impacts on the environment. Thus, avoidance of certain substances in paper production is important for environmental sustainability.
- Environmentally-friendly packaging: The packaging for the paper will not contain PVC or other chlorinated plastics.
- Environmental sound disposal: Instruction to dispose or recycle the paper and its packaging cover after use.

Social sustainability: It is important that public money is used in a way that achieves as much public benefit as possible. This means that money should not simply be focused on paying for a product, but should attempt, where possible, to achieve sustainable and wider benefits. In this respect, paper, in terms of social sustainability, can be defined as any effort that creates social value in national and local communities. A4 paper is sub-categorized in terms of social sustainability as follows:

- Compliance with the Law on Labour: The producers and distributors must comply with all the contents regulated in the Law on Labour. If the producer is from another country and sells the paper directly to the buyer in Viet Nam, it has to **comply with its national law on labour and other international labour standards** and human rights laws.
- Create **equal opportunity** in recruitment: The producers and distributors create opportunities for female employees, people with disabilities, and people from ethnic minorities to get job opportunities in their companies/factories with the same benefits as regular workers.

Economic sustainability: Paper, in terms of economic sustainability, can be defined as a contribution to local economic outcomes including cost savings. A4 paper is sub-categorized in terms of economic sustainability as follows:

- Small enterprise as regulated in the Law of Enterprise;
- Percentage of the input material from local resources (not from imported sources);
- Preference for domestic producers

Viet Nam Green Label Office developed the **Green Label criteria for office paper** in 2014, coded as NXVN 07:2014. The criteria clearly defined the requirements for input material; production process; marketing, purchasing and consuming; and finally disposing. However, since the development of the criteria, there is to this date no company certified with Green Label, due to the limited awareness of consumers. For example, the Van Diem Paper Company (PhuXuyen, Hanoi) was one of the pioneers in producing paper with less whitening compounds to reduce production cost, as well as reduce the eye dazzle and wanted to be certified with the Green Label. However, during the time applying for the ecolabel, the company's board of directors had to stop producing that "less white" paper, as a significant amount of this product could not be sold because the market still prefers white paper.

Besides the Green Label for office paper, there are some international ecolabels currently applied to imported office paper products sold in Vietnamese market, such as FSC and PEFC labels.

The **Forest Stewardship Council (FSC)** is an international non-profit, multi-stakeholder organization established in 1993 to promote the responsible management of the world's forests. The FSC does this by setting standards on forest products, along with certifying and labelling them as eco-friendly.

- **FSC forest management certification** confirms that the forest is being managed in a way that preserves the natural ecosystem and benefits the lives of local people and workers, all the ensuring that it sustains economic viability. Forest management certification is awarded to forest owners and managers whose operations and processes meet FSC standards.
- **FSC chain of custody certification** verifies that FSC-certified material has been identified and separated from non-certified and non-controlled material as it makes its way along the supply chain from point A all the way through to point B. To achieve chain of custody certification, the business must meet FSC-STD-40-004 Chain of Custody Certification standard. Chain of custody certification applies to businesses that manufacture or sell forest products. It confirms that

FSC-certified material is handled and tracked correctly throughout the entire supply chain³.

According to the Law of Procurement, a bidder will be assessed and selected based on two major group of criteria, the first one is **assessment criteria on bidder experience and capacity**, the second one is **assessment criteria on technical specification of the product**. The assessment criteria on bidder experience and capacity cover the experience of bidder in providing the same products in the past, production and commercial capacity, and financial capacity. There are also some social and economic criteria which are currently applied for **assessing preference criteria given to contractors**. The assessment criteria on technical specification of the product may vary depending on the type of product and the needs of the buyers.

Based on all the above information, we propose the initial additional criteria on technical specification of paper product and sub-categories of office paper to be considered before assessing the market as shown in the table below:

Table 3 Sub-categories of office paper

Criteria	Sub-categories
<i>Current selection criteria</i>	
Multiple uses (writing, printing, copying)	
2 side printable	
Weight	
Whiteness (ISO)	
<i>Environmental</i>	
No usage of halogen compounds or chlorine	Toxic free paper
No usage of APEO (alkyl phenol ethoxylates) and NPEO (nonylphenolethoxylates)	
No usage of dyeing chemical which can be harmful for users	
Amount of EDTA (ethylene diaminetetraacetic acid), DTPA (diethylenetriaminepentaacetic acid) used in the production process is less than 2.5kg /1 ton of	

³<https://ic.fsc.org/en/what-is-fsc-certification/chain-of-custody-certification>

pulp powder.	
Green Label	Paper with certified ecolabels
FSC, PEFC or equivalent labels	
Percentage of raw material (wood, bamboo) exploited from FSC certified forests	Paper made with material from responsible sources
Percentage of raw material (wood, bamboo) exploited from mature planted forest or sustainably-managed forest, which create no harm to the natural forest in the same geographical area	
Amount of water consumed in paper production	paper produced with resource-efficient methods
Amount of energy consumed in paper production	
Usage of renewable energy in production	
Packaging with recycled material	Environmentally-friendly packaging paper
Instruction for disposal	Environmentally-friendly disposal of paper
<i>Social</i>	
Compliance with the Law on Labour	Paper produced or distributed by socially-responsible companies
Recruitment process based on equal opportunities (creating opportunities for female employee, people with disabilities, and people from ethnic minorities)	
Percentage of female employees	
Percentage of employees with disabilities	
Percentage of employees from ethnic minorities	
Ensure social welfare of employees during the bidding, contracting and implementation of this bid	
<i>Economic</i>	
Small enterprise as regulated in the Law of Enterprise	Paper produced or distributed by SMEs
Percentage of the input material originating from local resources (not from imported sources)	Paper made from local material
Percentage of international/foreign capital share in the company's total capital	Paper produced or distributed by domestic companies

b. Laptops

Laptop is defined by VEA as an electronic device which is used for data processing, calculating, writing; designed to be able to carry away; able to operate in a significant time without connecting to power source; using an integrated monitor powered by the laptop battery or other mobile electric supplier. The power cord and charger of the laptop is also considered as a part of the laptop itself.

Environmental sustainability: Environmentally sustainable paper can be defined as any effort undertaken to reduce deforestation for paper production, as well as consuming lower amounts of energy and water, producing fewer emissions and avoiding certain substances in paper production and bleaching. Currently, paper is made in many environmentally responsible forms. Paper can be manufactured from partly to fully recycled materials using pre- and post-consumer waste. It can also be derived from sustainable forests, where trees are farmed specifically for paper production. Paper can be produced without chlorine bleaching. Finally, paper can be produced from plant fibers other than timber such as cotton, hemp, bamboo or sugar cane. A4 paper is sub-categorized in terms of environmental sustainability as follows:

- Paper produced from sustainable fibre sources: Virgin fibre paper is most commonly used and comes directly from native forests. Virgin fibre paper contains the strongest fibre but has the most immediate impact on the forests. However, that impact is diminished if paper is produced from virgin fibre stemming from legally harvested woods and from sustainably managed forests.
- Recycled Paper: Generally, it is applied to any sort of environmentally-friendly paper. It can be made from paper used by the consumer (post-consumer recycling) or from scraps from the paper mills that were not used in making finished paper (called postproduction or pre-consumer recycling).
- Consuming lower amounts of energy and water: Water and energy consumption levels can vary depending on the different paper production. Many studies show that the production of recycled paper requires less energy and water than those for paper based on virgin fibre.

- Chlorine free: Chlorine or chlorine substances and other chemicals (such as ozone or hydrogen peroxide) can be used in the bleaching process in order to obtain a final product with a high whiteness level. The usage of chlorine in the paper making process is extremely harmful to the environment. There are three types of sustainable bleaching: process chlorine free (PCF), elemental chlorine free (ECF), and totally chlorine free (TCF).
- Avoiding other chemical substances: Some of the synthetic polymers, colorants, dyes and other chemical that can be used in pulp and paper production have adverse impacts on the environment. Thus, avoidance of certain substances in paper production is important for environmental sustainability.
- Environmentally-friendly packaging: The packaging for the paper will not contain PVC or other chlorinated plastics.
- Environmental sound disposal: Instruction to dispose or recycle the paper and its packaging cover after using.

Social sustainability: Although there is currently no national laptop producer, the social sustainable criteria then would be applied to the domestic distributors. Laptop is sub-categorized in terms of social sustainability as follows:

- Compliance with the Law on Labour: The distributors must comply with all the contents regulated in the Law on Labour.
- Create equal opportunity in recruitment: The distributors create opportunities for female employee, people with disabilities, and people from ethnic minorities to get job in their companies/factories with same benefits in comparison to regular workers.

Economic sustainability: Laptop in terms of economic sustainability can be defined as a contribution to local economic outcomes including the promotion of local enterprises. Laptop is sub-categorized in terms of economic sustainability as follows:

- The distributor is small enterprise as regulated in the Law of Enterprise
- Percentage of the input material from local resources (not from imported sources)
- Preference for the domestic enterprises

Currently, there is no Vietnamese company which is able to produce laptop for the market. All the laptops are imported to Vietnam or assembled in Vietnam by the local enterprises. This leads to the situation the Green Label has not yet been certified for any brand of laptop in Vietnam. However, there are many other ecolabels that could be applied as alternatives for public procurement in Vietnam, e.g. Energy Star, EPEAT, 80 Plus, The Blue Angel, etc.

Energy Star is a U.S. Environmental Protection Agency voluntary program that helps businesses and individuals save money and protect our climate through superior energy efficiency.



Energy Star certified computers deliver substantial savings over standard models. At the date of this report conduction, there are 1472 records found on Energy Star website (<https://www.energystar.gov>) for laptops certified with this label.

EPEAT (Electronic Product Environmental Assessment Tool) is a procurement tool to help institutional purchasers in the public and private sectors evaluate, compare and select desktop computers, notebooks, monitors and printers based on their environmental attributes.



Most EPEAT criteria apply to the registered products, while some address the manufacturer and their corporate performance. Categories include:

- Material choice
- Design for end of life and recyclability

- Product longevity
- Energy efficiency
- Packaging
- Recycling programs
- Corporate performance

Thus, the sub-categories of laptops are proposed in the table below:

Table 4 Sub-categories of laptops

Criteria	Sub-categories
<i>Environment</i>	
Having ISO 14000 certificate	Laptop distributed by company having environmental management standards
Green Label	Ecolabel certified laptop
Amount of energy consumed per 1 product	Resource efficiently produced laptop
Amount of water consumed per 1 product	
Vietnam Energy Star Label	Energy efficient laptop
US Energy Star Label	
Electricity consumption per hour	
EPEAT Label (bronze, silver, gold)	
Packaging with recycled material or non PVC material	Environmental friendly packaging laptop
Environmental sound disposal of packaging material (no harmful chemical created in the disposal phase)	Environmental friendly disposal laptop
<i>Social</i>	
Recruitment process based on equal opportunities (creating opportunities for female employee, people with disabilities, and people from ethnic minorities)	Laptop distributed by social responsible companies
Percentage of employees are female	

Percentage of employees are people with disabilities	
Percentage of employees are people from ethnic minorities	
Ensure the social welfare of employees during the bidding, contracting and implementation of this bid	
<i>Economic</i>	
Small enterprise as regulated in the Law of Enterprise	Laptop distributed by SME
Period of product warranty (including repairing, replacement, maintenance)	Laptop with longer warranty
Period of guaranteeing the availability of device and spare parts including rechargeable batteries (if applicable) from the date of purchase	
Percentage of international/foreign capital share in the company's total capital	Laptop distributed by domestic company

c. Compact fluorescent lamps (CFL)

Fluorescent lamp is a lighting device using arc discharge method, which is different from incandescent bulbs using burning method.

Environmental sustainability:

CFLs have the risk of pollution through using Mercury during production, difficulty in withdrawing Mercury during disposal, packaging, energy consuming, and using different nature resources for production. As fluorescent lamps are currently broadly purchased and equipped in governmental offices, the aim of selecting this product for pilot tenders in the public procurement is to reduce the amount of Mercury through identifying the products that contain less of this chemical element. The environmental sustainability of fluorescent lamps should:

- Ensure the amount of Mercury per unit is under the acceptable threshold: According to the Viet Nam Green Label criteria for fluorescent lamps, the acceptable amount of Mercury is less than 10mg per unit.
- Cadmium (Cd) free and Arsenic (As) free: cadmium and metalloid arsenic have caused major human health problems in various parts of the world. The overt toxicity of these elements has been recognized for many years. Over the years, physicians became increasingly familiar with the symptoms of metal poisoning arising in occupationally exposed workers and in individual cases of poisoning. The products which do not contain Cd and As are better for the health of both workers and users, and neither create toxic waste combining those two toxic chemical.
- Radioisotope free: Compact fluorescent lamps which use magnetic ballasts often contain a trace amount of radioactive material to serve as an electron generator for their starting circuits. A commonly used radioisotope is Pm-147, in an amount close to 0.3 microcurie per lamp.
- Lead (Pb) free welding: Lead is a hazardous and poisonous material. The manufactures of compact fluorescent lamps should stop using lead in welding and soldering, or develop a pathway to stop using lead in the near future.
- Consuming lower amounts of energy and water during production: Water and energy consumption levels can vary depending on the different types of paper production. Many studies show that the production of recycled paper requires less energy and water than those for paper based on virgin fibre.
- Efficient energy consumption in operation: Different types of CFL may have the same wattage consumed in a unit of time. However, they may provide different brightness (lumens). It is needed to select the right CFL with appropriate levels of energy consumption for the expected lumens.
- Environmentally-friendly packaging: Packaging for the paper will not contain PVC or other chlorinated plastics.
- Environmentally-sound disposal: Instruction to dispose or recycle the product and its packaging cover after use.

Social sustainability:

- Compliance with the Law on Labour: The producers and distributors must comply with all the contents regulated in the Law on Labour. If the producer is from another country and sells the paper directly to the buyer in Viet Nam, it has to comply with its national law on labour and other international labour standard and human rights law.
- Create equal opportunity in recruitment: The producers and distributors create opportunities for female employees, people with disabilities, and people from ethnic minorities to get job opportunities in their companies/factories with the same benefits as regular workers.

Economic sustainability:

- Longevity of the lamp
- Small enterprise as regulated in the Law of Enterprise
- Percentage of the input material originating from local resources (not from imported sources)
- Preference for domestic producers

Table 5 Sub-categories for compact fluorescent lamps

Criteria	Sub-categories
<i>Current selection criteria</i>	
Brightness (in lumens)	
Wattage	
Bulb longevity	
Guarantee	
<i>Environment</i>	
Contain less than 10mg Mercury per unit	Toxic free CFL
No usage of Cadmium (Cd) and Arsenic (As)	
Radioisotope shall not be detected	
No usage of lead (Pb) compound in welding, or commitment to stop using after 12 months since the date of contract signing	
Having ISO 14000 certificate	ISO 14000 Certificate

Green Label	Green Label Certificate
Amount of energy consumed per 1 product	Resource efficiently production of CFL
Amount of water consumed per 1 product	
Viet Nam Energy Star Label	Energy-efficient CFL
Packaging with recycled material (cardboard paper, recyclable plastic)	Environmentally-friendly packaging of CFL
Environmentally-sound disposal of packaging material (no harmful chemical released in the disposal phase)	Environmentally-friendly disposal of CFL
<i>Social</i>	
Recruitment process based on equal opportunities (creating opportunities for female employees, people with disabilities, and people from ethnic minorities)	CFLs produced and distributed by socially-responsible companies
Percentage of female employs	
Percentage of employees with disabilities	
Percentage of employees from ethnic minorities	
Ensure social welfare of employees during the bidding, contracting and implementation of this bid	
<i>Economic</i>	
Longevity of the lamp	Long-life CFL
Small enterprise as regulated in the Law of Enterprise	CFL produced by SMEs
Period of product warranty (including repairing, replacement, maintenance)	Better warranty of CFL
Period of guaranteeing the availability of device and spare parts from the date of purchase	
Percentage of international/foreign capital share in the company's total capital	CFL produced by domestic

	company
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d. LED lights

Environmental sustainability:

Although LED lights have been currently promoted in both production and consumption due to their advantages in energy saving, mercury-free production, and good quality of light, the production and disposal process of LED lights still have some environmental adverse impacts. LED lights still have a measureable amount of lead (Pb) and arsenic (As) and other toxic chemical compounds with high possibility of creating environmental pollution. In order to control and minimize the potential impacts to the environment, fluorescent lamps should be:

- Toxic-free: In order to enhance the trust of customers in the aspect of health protection and also mitigate environmental impacts, LED lights must not have lead (Pb), cadmium (Cd), mercury (Hg), and other chemical compound combining hexa-chromium (Cr6+) in the products.
- Halogen-free: In general, the term “halogen-free” implies that the product material does not contain any halogenic compounds. “Halogen-free” indicates that a product enhances safety, health protection and is environmentally better for a given application. For example, PVC should not be used to produce plastic components of LED lights.
- Efficient energy consumption in operation: Rather than CFLs, LED is a highly energy efficient lighting technology. In the United States, residential LEDs, especially the products labelled with Energy Star, use at least 75% less energy, and last 25 times longer, than incandescent lighting⁴. However, it should be taken into consideration the amount of energy consumed by LED to provide the same brightness. The selection of appropriate LED with lower energy consumption for the expected lumens and uses (ceiling lamp, desk lamp, hallway lamp, etc.) thus may be essential.
- Environmentally-friendly packaging: packaging for LED will not contain PVC or other chlorinated plastics.

⁴ <https://energy.gov/energysaver/led-lighting>

- Environmentally-friendly shock resistance material in packaging: the shock resistance material (paper, plastic, Styrofoam, etc.) should not create any negative impacts to both human health and environmental health. They should be produced from recycled paper, or recycled post-consumer plastic.
- Environmentally-sound disposal: Instruction to dispose or recycle the paper and its packaging cover after use.

Social sustainability:

- Compliance with the Law on Labour: producers and distributors must comply with all stipulations in the Law on Labour. If the producer is from another country and sells LED directly to the buyer in Viet Nam, it has to comply with the national law on labour and other international labour standard and human rights law.
- Create equal opportunities in recruitment: The producers and distributors create opportunities for female employees, people with disabilities, and people from ethnic minorities to get job opportunities in their companies/factories with the same benefits as regular workers.

Economic sustainability:

- Longevity of the lamp
- Small enterprise as regulated in the Law of Enterprise
- Percentage of the input material originating from local resources (not from imported sources)
- Preference for domestic producers

Table 6 Sub-categories of LED lights

Criteria	Sub-categories
<i>Current selection criteria</i>	
Brightness (in lumens)	
Wattage	Energy efficiency
Bulb longevity	Long lasting lamp
Guarantee	
<i>Environment</i>	

Contain no cadmium (Cd), mercury (Hg), and other chemical compound combining of hexachromium (Cr6+)	Toxic free LED lights
Contain no halogen plastic (PVC)	
Having ISO 14000 certificate	ISO 14000 Certificate
Green Label	Green Label Certificate
Amount of energy consumed per 1 product	Resource efficient production of LED lights
Amount of water consumed per 1 product	
Viet Nam Energy Star Label	Energy-efficient LED lights
Packaging with recycled material (cardboard paper, recyclable plastic)	Environmentally-friendly packaging of LED lights
Environmentally-friendly shock resistance material in packaging	
Environmentally-sound disposal of packaging material (no harmful chemical released in the disposal phase)	Environmentally-friendly disposal of LED lights
<i>Social</i>	
Recruitment process based on equal opportunities (creating opportunities for female employees, people with disabilities, and people from ethnic minorities)	LED lights produced and distributed by socially-responsible companies
Percentage of female employees	
Percentage of employees with disabilities	
Percentage of employees from ethnic minorities	
Ensure social welfare of employees during the bidding, contracting and implementation of this bid	
<i>Economic</i>	
Small enterprise as regulated in the Law of Enterprise	LED lights produced by SMEs

Period of product warranty (including repairing, replacement, maintenance)	Better warranty of LED lights
Period of guaranteeing the availability of device and spare parts from the date of purchase	
Percentage of international/foreign capital share in the company's total capital	LED lights produced by domestic companies

III. MARKET ANALYSIS FOR PAPER

3.1. Supply of office paper

In a normal office, there are three types of office papers which are regularly purchased by the procurement officer, namely printing paper (A4 paper), notebooks (A4, A5, A6), envelopes (A4, A5), and stationery paper (sticky notes, notebooks, etc.). However, the stationery paper and notebooks are usually considered as part of the stationery procurement package, thus there is no specific tender for purchasing sticky notes and notebooks.

Office paper is defined by the Viet Nam Environment Administration (VEA) as paper used for printing, copying, writing, and other stationery paper used in offices, schools, and factories. There are no official statistics on the number of paper producers in Viet Nam. According to the **Viet Nam Pulp and Paper Association (VPPA)**, there could be thousands of enterprises working on paper producing, processing, recycling and importing. However, there are only **91 enterprises officially registered as member of VPPA**. And **from VPPA source, there is no statistical data of the number of enterprises producing recycled paper and/or eco-friendly paper**.

The table below shows the volume of paper consumed, produced, imported and exported in 2015, according to VPPA.

Table 7 Volume of paper sold in Viet Nam market in 2015

(includes both public and private, setors' consumption)

Unit: tons

Type	Jan-Jun/2015	Jul-Dec/2015
Consumption	2,021,860	2,137,140
Newspaper printing	59,000	62,000
Office paper	226,200	233,800
Domestically produced	1,003,850	1,043,150
Newspaper printing	20,150	20,850
Office paper	147,000	153,000
Imported	1,094,660	1,178,340
Newspaper printing	38,850	41,150
Office paper	91,000	94,000
Exported	74,550	80,450
Office paper	11,800	13,200

Source: VPPA, 2016⁵

The table above indicates the fact that the volume of paper produced domestically is currently **not adequate for national consumption**, which only satisfies half of the demand. Thus, Viet Nam has to import more than 1 billion tons of paper to meet the needs, which include 38.5 thousand tons for newspaper printing and 91 thousand tons for office paper producing. The **biggest paper producers in Viet Nam are Viet Nam Paper Corporation, Saigon Paper JSC, Tan Mai Paper JSC, Chanh Duong Paper JSC, An Binh Paper JSC, and Viet Tri Paper Company**. The fact is that the consumer rarely buy paper directly from the producer, but from the distributors, or in the supermarket.

The figure below show the production capacity of 7 biggest paper producers in Vietnam in 2008⁶.

⁵Viet Nam Pulp and Paper Association data

⁶HABUBANK, Summary report of Vietnam paper industry

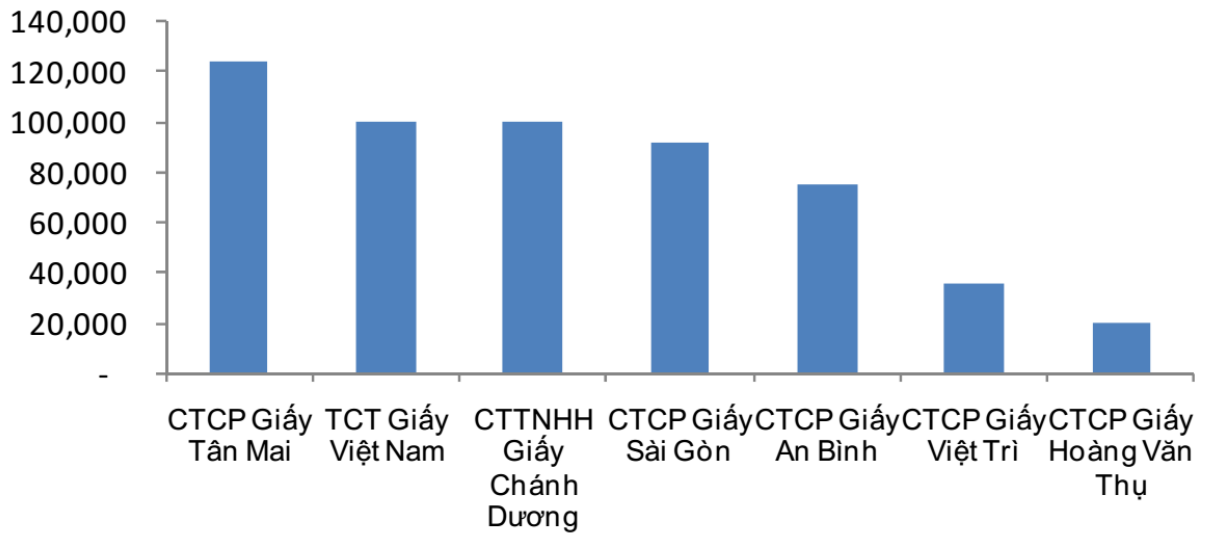


Figure 1 Production capacity of leading paper company in Vietnam (Source: HABUBANK)

Regarding the market share of those companies, the biggest companies account for 5-8% of the market (Vietnam Paper Corporation, Tan Mai Paper JSC, Saigon Paper JSC), which are followed by the smaller producers holding about 2-4% of the market (Viet Tri Paper Company, An Binh Paper JSC).

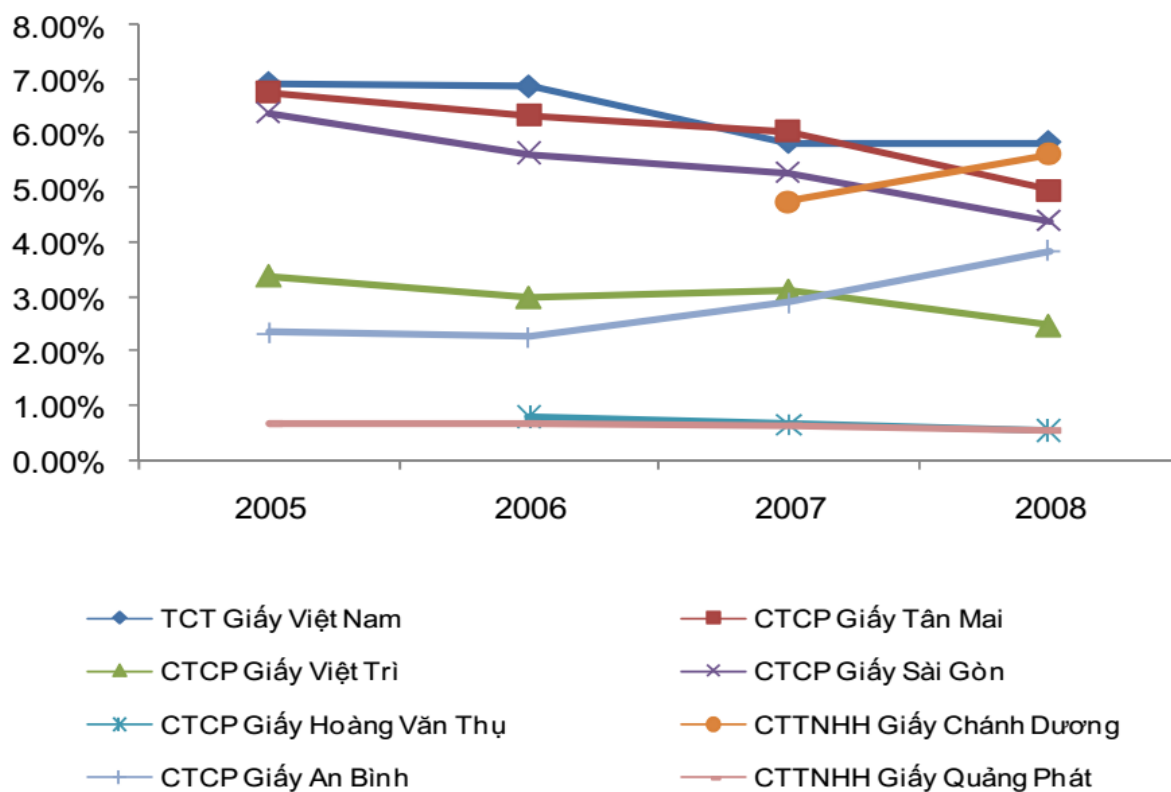


Figure 2 Market share of leading paper companies in Vietnam (Source: HABUBANK)

The above figure only shows the general picture of market share in paper product in the domestic market. However, with a specific product, there are some leading producers with significant market share. In the market of **printing and writing paper, Vietnam Paper Corporation, owner of Bai Bang Paper and Clever Up trademark**, holds the biggest share as of **26.3%**. Tan Mai is the biggest player in magazine paper production, with 52.2% market share, while Saigon Paper JSC leads the tissue paper industry, and Chanh Duong Paper JSC is the biggest producer of packaging paper⁷. Recently, the market share of domestic paper producers has been decreasing due to the new establishment and operation of new paper producers (domestic, joint-stock, and international companies) and the increase of imported paper.

Hai Tien Paper JSC, Khai Hoang Paper Company, VinhThinh Paper Company, Dong ThinhPhat JSC, Hoang Ha Stationery JSC, are the most popular importers and distributors of office paper products.

⁷HABUBANK, Summary report of Vietnam paper industry

Table 8 Price of popular printing paper products

Paper type	Producer	Eco-friendly/ sustainable label or declaration	Size	Weight (gr/m ²)	Unit	Price (VND)
Double A	Double A	Company declaration	A4	70	paper ream (500 sheets)	49,545
Paper One	APRIL Group	PEFC, Company declaration	A4	70	paper ream (500 sheets)	48,636
Supreme	SCG Paper Plc	FSC	A4	70	paper ream (500 sheets)	47,727
Clever Up	Vietnam Paper Corporation	Company declaration	A4	70	paper ream (500 sheets)	42,727
Bai Bang White Cover	Vietnam Paper Corporation	No	A4	70	paper ream (500 sheets)	40,909
Bai Bang Pink Cover	Vietnam Paper Corporation	No	A4	70	paper ream (500 sheets)	38,182

Source: Dong ThinkPhatCompany's quotation

The average price of the four eco-friendly papers is 47,158 VND, among which Double A paper is the most expensive with 49,545 VND per ream, and Clever Up is the cheapest with only 42,727. In comparison to the conventional paper (Bai Bang White cover and Bai Bang Pink Cover), the **average price of eco-friendly paper** is more than **19% more expensive**. The price for larger volumes can be reduced from 2 to 5%, depending on the volume of paper purchased, rather than the type of paper. Thus in general, the average price of eco-friendly paper is considered as relatively higher than the conventional one.

As stated above, even though printing papers are produced by domestic businesses or imported from international ones, all of the interviewed organizations/agencies stated that they purchased paper from **local distributors or stationery retailers**, who can supply almost all the available paper brands in the market. For example, the Dong ThinkPhat Company Ltd can provide the printing paper from up to 15 different manufacturers. The companies like Dong ThinkPhat actually play the role of contractors for the bidding announced by the public sector.

At the moment, the Viet Nam Green Label Office developed the Green Label criteria for office paper in 2014, coded as NXVN 07:2014. The criteria defined clearly the requirements for input material; production process; marketing, purchasing and consuming; and finally disposing. However, since the development of the criteria, the number of company certified with Green Label is still zero, due to the limited awareness of consumers. For example, the Van Diem Paper Company (PhuXuyen, Hanoi) was one of the pioneers in producing paper with less whitening compounds to reduce production cost as well as reduce the eye dazzle and wanted to be certified with the Green Label. However, during the time applying for the ecolabel, the company's board of directors had to stop producing that "less white" paper, as a significant amount of this product could not be sold because the market still preferred white paper.

3.2. Demand of office paper

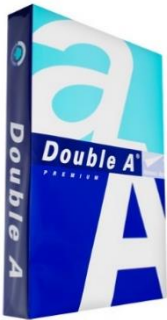


The interviewees (list of interviewees provided in Annex 1) stated that the office paper usually belongs to the stationery category when they submit the procurement plan. The paper is usually **purchased quarterly** by the office itself, rather than using the centralized public procurement system. 4 out of 12 interviewees said that they applied "**competitive quotation offer**", while 7 interviewees applied "**self-procuring**" when they want to buy office paper.

The representatives from 12 agencies were asked to estimate the amount and budget for office paper of their organization for an average year. However, all of them stated that the **demand for office paper varied from quarter to quarter** as they plan for stationery procurement in a quarterly basis. They only have the quota for one officer in

using paper in general. The **average annual budget for stationery is about 2 to 3 million VND for one officer**, of which the quota for office paper is about **4 to 5 ream per officer**.

The interviewees were also asked to identify the most popular printing papers in Vietnamese offices. The result is not surprising as the 4 most popular brands in the market are listed, including **Double A** (Thailand), **Supreme** (Thailand), **Clever Up** (Viet Nam), and **Paper One** (Indonesia).

Table 9. Sustainable alternatives offered by popular printing paper brands in Viet Nam in public procurement

No.	Brand	Manufacturer/ Certificate	Environmental attributes of the product
1	 Double A	Double A (1991) Public Co., Ltd, Thailand/ ISO 14001-2004	Produced from fast growing hybrid Eucalyptus tree. Encouraging farmers to grow the Double A Paper Tree on their paddy ridges increases green areas which absorb carbon dioxide causing global warming and climate change.
2	 Supreme	SCG Paper Plc., Thailand/ ISO 14001, Forest Management, Chain-of-Custody	"FM" (Forest Management) and "CoC" (Chain-of-Custody) certified by FSC (Forest Stewardship Council) standard in forest management, pulp production, and paper production.
3	 Clever Up	Vietnam Paper Corporation, Viet Nam/ ISO 14001-2004	Produced from fast growing Eucalyptus and Acacia plantations which help preserve natural forests

4	<p>Paper One</p> 	<p>APRIL Group, Indonesia/ PEFC Certified, ISO 14001</p>	<p>Using 100 percent renewable plantation fibre in paper products</p>
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The above table also concretizes the fact that the paper offer is insufficient in Viet Nam; where among 4 most popular brands, there is only 1 Vietnamese brand (Clever Up - by Vietnam Paper Corporation). The 2 most popular brands are from Thailand (Double A, Supreme).

Among the characteristics of paper which the representatives of state agencies select as the criteria to decide which paper they will buy, “**2-side printing**” is the most picked with 11 out of 12 interviewees selected, followed by **weight of the paper** (9/12), **brightness** (5/11) and **toxic-free** (3/12).

Table 10 Criteria for office paper

Characteristic	Percentage	Number
Weight	75%	9
Brightness	42%	5
2-side	92%	11
Toxic-free	33%	3
Sustainable source of material	0%	0
Ecolabel	0%	0

Although the interviewees currently do not select “sustainable source of material” and “ecolabel” as the criteria to buy office paper, they expressed the **willingness** to buy eco-friendly paper, especially the paper produced from sustainably managed forest or certified with a well-known label.

IV. Market analysis for laptops

4.1. Supply of laptops

Currently, there is no Vietnamese company which is able to produce laptop for the market. All the laptops are imported to Vietnam or assembled in Vietnam by the local enterprises. The contractors for those laptop procurement bidding are the local

retailers, which can supply different type of laptops from different manufacturers and brands. The most popular retailer of laptops in Vietnam are FPT, The Gioi Di Dong, Tran Anh, Phuc Anh, Nguyen Kim, etc. Among the laptop distributors, FPT holds 23% of the market share, all electronics retailers hold 22%, all computer and laptop retailers hold 10%, according to GfK data⁸.

FPT Digital Retail Joint Stock Company

In August 2007, the FPT Retail Limited Company was established, operating the [IN]Store chain nation-wide. In 2012, FPT Retail Ltd changed its name to FPT Digital Retail Joint Stock Company and became a member of FPT Corporation. The new company operates two chains namely FPT Shop and F Studio by FPT. After nearly 10 years operating, the company has continued to develop its distribution and retail networks in all provinces of the country. FPT Shop is considered as one of the biggest digital retail chains in Vietnam with more than 420 shops and more than 3000 employees.



FPT shop is now the official and authorised retailer/distributor for laptops products from different producers, including Dell, Acer, Lenovo, HP, Toshiba, etc., with competitive price.

Mobile World Group

Mobile World Group (in Vietnamese The Gioi Di Dong Investment Joint Stock Company) is a joint stock company established in 2009 according to the Business License no.

⁸Data from GfK in Vietnam

4103012275 issued by Binh Duong Provincial Department of Planning and Investment dated on 16 January 2009.

Mobile World Group operates two retail chains namely The Gioi Di Dong and Dien May XANH. Recently, the company has developed rapidly to become the biggest digital retail chain in Vietnam with more than 1000 shops and supermarkets in all 63 provinces of Vietnam.



4.2. Demand analysis for laptops

The laptops are not usually purchased in large quantity by the public sector. More than half of respondents in the interview stated that they have never purchased the laptops in the public procurement system. The laptops are somehow considered as personal working tool of the officials in Vietnam rather than a public asset, thus usually bought by the government officials with their own budget. However, the respondents stated that the laptops are usually purchased for the projects implemented by governmental agencies and then used by the project staff. The number of laptops purchased in one project is varied depending on the size of staff, usually from 3 to 5 laptops. The statistic from IDC showed that Dell and Asus are the leading brands of laptop in Vietnam market, which contribute 35% to the total laptop revenue. The following brands are HP, Acer, and Lenovo.

According to the top 10 best-selling laptops in 2016 summarised recorded by FPT Shop, Asus and Dell are the leading brands. In detail, Asus had 6 best-selling products

including Asus X540SC, Asus X540LJ, Asus X455LA, Asus A556UR, Asus E200HA, and Asus X540LA. The second best-seller position went to Dell with 4 products, namely Dell N3558G, Dell N3558, Dell N3552 P, and Dell V5459. In which, Dell N3558G was the most purchased product at FPT Shop chain stores in the year 2016⁹.

Almost all the laptops sold in Vietnam market are imported to or assembled in Vietnam, with the application of other ecolabels according to the producers' policy. This leads to the situation the Green Label was developed but has not yet been certified for any brand of laptop in Vietnam. However, there are many other ecolabels that could be applied as alternatives for public procurement in Vietnam, e.g. Energy Star, EPEAT, 80 Plus, the Blue Angel, etc. In addition, there may be other possible criteria in environmental aspect, e.g. contains of hazardous chemical, packaging with recycled material, instruction for disposal; in social aspect, e.g. composition of female labour; and in economic aspect, e.g. the bidder is a SME according to the Law of Business, laptops are assembled domestically by Vietnamese workers.

As the volume of laptop purchased is very small (from 3 to 5) and the laptop procurement is not usually relying on state budget, we recommend to skip laptops in the piloting phase of the SPPEL project.

V. MARKET ANALYSIS FOR CFL AND LED BULBS

5.1. Supply of compact fluorescent and LED lamps

According to the **Viet Nam Lighting Association (VLA)**¹⁰, there are approximately **200 enterprises** in Viet Nam currently working in light bulbs production and trading, including both **national enterprises and international enterprises** which have representative offices in Viet Nam. The number of enterprises joining this market has increased recently, especially importing companies.

The data summarised from the market research conducted by DienQuang Lamp JSC showed that the lamp and light bulb market in Viet Nam is composed by **60% of domestic products and 40% of foreign products**. In the 'low' segment (low quality, cheap price), Chinese products account for a major contribution, more than 80%; the rest are small enterprises from Viet Nam.

⁹Data from FPT Corporation



¹⁰<http://hoichieusangvietnam.com/>

In the middle and high segments, the biggest Vietnamese companies, e.g. **DienQuang** and **Rang Dong**, have to intensely compete with well-known producers such as Philips, Osram, and Panasonic¹¹.

Regarding the market of regular lamps, especially compact fluorescent lamps (CFL) and LEDs, there is intense competition between the three biggest brands, DienQuang, Rang Dong, and Philips, which all have long-story trademark and experience in doing business in Viet Nam. **DienQuang** is now holding the **biggest share of the market**, which is approximately **40%**, followed by **Rang Dong with 25%**, and **Philips with more than 15%**. Besides the three leading companies, there are many international, joint-venture, and domestic companies emerging as new players in the CFL and LED market¹².



Table 11 Price of popular 3U 14Watt Day light CFL products

Product type/code	Producer	Eco-friendly/ sustainable label or declaration	Longevity	Lumens	Price (VND)
Model: CFL 3UT3 14W 	Rang Dong	Vietnam Energy Star	6000h	800	39,600
Compact CFL-3U- CSN 14W-DL-B22 T4 	Dien Quang	Vietnam Energy Star, Vietnam Green Label	6000h	750/ 800	39,600
Philips 3U 14W	Philips	Energy Saver	up to	790	45,500

¹¹ Summarised from Market research on light bulb in Viet Nam. DienQuang Lamp Joint Stock Company.

¹² <http://www.brandsvietnam.com/5762-Thi-truong-bong-den-Cuoc-dua-cua-3-anh-tai>

		(Save label)	8000h		
Compact Osram Dulux Value 14W/827 	Osram	Energy Saver Label	up to 10000h	770	47,500
Compact 3U 14W Eurosuper 1191029E 	Eurosuper - Eurostar Vietnam	None	8000h	832	40,000





Source: Summarized from distributors

The table above shows that the price of domestic CFL products with ecolabel (Rang Dong and Dien Quang) is 1% cheaper than the non-label product (Eurosuper). However the longevity of light bulbs from Eurosuper is 8000 hours, which is 2000 hours longer than Rang Dong and Dien Quang CFL bulbs. The imported CFLs are much more expensive than the domestic ones. With the same technical specifications of 3U, 14W, E27 socket, and day light colour with similar lumens, Philips bulbs is 13.75% more expensive, and the price of Osram bulbs is 18.75% higher than Eurosuper ones.

With the same brightness of about 800 lumens, we select some 9 Watt day light LED bulbs to compare the price of LED products among themselves and with CFLs products.

Table 12 Price of popular 3U 9 Watt day light CFL products

Product type/code	Producer	Eco-friendly/ sustainable label or declaration	Longevity	Lumens	Price (VND)
Comet CB13-9D/W	Khai Toan JSC	Self-declaration on energy saving, eye- sight safety, and eco- friendly	25,000h	800	66,000

					
<p>LEDBUA80 09727</p>  <p><input type="checkbox"/> Ánh sáng trắng/ Daylight</p>	<p>Dien Quang</p>	<p>Self-declaration on energy saving</p>	<p>up to 30,000h</p>	<p>800</p>	<p>71,200</p>
<p>LED A65N2/9W</p> 	<p>Rang Dong</p>	<p>Self-declaration on no mercury, no toxic matters, no radiation and energy saving</p>	<p>15000h</p>	<p>830</p>	<p>77,000</p>
<p>Philips Ledbulb 9W E27 6500K 230V A60</p> 	<p>Philips</p>	<p>Self-declaration on energy saving, less flare</p>	<p>15,000h</p>	<p>806</p>	<p>99,500</p>
<p>Dragon DRL-BULB-7W</p>	<p>Dragon-Taiwan</p>	<p>Self-declaration on energy</p>	<p>20,000h</p>	<p>770</p>	<p>60,000</p>

	(Epistar)	saving and non-toxic			
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Source: Summarized from distributors

There are many LED bulb products currently being traded in the market, including both domestic produced and imported ones. The price of domestic LED bulbs range from 66,000 VND to 77,000 VND. While the price of imported LED bulbs varies depending on the trademark and origin of the products. For the similar technical specification, a LED bulb imported from Taiwan costs 60,000 VND, while a Philips ones cost 99,500 VND.

All the producers have some self-declaration on energy saving, long lasting, eye-sight safety, and non-toxic, while none of them has been certified with Vietnam Green Label, Vietnam Energy Star or any equivalent international label.

In fact, in almost all office building, the ceiling lighting system is installed with tube fluorescent. CFL and LED bulbs (E27 socket) are usually used for desk lamps, and installed in stairway area, restroom. In case of selecting a bulb for those purpose, LED should be taken into consideration for its better performance and higher efficiency.

We take 2 products from Dien Quang to analyse the difference between CFLs and LEDs.

Table 13 Comparison between Dien Quang CFL and LED bulb

Type of products	Code/model	Longevity	Price (VND)	Price for 30,000h lighting (VND)
CFL bulb	CSN 14W-DL-B22 CFL-3U-T4	6,000h	39,600	198,000 (plus 420 kWh of electricity)
LED bulb	LED BUA80 09727 9W	15,000h	71,200	142,400 (plus 270kWh of electricity)

Source: Calculation by author

As shown in the above table, the price for purchasing LED bulb for the same lumen and time of lighting is much cheaper than CFL bulb (71.9%). With the average price for electricity as of 2,000 VND per 1kWh, the instalment of LEDs can save 300,000 VND for 30,000 hour of lighting.

Key players in CFLs and LEDs industry in Vietnam *DienQuang Lamp Joint Stock Company*

In order to catch the modern trend of lighting innovation and sustainable consumption, DienQuang started to research LED products in 2007 with the technical support from Japan. Since then, DienQuang has invented and improved hundreds of LED products every year. In 2014, DienQuang invested 30 billion VND to operate another production line with the technology support from Panasonic. This production line helped DienQuang to increase its LED production capacity to 20 million products annually, and become the largest LED producer in Viet Nam.

With 5 international standard factories equipped with synchronous and modern production lines (including one factory in Venezuela), DienQuang has the ability to strictly control every production process both from raw materials to finished products. Along with other awards for good quality and brand such as **CE Compliance with EU Safety Standards (CE mark)**, **“Viet Nam Energy Star”** Trademark granted by Ministry of Industry and Trade, DienQuang is the only Vietnamese company having the **“Viet Nam Green Label”** certified by Ministry of Natural Resources and Environment. The products of DienQuang certified with Viet Nam Green Label include: 33 types of CFL, 10 types of tube FL, and 3 types of double wing FL.



điện quang

Sản phẩm **LED**
TỬ THƯƠNG HIỆU CHIẾU SÁNG
HÀNG ĐẦU VIỆT NAM

- ✓ Chất lượng ánh sáng hoàn hảo
- ✓ Tuổi thọ 30,000h.
- ✓ Sử dụng chip LED SMD tiên tiến.
- ✓ Thiết kế thẩm mỹ, hiện đại, đáp ứng mọi nhu cầu chiếu sáng.

LED LIGHTING
Đỉnh Cao Chiếu Sáng Hiện Đại

LED SMD
Ánh Sáng Hoàn Hảo

30x

Rang Dong Light Source & Vacuum Flask Joint Stock Company

In 2010, Rang Dong cooperated with Hanoi University of Technology to jointly establish the HUT-RALACO Lab which focused on research and application of new technologies, new materials in lighting production, including LED technology. In March 2011, Rang Dong established the Lighting Research and Development Centre. The Centre had brought together the respected experts in lighting sector to research and to develop LED products. Up to 2015, Rang Dong possesses a LED production line with the capacity of 8 million pcs/year.



KhaiToan Joint Stock Company

In the LED light market, besides the two big ones, namely Rang Dong and DienQuang, which are former state enterprises, there is another one which is a private enterprise but also very famous for its LED product, KhaiToan Joint Stock Company (in short KTG). KTG, which was previously known as Hong Phuc Electrical Equipment and Lighting, has been established since 1994. Currently, it is among the leading group in supplying electrical equipment and lighting products in Viet Nam. It possesses 3 famous brand names, including two LED brands AC and Comet. In addition, with its ability, experience and potential, **KTG is the only Asian partner which is selected by Osram (Germany) to exchange trade marks in order to produce lighting products for the Southeast Asia market in German standard under Osram – AC brand name.**



5.2. Demand analysis of compact fluorescent and LED lamps

In general, the demand for LED lighting system is mostly from the **civil construction** and **engineering sector**. The public sector seems to hesitate to purchase LED lights through the public procurement system, since the office facilities were built long time ago with the installation of CFL and fluorescent tube lighting system. CFLs and fluorescent are usually purchased by the procurement officers for maintenance purposes. Currently, **LED lights are only purchased in small quantity by the governmental agencies**, and the product is mostly **desk lamp**. The CFLs and LEDs are usually purchased by using competitive quotation offer method, in which at least 3 providers should submit the quotation along with technical specifications and guarantee policy.

In average, there are approximately **8 to 10 compact fluorescent lamps** currently installed and operated **in an office room**, depending on the size and the design of the office. Viet Nam Environmental Administration (VEA) has about 200 CFLs in its office, while the number of CFLs in Viet Nam Textile and Garment Group (VTGG) is more than 300. The quota for purchasing new CFLs for replacement of the old and broken ones is about 10% of the total number of CFLs. It means that VEA procurement officers could purchase 20 CFLs for maintenance purpose for one year, and that figure of VTGG is about 30 CFLs. All interviewees stated that they do not have any data and estimation about the number of LED lights currently used and purchased in their organizations.

Table 14 Criteria for CFLs and LED lights

Technical specification	Percentage	Number
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Wattage	100%	12
Color	75%	9
Brightness in lumens	42%	5
Longevity	92%	11
Ecolabel	17%	2
Toxic free	25%	3
Energy efficiency	75%	9

The table above illustrates the criteria that state agencies currently apply to select CFLs and LED lights to be purchased. **Wattage** (12/12) and **longevity** (11/12) are the two major criteria according to the opinions of the respondents, followed by energy efficiency (9/12) and color (9/12). Only 3 out of 12 interviewees chose “toxic-free” as a criterion as they heard about the fact that there are some toxic chemical compounds contained in the CFLs, but they do not know exactly the chemicals and the impacts on human health.

Few interviews also showed that they want to buy lamps which are not harmful to their eyes, however they do not know how to measure this indicator and there is also no sign or label on the product to show that it is safe for eyesight.

VI. VALIDATION OF SUSTAINABILITY CRITERIA FOR EACH SUB-CATEGORY OF PRODUCT WITH THE MARKET AND THE STATE AGENCIES

According to the Law of Procurement and existing legal documents, a bidder must meet some compulsory requirements to be qualified for the selection and award. The criteria which could be applied to the three prioritised products are:

- No record of violation against the Law of Environment
- No case of environment pollution, or illegal waste disposal
- No record of violation against the Law of Labour
- No record of corruption, fraud and maladministration
- No usage of banned chemical regulated by the laws

Besides the obligation of having those criteria, the bidder of each prioritised product should also have some specific criteria regarding environmental, social, and economic aspects.

The social and economic criteria are of similarity among the three prioritised products, and have been already recommended to be applied in the current tender documents. The criteria are listed in the table below. However, during the development of pilot tender, those criteria could be revised and adopted in accordance to the real situation.

	<i>Sub-categories</i>	<i>Means of verification</i>
<i>Social</i>		
Compliance with the Law on Labor	Products produced or distributed by social responsible companies	Company declaration, records, CSR, human resource development strategies
Recruitment process based on equal opportunities (creating opportunities for female employee, people with disabilities, and people from ethnic minorities)		
Percentage of employees are female		
Percentage of employees are people with disabilities		
Percentage of employees are people from ethnic minorities		
Ensure the social welfare of employees during the bidding, contracting and implementation of this bid		
Have disclosed Corporate Social Responsibility policy		
<i>Economic</i>		
Small enterprise as regulated in the Law of Enterprise	Products produced or distributed by SME	Business license
Percentage of the input material from local resources (not from imported sources)	Paper made from local material	Technical report, production process manual
Percentage of international/foreign capital share in the company's total capital	Paper produced or distributed by domestic companies	Business license

In other hand, the environmental criteria vary depending on the type of product and the feasible means of verification to evaluate those criteria.

6.1. Paper

As almost all the paper products are purchased through the distributors or retailers, the criteria related to production process such as the containing or using of chemical compounds (i.e. halogenic compounds, dyeing chemical, etc.) would be removed. We only keep the criteria which can be evaluated by looking at the information printed on the product package or can be committed by the retailers..

Criteria	Sub-categories	Means of verification	Company
<i>Product specifications</i>			
Multiple uses (writing, printing, copying)		Specification printed on the package or instruction document	
2 side printable		-	
Weight		-	
Whiteness (ISO)		-	
<i>Environmental</i>			
No use of toxic chemical compounds	Toxic chemical-free paper	Retailer self-declaration by written document, producer self-declaration printed on the products, testing result from trusted lab, Green Label	Dong Thinh Phat, Hoang Ha, Hai Tien, An Sinh JSC, Ngoc Lan JSC
Percentage of raw material (wood, bamboo) exploited from FSC certified forest	Paper made with material from responsible source	Producer self-declaration printed on the products, Green Label, FSC, PEFC label or equivalent	Dong Thinh Phat, Hoang Ha, Hai Tien, An Sinh JSC
Percentage of raw material (wood, bamboo) exploited from mature planted forest or sustainable managed forest which create no			Dong Thinh Phat, Hoang Ha, Hai Tien, An Sinh JSC

harm to the natural forest in the same geographical area			
Packaging with recycled material	Environmental friendly packaging paper	Recycled label for packaging material	Dong Thinh Phat, Hoang Ha, Hai Tien, An Sinh JSC
Instruction for disposal	Environmental friendly disposal paper	Instruction or sign for proper disposal	Dong Thinh Phat, Hoang Ha, Hai Tien, An Sinh JSC

6.2. CFL bulbs

Criteria	Sub-categories	Means of verification	
<i>Product specifications</i>			
Brightness (in lumens)		Specification printed on the package or instruction document	
Wattage		-	
Bulb longevity		-	
Guarantee		-	
<i>Environment</i>			
Does not contain any toxic chemical compound	Toxic free CFL	Company self-declaration printed on the product	Rang Dong, Dien Quang, Huynh Tran, Hoang Phat, Ngoc Huy
Having ISO 14000 certificate	ISO 14000 Certificate	Certificate, label printed on the product	Rang Dong, Dien Quang, Huynh Tran, Hoang Phat, Ngoc Huy
Green Label	Green Label		Dien Quang

	Certificate		
Energy efficient	Energy-efficient CFL	Viet Nam Energy Star Label, or equivalent label, or self-declaration on energy saving	Rang Dong, Dien Quang, Huynh Tran, Hoang Phat, Ngoc Huy
Packaging with recycled material (cardboard paper, recyclable plastic)	Environmentally friendly packaging CFL	Recycled label for packaging material	Rang Dong, Dien Quang, Huynh Tran, Hoang Phat, Ngoc Huy
Environmental sound disposal of packaging material (no harmful chemical created in the disposal phase)	Environmentally friendly disposal CFL	Instruction or symbols for proper disposal	Rang Dong, Dien Quang, Huynh Tran, Hoang Phat, Ngoc Huy

6.3. LED bulbs

Criteria	Sub-categories	Means of verification	Company
<i>Product specifications</i>			
Brightness (in lumens)		Specification printed on the package or instruction document	
Wattage		-	
Bulb longevity		-	
Guarantee		-	
<i>Environment</i>			
No containing of toxic chemical compound	Toxic free LED lights	Company self-declaration printed on the product	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Having ISO 14000 certificate	ISO 14000	Certificate/label	Rang Dong,

	Certificate	printed on the product	Dien Quang, Khai Toan Group, Huynh Tran
Green Label or equivalent	Green Label Certificate		N/A
Viet Nam Energy Star Label or self-declaration on energy saving	Energy efficient LED lights	Certificate, label/declaration printed on product	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Long lasting (i.e. minimum longevity of 8000 hours)	Long lasting LED	Minimum 8000 hours. Longevity in number of hours printed on the product, or can be referred from trusted source, at least	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Eye-sight safety (user-friendly)	User-friendly LED	Eye-safety symbols or declaration printed on the product, or declaration from retailers by written document	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Packaging with recycled material (cardboard paper, recyclable plastic)	Environmental friendly packaging LED lights	Recycled label for packaging material	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Environmental friendly shock resistance material in packaging (if applicable)		Recycled label shock resistance material	Rang Dong, Dien Quang, Khai Toan Group, Huynh Tran
Environmental sound disposal of packaging material (no harmful	Environmental friendly disposal	Instruction or symbols for proper	Rang Dong, Dien Quang,

chemical created in the disposal phase)	LED lights	disposal	Khai Toan Group, Huynh Tran
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VII. CONCLUSIONS AND RECOMMENDATIONS

7.1. Conclusions

After the initial market analysis of laptops, the consultants acknowledged that the laptops are usually purchased in small quantity, and mostly used the financial resource from a project which might be from international donors rather than the state budget. After consultation with experts from UN Environment and the agreement of the SPPEL project manager, this report only focused in 3 products, which are 1) office paper, 2) compact fluorescent lamps, and 3) LEDs light bulbs.

The sub-categories of 3 prioritised products which are expected to be to the subject of pilot tenders are **A4 printing paper, compact fluorescent lamps, and LED light bulb.**

All of the products are available in the Vietnamese market, where printing paper, **CFLs, and LED lights are produced domestically** by Vietnamese enterprises. The Viet Nam **Green Label Office has developed criteria for A4 printing paper, fluorescent light, and laptops.** The criteria for **recycled paper are now under development.** At the moment, there are **no criteria to certify LED products.** DienQuang Lamp JSC is the only company which has the Green Label for its fluorescent products. There is no other enterprise currently holding the Green Label for paper, and LED lights.

For printing paper, there are many retailers in the domestic market which are available to provide the eco-friendly paper to the central agencies. The paper products might be produced by national company (Clever Up paper) or imported (Double A, Supreme, Paper One). The price of eco-friendly papers is considered as relatively higher than the conventional ones, however all of the interviewees stated that they are willing to buy the sustainable products.

Regarding light bulbs, it is clear that the procurement and instalment of LED lighting system would be much cheaper than the CFL ones. In the case where old office building is equipped with fluorescent tubes, it could be difficult to switch to more sustainable ones. But in the lighting system with E27 socket, LED bulbs are recommended to get the priority to be purchased. The market for CFL and LED bulbs is ready with both domestic

products (Rang Dong, Dien Quang, and Comet) and imported ones (Philips, Osram). When selecting the appropriate light bulbs, the criteria such as lumen, longevity, wattage may be considered as sustainable criteria (environmental and economic aspects) rather than normal technical specification. For example, a simple calculation formula can be employed to find out what is the price of 1-hour lighting with a specific lumen (brightness) of a product:

1 hour lighting price = price/longevity (in hour) + wattage per hour * electricity cost

7.2. Recommendations

The Viet Nam Green Label Office should consider fastening the development of Green Label criteria for LED bulbs in order to be completed by the end of 2017, as LED is forecasted to be suitable with the modern trend of consumption due to their environmental attributes. The criteria to certify LED bulbs are currently developed in some countries and regions, such as the EU GPP Criteria, which VEA could utilise as references. In the meantime, some specific criteria for selecting CFLs and LEDs should be developed and incorporated in the bidding documents of those products for the piloting phase. In case the Green Label would not be completed, VEA should consider developing a set of criteria to select the best eco-friendly and/or user-friendly for public procurement.

The pilot tender should be organised in small scale with close cooperation with the Department of Procurement Management and the Department of Public Assets Management. The products to be purchased in the pilots are suggested to be eco-friendly paper (with responsible source of material, and/or without toxic chemical compound), and eco-friendly CFLs and LEDs (energy efficient, no toxic chemical compound). The state agencies which are participating in the SPPEL project Steering Committee could host a pilot tender for the above products. Even though the volume of products for the pilot tender would be small, the tender procedure has to follow every step of an official public procurement tender in order to assess the applicability of SPP and potential gaps. For example, LEDs can be purchased for maintenance purpose in the pilot phase, then can be purchased in bigger volume whenever an agency needs to replace or renovate the lighting system of its office.

The Project Management Board in particular and Viet Nam Environment Administration should develop a cooperation mechanism with the Ministry of Industry and Trade to promote the Green Label to the enterprise community.

More awareness raising activities should also be designed and implemented to disseminate the information, knowledge on sustainable consumption, Green Label, and the benefit of purchasing green and/or sustainable products.

Annex 1. List of interviewees

No.	Organisation	Name
1	Department of Public Properties Management (MOF)	Chu Thi Thuy Chung
2	Vietnam Efficiency Institute (MOST)	Nguyen Thu Hien
3	Department of Science and Technology (MOIT)	Nguyen Huy Hoan
4	Department of Science, Education and Environment (MPI)	Nguyen Dieu Trinh
5	Department of Legislation	Nguyen Hong Quang
6	Vietnam Environment Agency	Nguyen Thanh Nga
7	Ministry of Agriculture and Rural Development	Ngo Nguyen Nhan
8	Ministry of Construction	Hoang Manh Linh
9	Ministry of Education and Training	Nguyen Dinh Manh
10	Thanh Xuan District People Committee	Nguyen Quynh Trang
11	Vietnam Textile and Garment Group	Nguyen Thu Ha
12	Northern Food Corporation (Vinafood1)	Nguyen Vu Hoan

Annex 2. Interview check list

Paper:

- What type of paper product your organization currently purchasing?
- How do you purchase those products? Method?
 - Open bidding
 - Direct bidding
 - Competitive quotation offer
 - Self-procuring
- What is the amount, quantity of each tender? Or in total?
- What is the budget for each tender? Or in total?
- Which paper brand you often purchase? Or be selected after the tender?
- What are the criteria you apply to select the paper products?
 - Weight
 - Brightness
 - 2-side
 - Sustainable source of material
 - Ecolabel

CFLs/LEDs:

- What type of CFLs/LEDs product your organization currently purchasing?
- How do you purchase those products? Method?
 - Open bidding
 - Direct bidding
 - Competitive quotation offer
 - Self-procuring
- What is the amount, quantity of each tender? Or in total?
- What is the budget for each tender? Or in total?
- Which CFLs/LEDs brand you often purchase? Or be selected after the tender?
- What are the criteria you apply to select the paper products?
 - Wattage
 - Colour
 - Brightness in lumens
 - Longevity
 - Ecolabel
 - Toxic free
 - Energy efficiency