THE COLLABORATIVE LABELING AND APPLIANCE STANDARDS PROGRAM

Energy Efficiency Standards and Labeling in Vietnam

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ABBREVIATIONS AND ACRONYMS

CLASP	Collaborative Labeling and Appliance Standards Program
EECO	Energy Efficiency and Conservation Office
EE S&L	Energy Efficiency Standards and Labeling
ELI	Efficient Lighting Initiative
Hi - tech LOM	Hi Tech Laboratory of Material
IEC	International Electrotechnical Commission
ISO	International Organization for Standards
MEPS	Minimum Energy Performance Standards
METI	Ministry of Economy, Trade and Industry, Japan
MOIT	Ministry of Industry and Trade, Vietnam
MOST	Ministry of Science and Technology, Vietnam
MTOE	Million Tons of Oil Equivalent
PSC	Program Steering Committee
STAMEQ	Directorate for Standards and Quality
UNDP-GEF	United Nations Development Program - Global Environment Facility
VILAS	Vietnam Laboratory Accreditation Scheme
Vinastas	Vietnam Standard and Consumers Association
VSQC	Vietnam Standards and Quality Center
WB	World Bank

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EXECUTIVE SUMMARY

This report describes the findings of a mission and workshop held in Vietnam in January 2008 to assess the current state of Energy Efficiency Standards and Labeling (EE S&L) activities in Vietnam and to identify potential areas where Vietnam could benefit from international assistance and capacity-building for EES&L.

The scoping mission and the workshop were held in January 2008 in Vietnam and were supported by the Collaborative Labeling and Appliance Standards Program (CLASP) under funding from Japan's Ministry of Economy, Trade and Industry (METI) and the Institute of Energy Economics, Japan (IEEJ). Experts from the IEEJ and the Energy Conservation Center, Japan (ECCJ) also participated in the mission.

The Government of Vietnam initiated early action in the field of EE S&L at the beginning of 2000 when a project was initiated with support from the World Bank (WB) and the Global Environmental Facility (GEF) to prepare draft standard documents for fluorescent lamps, ballasts and three-phase electric induction motors.

In April 2006, the Government of Vietnam developed and launched the National Target Program on Energy Efficiency and Conservation as follow-on to this WB-GEF project. This program stipulates that the Ministry of Industry and Trade (MOIT) should take the leading role in the development of a standards and labeling program in Vietnam. The National Target Program further requires that: (1) a standards and labeling program should be launched for five products in the period from 2006 to 2010; and (2) another group of five products should be added in the period of 2011 to 2015. The products targeted for the 2006-2010 period include: electric motors; fans; air conditioners; fluorescent lights; and ballasts. Within MOIT, the Energy Efficiency and Conservation Office (EECO) is the entity that administers EE S&L activities.

In July 2007, MOIT launched a first voluntary labeling program targeting linear fluorescent tubes and electromagnetic ballasts. The government guidance for this standards and labeling activity is based on Circular NO. 08/2006/TT-BCN. The labeling scheme is based on an endorsement label type that was developed following a national competition with several private graphic design firms invited to submit designs for the endorsement label. Ministry of Science and Technology (MOST) is responsible for preparing test procedures as well as the standards for the energy efficiency specifications and thresholds required to qualify for label certification. MOST relies on its Directorate for Standards and Quality (STAMEQ) and its Vietnam Standards and Quality Center (VSQC) to write the relevant standards for thresholds and specifications. The testing procedures are often adapted from internationally recognized standards produced by the International Organization for Standards (ISO) or the International Electrotechnical Commission (IEC). Vietnam's Institute of Energy also supports the EE S&L programs by providing market research data on the targeted products to MOIT.

The selection of the first products to be part of the labeling scheme was made partly based on: (1) opportunity (existing draft standards from the previous World Bank/GEF funded project); (2) national capability (there are national capacities for producing and testing lighting products); and (3) data availability (there is a limited set of market data on the lighting products). There are currently five laboratories designated by MOIT to perform testing of lighting products under the endorsement labeling scheme. The MOIT may also accept the results carried out by accredited international laboratories for its labeling scheme. The MOIT is the entity that issues the certificate to manufacturers, allowing them to label their products.

The first voluntary program that was launched was based on an endorsement labeling approach. However, MOIT and other stakeholders consider that endorsement scheme is only an initial, convenient and simple first step in implementing their labeling policy. Their long term objective is to introduce comparative labels and Minimum Energy Performance Standards (MEPS) in the market. This is already planned for the next wave of products. Thus, the next two products (1) air conditioners and (2) refrigerators will use a comparative labeling scheme and MEPS will be developed for them. These products were selected by a discussion and consensus building process amongst the stakeholders. For air conditioners, the national increase in peak demand observed by the national electric utility was the main factor for selection. For refrigerators, the stakeholders just followed international best practice.

A project was developed by the Government of Vietnam, with financing from the World Bank, to support the air conditioner EE S&L activity. This project will be launched in the first half of 2008. The Government of Vietnam has already approved funding for the construction of the first testing facility in the country that can test the energy efficiency performance of air conditioners and refrigerators. The laboratory will be hosted in the Hi-Tech Laboratory of Material (Hi – tech LOM), an institution that belongs to the Institute of Energy and Mining Machine which is part of the Vietnam National Coal, Mineral Industries Group. This group is a state-owned holding that has several industrial facilities in the mining sector of Vietnam. The Hi – tech LOM is accredited by the Vietnam Laboratory Accreditation Scheme (VILAS). The Hi – tech LOM is actually preparing to purchase testing equipment and plans to carry out all these activities internally without support from international or national experts in the field of refrigerator or air conditioner testing.

Other activities were launched and supported by UNDP/GEF funding. These include: (1) the Vietnam Energy Efficient Public Lighting (VEEPL) project that will support the development and implementation of standards (limited support to identify international testing standards and development of MEPS and HEPS[1]) and labeling activities for public lighting products; and (2) the Promotion of Energy Conservation in Small and Medium Enterprises project that targets medium and small enterprises and supports information dissemination on the benefit of standards and labeling to industry with assistance on strategies for promoting labeled products. There are some limited market research activities underway by the Institute of Energy, but a lack of market data is one of the key

[1] HEPS: High Efficiency Performance Standards. A designation often used in Asia to refer to the energy efficient threshold associated with an endorsement labeling program.

constraints preventing MOIT from systematically selecting future products to be included in the S&L program. The lack of market data also makes it difficult to accurately evaluate the S&L program energy saving potential and thus, the economic evaluation and national impact evaluation of different labeling scheme options.

The Government of Vietnam is preparing an Energy Conservation Law that will further strengthen the regulatory framework for EE S&L activities. The Government recognizes the importance of energy efficiency as a national priority and wants to provide a more comprehensive legal framework to include all the potential policies and regulations that may be introduced in the future by the government.

There is no monitoring and impact evaluation of the on-going voluntary endorsement label. MOIT is interested in developing these activities in the near future. However, at this time, they are operating with limited human resources and a budget that makes the acquisition of new skills required to launch such activities a challenge.

There are several consumer associations in the country. One in particular has national coverage—Vietnam Standard and Consumers Association (Vinastas). This association generally supports the concept of EE S&L, but has limited human and financial resources to promote EE S&L on its own. Vinastas can, however, be a potential actor in promotion and outreach.

The manufacturing sector is not very well organized in Vietnam and it is difficult to find associations of producers that can act as key stakeholders in the implementation of EE S&L. The current approach of MOIT is to work individually with private firms interested in joining the voluntary labeling scheme.

As for the retail sector, there are neither on-going awareness nor training activities to support the EE S&L program. This will need to be initiated in the near future, beginning with a planning phase and the preparation of a communication plan to support S&L.

The CLASP team met with MOIT, MOST, and other stakeholders during the mission. Discussions were held to identify areas of interest for international assistance and capacity-building focusing on those activities that would help the Government of Vietnam to achieve the aggressive targets laid out in the National Target Program.

Based on the mission findings, it was possible to identify the following areas of potential collaboration between international experts and the Government of Vietnam for the support of EE S&L activities. The activities are grouped into three levels of priority:

High Priority Group:

1. Support for the implementation of the refrigerator and air conditioner testing laboratory: This activity is perceived as critical for the success of the S&L program and there is a clear need for support in several key areas including: detailed design (if timeframe allows); selection of equipment; supervision of installation; commissioning; employee training; writing of detailed operation procedures.

2. Support to set-up a monitoring and evaluation activity: monitoring and evaluation is rightly perceived by MOIT as a key element in gathering additional political support for the program and in supporting fine tuning of ongoing activities. Capacity building in the field of monitoring and evaluation will help MOIT to incorporate those components in future program design.
3. Support to develop integrated market communication strategies and plan: The various stakeholders presently lack a communication plan and the ability to disseminate information on S&L benefits. MOIT would appreciate support to develop an effective communications campaign to make the best use of limited financial resources.
4. Assistance on technical and economical analyses for energy using equipment: This component could help MOIT to select future equipment to include in the standards and labeling scheme in a more systematic way.

Medium Priority Group

5. Support to VSQC to develop or upgrade the energy efficiency standards: MOST expressed the need for support in the development of appropriate standards (including test procedures and label specifications and energy efficiency threshold) for the new comparative labeling approach. This procedure can also provide key support to ensure harmonization with other regional or national S&L initiatives in Asian countries.
6. Capacity building for the Energy Efficiency and Conservation Center: In the context of rapid growth of the standards and labeling activities and the addition of new resources, MOIT perceives a need for capacity building activities to support and strengthen the Center during this critical stage of its development. That support should include not only theoretical training, but more hands-on training with resources experienced in the reality of S&L implementation in development countries.
7. Support to carry out market research activities: Market research is needed to assist in the development of EE S&L activities in Vietnam. Market research is critical to acquire increased knowledge of the energy end usage structure for various sectors of the Vietnamese market. There is a need for updated data about the penetration of various types of products in the market but also for market characterization.
8. Support for development of incentive policies: The development of incentive policies for S&L is still at a very early stage of discussion. This component could include: theoretical training, case studies; discussion with stakeholders; and elaboration of potential schemes to support the S&L implementation.

Lower Priority Group

9. Support to develop retailers' capacity building and training plan: This component could provide MOIT with support to develop a capacity building and training plan for retailers as the current awareness of this group about S&L is almost non-existent. This activity could provide salesmen

with rationale for sales and provide a channel to incite them to include energy efficient products in their offerings.

10. Support to develop a detailed S&L program plan: This component could provide support to MOIT to develop and write a detailed program plan including detailed procedures describing the relationships between manufacturers, retailers, importers and MOIT. The procedures should specify the information flow and forms required from each market actor to exchange information in a consistent way. The procedures should state the steps in the review and approval process in order to get the certification for labeling. Finally, the procedures should include exception procedures or guidelines in case of disagreement. This operation can also provide the opportunity to compare the current program procedures with international best practices in this domain.
11. Capacity building on CLASP'S PAMS model: This activity includes training and hands-on support to apply the CLASP PAMS tool to model some of the products in the Vietnamese market and assess the impacts of various policy options. This activity can also be combined with activity 4 mentioned above.
12. Manufacturers' capacity building on S&L programs: This activity could target the manufacturers of different energy consuming products. It could provide them with options to improve the efficiency of the equipment offered and put them in better position to compete with other products when the comparative labeling scheme is in place.

In conclusion, there are plenty of opportunities to support the Vietnamese government in the field of EE S&L in the near future. The Government of Vietnam has demonstrated in the past its interest in and support for S&L implementation. Concrete objectives were set up in the national target program and responsibilities have been given to various national organizations. The Government has devoted human and financial resources to implement the initial series of standards and labeling schemes, even if those resources are limited. In this context, it could make perfect sense for CLASP to identify donors interested in developing a staged support program to provide focused capacity building, hands-on training, and strategic support to the Government of Vietnam. In short, if METI and IEEJ are interested in follow-on collaboration in Vietnam, there seems to be ample opportunity in the field of S&L.

1 INTRODUCTION

This report summarizes the findings of a scoping mission and workshop organized by CLASP in Vietnam in January 2008. This mission was funded by METI and IEEJ. The mission had two goals:

(1) to assess the current state of Energy Efficiency Standards and Labeling (EE S&L) activities in Vietnam;

(2) to identify potential areas where Vietnam could benefit from international assistance and capacity-building for EES&L.

The mission team included Mr. Pierre Baillargeon from Econoler International, Canada (a CLASP implementing partner) as team leader, Mr. Tienan Li from the China Standards Certification Center (a CLASP implementing partner), Mrs. Kim Seong Hee from the Institute of Energy Economics, Japan and Mr. Hidefumi Katayama from the Energy Conservation Center, Japan.

The mission took place from January 14 to 18, 2008 and the workshop with different stakeholders was held at the Press Club, Hanoi on January 18, 2008.

Section 2 demonstrates the findings of the study tour and the country analysis performed based on information gathered and the various discussions held with the stakeholders. The section starts with an introduction to the various stakeholders in the country then offers some market characteristics. Next, it describes the current baseline for S&L activities in the country and introduces the planned activities for the medium term future.

Section 3 presents the workshop that took place, including the key topics presented and a description of the survey conducted and the resulting discussion of the possible support options.

Section 4 offers conclusions about the potential follow-up activities that can be envisioned to support the Vietnamese Government in its effort to implement standards and labeling options.

The workshop's agenda and a list of participants is found in Appendix 1, while Appendix 2 presents more details of the visits and meetings organized during the study tour, including photographs.

2 OVERALL FINDINGS OF THE STUDY TOUR AND RESULTING COUNTRY ANALYSIS

2.1 KEY PLAYERS AND ROLES IN VIETNAM'S EE POLICY, PARTICULARLY S&L

Figure 1 summarizes the links between the most important institutional stakeholders. MOIT and MOST are the two lead agencies, with differing roles. MOIT is responsible for the supervision of the labeling program while MOST is responsible for the development and approval of energy efficiency standards including testing procedures, and for setting the requirements for the labeling program.

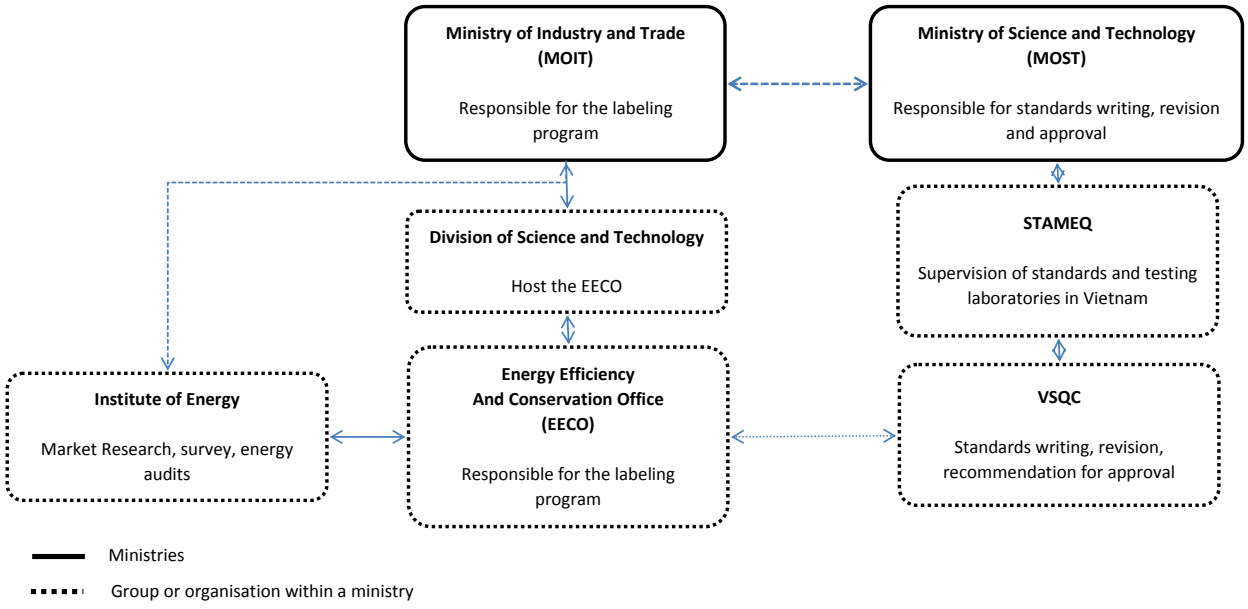


Figure 1 – Links between the Key EE S&L Institutions in Vietnam

MOIT

The Ministry of Industry and Trade is the primary implementing agency for the EE S&L program. Under the national program for energy efficiency, MOIT was mandated to supervise all EE S&L activities in Vietnam. In addition to being the primary actor to define and implement the standards and labeling policies, MOIT also acts as a key national counterpart for related projects funded by international finance organizations, i.e. METI, the World Bank, the United Nations Development Program - Global Environment Facility (UNDP-GEF), and others.

The Energy Efficiency and Conservation Office (EECO) was created recently under the Division of Science and Technology of MOIT in order to implement different activities, including endorsement and comparative energy information labeling.

One of the key decision makers related to EE S&L program is Mr. Nguyen Dinh Hiep. He is assisted by two project managers, namely Mr. Phuong Hoang Kim whose role is to coordinate and plan different energy efficient activities including EE S&L; and by Mr. Hoang Duong Thanh who is the manager of the EE labeling program. In addition, EECO has eight staff members working part-time on standards and labeling activities and part-time on other tasks.

MOST

The Ministry of Science and Technology is responsible for the development and approval of the national energy efficiency standards, including the energy performance testing procedures. Mr. Nguyen Ba Vinh is the supervisor of the energy efficiency standards development activities. He oversees schedules, budgets and resources and submits to MOIT for approval the energy efficiency standards developed by a separate team under MOST. Mr. To Dinh Thai is the policy and institutional coordinator for MOST. He is also engaged in the energy efficiency standard development and approval process. Mr. Nguyen Ba Vinh and Mr. To Dinh Thai also manage a UNDP-GEF project where MOST is the executing agency. This project, "Promoting Energy Conservation in Small and Medium Scale Enterprises", includes several functions to strengthen the energy efficiency activities in SMEs. One of the components of this project is related to S&L. This activity is intended to help increase SMEs' awareness of labeling and support SMEs promotion of labeled products.

Within MOST, one group named Directorate for Standards and Quality (STAMEQ) oversees all work related to standards, metrology and quality. STAMEQ oversees the activities of VSQC. This center transposes internationally recognized test procedures and reviews the energy efficiency levels that are to be used in the labeling program and for future Minimum Energy Performance Standards (MEPS) levels. Thus VSQC is the primary organization for the day-today development of Vietnam's energy efficiency standards.

The main person responsible for the development of standards is Mr. Luong Van Phan, Deputy Director of VSQC. Several people are actively involved in the development process, including:

- Ms. Doan Thi Thanh Van, Deputy of Electrical & Electronic Division;
- Ms. Nguyen Quang Ngoc, Head of Electrical & Electronic Division;
- Ms. Bui Ngoc Bich, Deputy Head of Metrology Section.

Laboratories

There are currently laboratories that can perform energy performance tests for lighting products, but there are no laboratories for other types of equipment or appliance. MOIT is currently supporting an initiative to build the first air conditioner and refrigerator testing laboratory in the country.

There are currently five laboratories that are designated by MOIT to perform lighting tests in the country for the purpose of the lighting product labeling scheme. MOIT also accepts, under certain conditions, tests that are made in recognized laboratories outside the country.

As for the future labeling programs for refrigerators and air conditioners, an institution has already been identified to host a new laboratory to perform those tests. The Hi Tech Laboratory of Material (Hi - tech LOM), belongs to the Institute of Energy and Mining Machine which is part of the Vietnam National Coal, Mineral Industries Group. This laboratory has been selected by MOIT to host the new refrigerator and air conditioner testing facility. The funding for this new facility has recently been approved and is a shared effort between MOIT and the Institute. Once operational, this laboratory will perform the equipment testing for the refrigerators and air conditioner labeling programs. This type of activity is a new field for this laboratory and for Vietnam.

Mr. Cao Ngoc Dau is Director of this Institute and supervises the activities related to the construction and operation of this new facility. Mr. Bach Dong Phong is the Director of Hi - tech LOM and will be involved in the daily progression related to the design, purchase, start-up and operation of the refrigerator and air conditioner energy efficiency testing laboratory. It is hoped the lab will be operational by the second half of 2009.

Institute of Energy

The Institute of Energy is an energy research and planning institute established in 1989. It is under the authority of MOIT. The institute participates in market research activities to determine energy usage in Vietnam, and also performs energy audits for different buildings/facilities. Mr. Tran Manh Hung, Head of the Energy Economic, Demand Forecast and Demand Side Management Department is the main person associated with those research activities.

Vinastas

The Vietnam Standard and Consumer Association (Vinastas) is the only national consumer protection association in Vietnam. This association work to promote standards to support the quality of products sold in the Vietnamese market. The organization is a non-profit and non-governmental entity that relies mainly on voluntary resources for its operations. Vinastas has created a national network of consumer organizations covering a large portion of the country. Vinastas could be a good channel to directly promote the energy efficiency concept and label to end-users. Vinastas depends on mandates received from various organizations to fund its awareness activities. In the past, they have carried out a few campaigns on topics related to household energy efficiency. The organization publishes a bi-monthly journal that covers different topics of interest to the customer. Sample materials shown in Figure 2 illustrate the types of energy efficiency dissemination activities (even if not related in this specific case to S&L) done in the past by this organization.

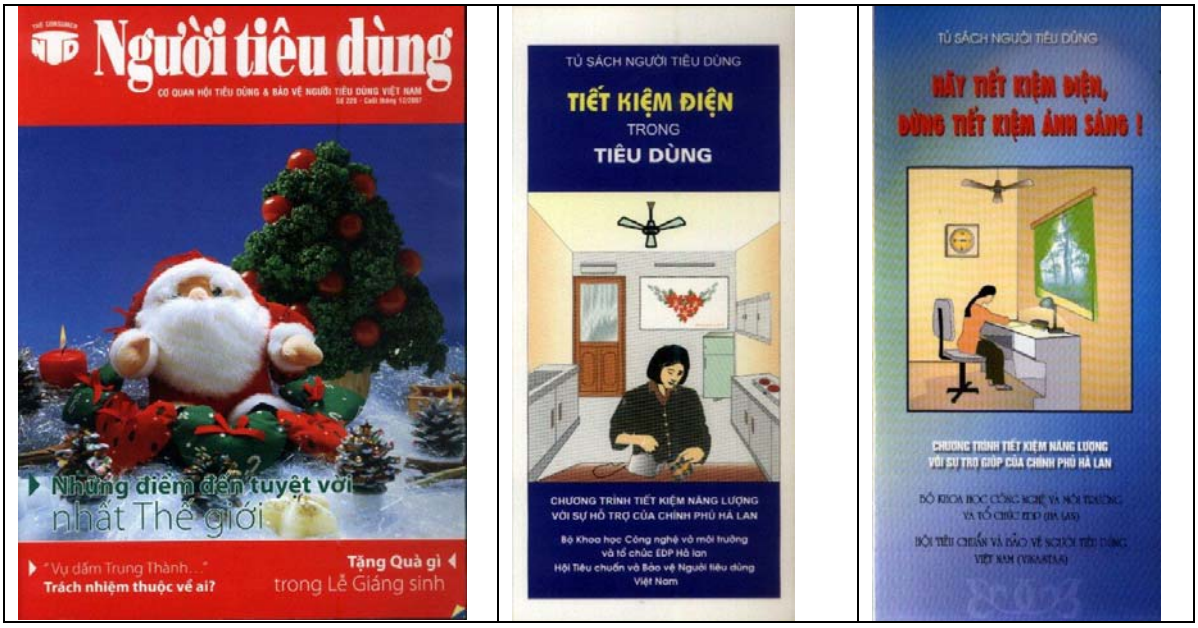


Figure 2 – Vinastas Journal and Sample of Information Dissemination Instruments

UNDP's Country Office

The United Nations Development Program creates and implements different programs related to Vietnam's development priorities. One of those is climate change and energy efficiency activities are included within that framework. UNDP is implementing several projects relevant to EE S&L in Vietnam. One of these projects is called "Vietnam Energy Efficient Public Lighting". This project aims to increase the efficiency of public lighting systems including lighting sources. One aspect of this project is the program development of EE S&L for lighting products. These products include CFLs, linear fluorescent lamps, fluorescent lamp ballasts, high intensity discharge lamps and ballasts. Dr. Phan Hong Khois is the project manager and Dr. Nguyen Thi Bac Kinh is the National Senior Technical Advisor for this program. One of the consultants to this program is Mr. Li Tienan from the China Standards Certification Center and one of the two CLASP implementing partners who went on this mission and authored this report.

Another project implemented by UNDP is "Promoting Energy Conservation in Small and Medium Scale Enterprises", previously described above within the discussion of MOST's activities.

World Bank

For the last ten years, the World Bank has been actively engaged in the support of energy efficiency in Vietnam. The first phase (a DSM program completed in 2002) provided the foundation for the introduction of the first standards and labeling activities in Vietnam. This project included the development of draft standards for linear fluorescent lamps, electromagnetic ballasts and for mid- and

small-size, 3-phase induction motors. The World Bank is currently launching a project for the support of standards and labeling for air conditioning equipment.

Manufacturers

The manufacturing sector in Vietnam is not very well structured; in general, each sector has different characteristics. The lighting equipment sector is characterized by several large-scales, world class manufacturing facilities that serve the local market and export to several countries including industrialized countries like Korea. The appliance sector is dominated by large companies that were established in Vietnam under foreign ownership or joint venture. There is no large manufacturer of computers and office equipment. Generally, the trade associations, when they exist for a specific sub-sector, are not very strong. To now, MOIT has preferred a direct discussion with individual manufacturers.

Retailers

The retailers sector is not much organized; (There are no association of retailers for either appliances or electrical products).l The retail sector is not very organized; there are no national chains for distribution of appliances, lighting and office equipment. All retailers are generally small street shops. Shop owners are not aware of the energy efficiency aspects of their products and do not know how to promote high efficiency products. No activities currently target this market actor in the EE S&L program. Thus, the salesmen receive no training and no directives on selling higher energy efficiency equipment.

2.2 MARKET CHARACTERISTICS FOR S&L

This section presents information about the market including penetration of residential equipment, residential sector end usage, commercial and industrial sector end usage, and some results from past surveys conducted in the retail sector. The mission team discussed market data and market research issues with MOIT. The Ministry mentioned that there is a clear need for additional research and information collection and integration in a common database. Most of the information available about energy usage in the market comes from studies that are now considered outdated. These studies can only be used to give a picture of past energy usage. Nevertheless, they can be useful in the process of identifying the missing pieces of information for future research activities.

2.2.1 Total Energy Usage by Sector

Vietnam's energy usage per sector in 2006[2] was:

[2] Presentation of Mr. Nguyen Van Hung, Deputy General Director of Energy & Petro Dept, Ministry of Industry and Commerce of Vietnam at UNIDO Expert Group meeting "Using Energy Management Standards to Stimulate Persistent Application of Energy Efficiency In Industry, 21-22 March 2007, Vienna.

- Industry 8.5 MTOE
- Transport 6.5 MTOE
- Service 1.76 MTOE
- Residential 3.3 MTOE
- Agriculture 3.3 MTOE

2.2.2 Ownership and End Usages

Very little information exists in Vietnam about the market characteristics for energy consuming equipment and products. The only market penetration study available was carried out in 2001 as part of the Word Bank's Phase 1 DSM program. This activity was limited in scope as it essentially aimed at gathering penetration data for some residential sector products. Three thousand households were included in the survey. This sample represents a subset of a group representing roughly 3.4 million households (about 20% of the country's total households). This group of 3.4 millions households is the most interesting portion of households when considering energy efficiency activities as the remaining 80 percent of the population typically lives in areas where energy intensity and potential for improving the energy efficiency of equipment is very low.

Table 1 shows the ownership data from this 2001 study.

Table 1 – Appliance Saturation Observed in the Selected Sample* (Year 2001)

APPLIANCE	NUMBER	NO. PER 100 HOUSEHOLDS**
Refrigerators & freezers	2,941,864	85
Rice cookers	3,386,865	98
TVs	5,458,041	158
Lights – fluorescent	26,070,694	752
Lights - incandescent	8,843,411	255
Lights – Compact fluorescent	787,666	23
Lights - Other types	862,346	25
Fans & ventilators	25,031,635	722
Room air conditioners	749,542	22

There is anecdotal evidence that the market picture presented above has changed significantly in recent years. For instance, compact fluorescent lamps with an ownership of 0.23 units per household has increased a lot due to the reduction of price and the local manufacturing of those products. The corresponding increase in CFLs is directly impacting the sales of incandescent fluorescent lamps as the lifetime of a CFL is often ten times higher thus, reducing the total quantity of lamps sold in the market. Finally, the penetration of air conditioning equipment is increasing due to the combined effect of a higher living standards and a worldwide reduction in the cost of unitary and split air conditioner systems. In 2001, the surveyed manufacturers were already observing a growth of ten percent per year

in the market size of air conditioners. It is also important to note that this ownership survey was only targeting the richest urban areas of Vietnam. In that year, hardly anyone owned appliances such as refrigerators in the rural areas. With the progression of the living standards in the countryside, this situation is also changing.

Table 2 presents a rough estimate of the end usage of various products in the 2002 market. from a survey carried out in 2002. These data should not be considered as very accurate as there was no load research to determine the past load efficiency of various equipment types. The survey questions were designed to be simple (e.g. How many hours is a certain piece of equipment used?) and the answers received were not sufficient to determine the unitary energy usage. So this table should be viewed as a rough first estimate of Vietnam's household end usages. There is a clear need for additional market research and load metering to achieve an accurate picture of the market. Some activities were undertaken by the government in 2007 to carry out a limited scope ownership survey. No official results have been presented yet, but may become available in the next six months.

Table 2 – Electricity Use by End-Use (in GWh and in %) for 3.6 million households

END-USE	GWH/YEAR	%
Refrigerators	2,405.6	18.74%
Rice cookers	1,999.7	15.58%
Color TVs	1,479.3	11.52%
Fans	1,286.1	10.02%
Air conditioners	1,144.1	8.91%
Fluorescent lamps	1,071.4	8.35%
Iron	792.0	6.17%
Water heating	719.9	5.61%
Fresh water pumps	488.8	3.81%
Incandescent lamps	305.3	2.38%
Washing machines	284.3	2.21%
Kitchen appliances	251.2	1.96%
Other lights	164.0	1.28%
Freezers	163.3	1.27%
Others	124.6	0.97%
Entertainment	108.4	0.84%
Computers/printers	43.3	0.34%
CFLs	7.4	0.06%
Total	12,838.8	100.00%

*There are approximately 4.7 persons per household

From these analyses, four types of equipment were identified by MOIT and discussed amongst shareholders in Vietnam for further research. This identification process was gradual over the 2002-2005 period. MOIT targeted the following products as prime candidate for implementation of a

standards and labeling scheme: (i) Refrigerators; (ii) Room air conditioners; (iii) Rice cookers; (iv) Fans, identified in 2001 together with their estimated growth. The data was derived from triangulation of interviews with different manufacturers. However, it is important to note that they may be incomplete as there is also equipment entering the market in unofficial ways and there is no reliable source of integrated information on the market size. Again, the data should be considered as rough and preliminary estimates.

Table 3 – Rate of Growth of Priority Appliances and Technical Potential Annual Energy Savings Associated with EE Labeling Programs in Vietnam

APPLIANCE	AVERAGE ANNUAL SALES (1999-2000)	NUMBER IN USE (IN 2000)	GROWTH RATE (PER YEAR) %
Refrigerators	238,000	3,500,000	8.1%
Room air conditioners	89,000	750,000	11.9%
Rice cookers	271,000	3,386,865	8%
Fans	2,000,000	25,031,635	8%

For the commercial, institutional and industrial sectors, there is only some information available on energy end usage. The UNDP DSM Project-Phase 1 included about 20 audits to provide a first evaluation of energy balance and energy savings potential in buildings and facilities in Vietnam. Every year the Institute of Energy continues to perform audits on public and private facilities across Vietnam. To date, about 65 audits have been completed. The size of this sample is too small to draw any statistically valid evaluation of the end usages for different sub-sectors of the market but it provides some trends.

2.2.3 Product Energy Efficiency

Concerning the current level of efficiency of the equipment sold in the market, there are no data available as there are no existing testing facilities, except for lighting products. Even though lighting product test facilities exist, they are only testing high efficiency products from manufacturers who want to get their certificates to label those products. So, the results cannot be used to determine the average efficiency of products in the market. There is anecdotal evidence that the quality of products imported in the market is very low (low lifetime for CFLs, cheap products, no brand equipment, etc.). As mentioned earlier in the report, there is a notable exception for lighting products as there are several local manufacturers that can produce high efficiency lighting equipment. However, customer demand for such higher priced products remains limited.

In the UNDP DSM Program-Phase 1, some interviews with manufacturers were made to try to estimate the current level of efficient products in the market. This exercise was mainly to determine the savings possibilities. Only the potential figures can be found in the report produced for this project.

2.2.4 Supply Chain

Manufacturers

The supply chain is quite different for various sub-sectors of the economy. For lighting products, there are several large local manufacturers that supply a significant share of the market needs. They are mainly located in Ho Chi Minh and Hanoi and have modern and efficient production units for CFLs, linear fluorescent lamps and ballasts. One of these companies, Rang Dong Light Source and Vacuum Flask Joint Stock Company (RALACO), has its own testing facility including equipment for safety testing, life-cycle testing and energy-efficiency testing, among others. Some of the lighting manufacturers are also engaged in the development of advanced lighting systems using Light Emitting Device (LED) technologies. These manufacturers voluntarily joined the standards and labeling program. They welcome this initiative that could help them to distinguish their high efficiency and high quality products from the low-priced and low-quality ones that are in the market. In this regard, their interest is not limited to energy efficiency, but also includes other aspects of product quality such as lifetime, power factor, safety and efficacy. These manufacturers have their own national network including distribution centers around the country. The distribution centers supply small shops that sell these products to the consumers. In addition to these large manufacturers, there are various small- and medium-size manufacturers that lack the production capability to develop and market high-efficiency products. These manufacturers are not engaged in the voluntary energy efficiency labeling program scheme.

For appliances, the market is dominated by large international owned or joint venture manufacturers. The ownership is shared by various countries and regions including Japan, South Korea, and Chinese Taipei. These corporations can generally access technology and financial support from their shareholders. In Vietnam, a relatively small quantity of large manufacturers supplies the majority of the market. These manufacturers are usually not vertically integrated. They import several components of equipment from abroad and assemble them in Vietnam. So far, they do not perceive the EE S&L initiative as beneficial for them.

For office equipment and electronic audio/video products, Vietnam mainly relies on imports. There are some large assembly facilities for such equipment in the country.

For motors, there are some Vietnamese manufacturers but their capability to produce high efficiency products is limited. A large number of motors are imported as part of more complex machinery. The large quantity of machines imported with electric motors that are an integral part of the equipment, makes it difficult to apply MEPS or a labeling scheme. It is relatively easy to put in place a procedure to stop low efficiency motors at the border if they do not meet the country standards. But it is more

difficult to act on motors integrated as a sub-component of large production machinery. MOIT stresses that a labeling or MEPS introduction should not only cover the unitary motors but also the ones included in assembled equipment.

Generally, Vietnam is not a production-based economy. The manufacturers based in Vietnam take up only a portion of the market share. Most of the products are imported from Japan, China, Thailand, Malaysia and South Korea. European and American products hold a small niche in the up-scale/high-end market.

Retailers

For retailers, differences are found in the distribution chains among products. For lighting products, the large manufacturers have their own distribution centers in several cities throughout the country. The manufacturer provides information to its distribution centers about new products and their characteristics. For other manufacturers, the sales are done directly through small shops and a few department stores. The level of awareness of energy efficiency is very low for the retailers as there is no communication campaign or training program available for them.

Figure 3 – Street Shop Display

2.2.5 Customer Awareness

Customer awareness of energy efficiency is likely also very low. This was suggested by all market actors met during the mission. The communication campaign budget for EE S&L program promotion financed by MOIT is very limited. It seems that manufacturers (except for large lighting national manufacturers) do not promote energy efficiency. There is no coordination or collaborative initiative allowing interested stakeholders such as MOIT, Electricity of Vietnam (EVN), manufacturers, retailers and consumer associations to join forces to promote higher energy efficiency products.

There is no integrated market promotion plan including the development of communication and promotion tactics, marketing plans, message development, slogans, campaign effectiveness evaluations, etc. Therefore, an important effort will be required in the future to foster the capacity of the various stakeholders to develop those elements.

Vietnam's living standard is still low and the stakeholders noted that customers' willingness or ability to purchase more expensive products was either non-existent or very limited. This constitutes a very important barrier to the market transformation process. There is a need to demonstrate to the population, retailers and manufacturers that some improvement in products efficiency is possible with no increase in cost when dealing with equipment at the lower spectrum of the energy efficiency.

2.3 S&L BASELINE AND FUTURE PLAN

2.3.1 Policies and Regulations Review

This section describes the policies and regulations[3] that are currently enacted in Vietnam to foster the introduction of energy efficiency activities in the market. The Government of Vietnam generally recognizes the importance of energy efficiency to their national economy and has launched different initiatives over the years starting with the World Bank supported projects. The current regulations are a gradual evolution of the Government policies toward a more active and direct involvement in the regulations of higher efficiency products and behaviors.

Decree No.102/2003/NĐ-CP: The Government's Decree on Energy Conservation and Energy Efficiency --- September 3, 2003

This decree is the main regulation for energy conservation and energy efficiency in Vietnam. The decree is a general statement that contains no details and no concrete requirements for its application. There are no prescribed levels for energy conservation and energy efficiency that should be met by products and equipment.

Vietnam issued Decree No.102/2003/NĐ-CP on September 3, 2003 to enhance the extent to which energy conservation and energy efficiency contribute to meeting the increasing demand for energy as well as to support economic growth and protect the environment, .

The decree regulates the technological measures which can be applied to manufacturers to improve the energy conservation and energy efficiency of their products. The decree also describes the responsibilities of the manufacturers and the responsibilities of the key energy-consuming entities in the industrial sector.

Regarding energy conservation and energy efficiency in the building sector, the decree stipulates responsibilities for many of the stakeholders including: building designers, investors and promoters,

[3] In this section we provide the official English translations of the decrees, decisions, circulars and laws that were provided to the mission team.

construction firms and building owners. Each of those groups is directed to implement energy efficiency and conservation measures.

The various stakeholders in the supply chain including: manufacturers; retailers; exporters; and importers have the responsibility to apply scientific and technological solutions to introduce energy-efficient products to the market place. Information about energy consumption levels should be adequate and clearly stated in the owner's manual or on product labels.

Organizations and individuals have the responsibility to use equipment complying with energy efficiency norms and to replace energy inefficient equipment. This applies to several end-usages including: lighting; ventilation; air conditioning; pumping; and other domestic operations. This is intended to reduce the energy consumption levels and help implement the state policy on energy conservation.

The relevant government agencies will implement this policy and take the appropriate measures to support and promote energy conservation and energy efficiency, including:

- Develop science and technology for the purpose of energy conservation and energy efficiency.
- Improve awareness on energy conservation and energy efficiency.
- Launch national program on energy conservation and energy efficiency.

Decision No. 79/2006/QĐ-TTg: Decision on the Approval of the National Target Program on Energy Efficiency and Conservation --- April 14, 2006

The Government of Vietnam clearly expressed its intention to promote the introduction of EE S&L programs in Vietnam through Decision No. 79/2006/QĐ-TTg dated April 14, 2006. This document creates a national target program for energy efficiency and conservation. This program will be implemented from 2006 to 2015 in two distinct phases:

- Phase I (2006 - 2010): Actively introduce and begin implementation of all components of the program.
- Phase II (2011 - 2015): Intensive and large-scale implementation of the contents of the program based on evaluation, conclusions and lessons learned from Phase I.

This decision sets overall national goals and specific objectives for energy conservation and energy efficiency for years 2006 to 2015. The decision specifies the details of the 11 national projects and programs, which are divided into six groups.

<u>Group 1: Strengthen the state management of energy conservation and energy efficiency; organize the energy saving control system by implementing the first project</u>

First project: Complete the legal framework for energy efficiency and conservation in industrial production, construction project management, the residential sector and energy consuming equipment.

Group 2: Strengthen the information, education and communication activities; mobilize public support; raise awareness and promote the economic and efficient utilization of energy; and protect the environment with three specific projects

Second project: Raise public awareness about energy efficiency and conservation.
Third project: Develop and promote an energy efficiency and energy conservation education scheme in the national education system.
Fourth project: Implement a pilot campaign establishing the model, "Economic utilization of energy in each household".

Group 3: Develop and distribute highly energy-efficient products and equipment, in the marketplace, gradually removing energy inefficient products with the following two projects

Fifth project: Develop standards and implement an energy efficiency endorsement labeling program for several selected energy consuming products.
Sixth project: Provide technical assistance to the domestic manufacturers in order to aide them in complying with energy performance standards.

Group 4: Develop and promote economical and efficient utilization of energy in industrial production facilities with the following two projects

Seventh project: Develop a management model for cost-effective and efficient energy use in industrial manufacturing/production enterprises.
Eighth project: Assist the industrial manufacturing/production enterprises to upgrade, improve and restructure their processes for cost-effective and efficient energy use.

Group 5: Economical and efficient energy use in buildings with the following two projects

Ninth project: Strengthen capacity and implement activities to promote energy efficiency and conservation in building design, construction and management.
Tenth project: Develop a model of energy conservation and energy efficiency management and include it in the building operations.

Group 6: Economical and efficient energy use in transportation activities with the following project

Eleventh project: Maximize the efficiency of transportation systems, minimize fuel consumption and reduce emissions from transportation in the environment.

The decision also describes several strategies including: financial; science and technology investment; training; and international cooperation, to implement this national program.

To enhance the implementation of the national target program, a Program Steering Committee (PSC) was set up and the tasks were assigned to the related government agencies.

Decision No. 80/2006/QĐ-TTg: Decision on Approval of Electricity Saving Program for the period of 2006 – 2010 --- April 14, 2006

The following Decision (No: 80/2006/QĐ-TTg) approved the Electricity Saving Program for Phase 1 period of 2006 – 2010. This decision describes the detailed activities of the national target program for the first five years of operation. The objectives of the program in the first five years include:

- Raising public awareness about ways of conserving electricity and using energy efficiently in order to ensure stability as the nation develops. Promoting the habit of conserving electricity and using energy efficiently into the daily life of all households and society.
- Ensuring a stable electricity supply for industrial and commercial sectors, as well as households. Minimizing the interruption and power outage of electricity supply.

The first five-year program includes the following key elements:

- Mobilize the whole population to save energy;
- Save electricity in offices;
- Save electricity in daily life and services;
- Save electricity in industrial production facilities;
- Save electricity in the electricity supply sector;
- Save electricity used by electric appliances;
- Establish an energy-efficient lighting plan;
- Popularize use of solar water heaters and use of alternative energy sources.

One item of the plan targets energy efficiency of electric appliances. The objective is to include the establishment of mechanisms which encourage and support manufacturers and importers to market high-efficiency electric appliances and to gradually eliminate the lower-efficiency ones. It also includes the circulation of information and guides to enhance customers' awareness and motivation to select electricity savings appliances in the market. One of the key elements of this decision stipulates that "MOIT shall issue circular guides to put a label on high-efficiency electrical appliances. ***From 2006 - 2010 energy savings labeling will be carried out for five targeted appliances including electrical motors, fans, air conditioners, fluorescent lights and its ballasts".*** It adds that MOIT should develop

and implement solutions for technical assistance, establish financial mechanisms aimed at encouraging investments in more efficient production, testing systems, etc. All of this is to support production and importation of electricity savings products and to reduce the production, importation and use of low-efficiency electrical appliances.

Also, MOIT is designated as the entity responsible to preside over and to coordinate with related Ministries, bodies and organizations to implement the national program.

Decision No. 08/QĐ-BCĐ: Decision on Assigning the Implementation of National Target Program on Economical and Efficient Use of Energy in 2007 --- December 29, 2006

This decision assigns tasks for the year 2007 to the relevant offices and agencies that participated in implementing Decision No. 79/2006/QĐ-TTg: National Target Program on Economical and Efficient Use of Energy.

The heads of assigned offices and agencies have the responsibility to comply with prevailing regulations and carry out the assigned tasks in compliance with their content and progress.

The Chief of Ministry's Office, Heads of functioning departments, Chief of Energy Conservation Office and Heads of assigned units are responsible for the implementation of this decision.

This decision provides the detailed plan for assigning the implementation of Decision No. 79/2006/QD-TTg in the year 2007. For each task, the decision identifies the lead unit, collaborating units, task activities, expected results, expenses and duration.

As far as EE S&L, the document confirms that the EECO is responsible for the activity with cooperation from the VSQC. The detailed activities to be implemented in the year are listed without specific dates for completion:

- Survey the market of air conditioners, electronic fans, and refrigerators.
- Survey domestic production technology capacity.
- Survey testing capability.
- Review current Vietnam Standards.
- Study standards of different countries.
- Develop draft standards.
- Propose to issue the standards.

A budget of 600,000 million Dongs is allocated for the implementation of these activities.

Circular No. 08/2006/TT-BCN: Guidance on the Energy Efficiency Labeling Process and Procedure for Energy Using Products --- July 16, 2007

This circular provides guidance on the process and procedures of registration, evaluation, and certification for the energy efficiency label applied to energy consuming products. It was issued on July 16, 2007.

This circular applies to organizations or individuals who manufacture and/or import energy consuming products and relevant stakeholders. The manufacturers and/or importers of energy consuming products identified in the circular and that are targeted for the labeling program may request that MOIT proceed with the evaluation of the energy efficiency of their products, resulting in certification for labeling, provided that they meet technical specifications regulated by MOIT.

This circular prescribes the following specific provisions:

- Testing laboratory requirements;
- Process for product certification, including preparation, registration application, file review and evaluation;
- Energy efficiency certificate and certified products;
- Energy-efficient label;
- Certification re-registration, etc.

The circular also prescribes the relevant requirements for the initial performance check, for the after-certification supervision of products, and for the process applicable to suspension and revocation of the energy efficiency certificate. Such suspension or revocation will take place when manufacturers and/or the certified products cease to comply with the relevant requirements.

MOIT's Department of Science and Technology is assigned as the executive agency to implement energy efficiency certification and the labeling program in Vietnam.

To date, there are no financial support policies for the introduction of energy-efficient products and technologies and no incentive policies to support the purchase of energy-efficient equipment by government agencies. National discussions are being held on this topic. The importance of these elements was highlighted by participants to a national workshop held in December 2007 in Halong Bay. The participants also stressed that the funding mechanisms should not only be provided by the government, but also by the private sector even if this is challenging in a Vietnamese context.

The Government of Vietnam wants all government agencies to work together to articulate an integrated set of incentives and promotion policies. MOIT and several stakeholders mentioned this important objective during the CLASP mission and they emphasized their needs for support to persuade the different government agencies to work together to develop those policies.

Energy Conservation Law

The Government of Vietnam is currently preparing an energy conservation law. The document is now in its fifth draft version with associated reviews and discussions underway between stakeholders. This law includes provisions on economic and effective energy consumption. The energy conservation law will comprise the following chapters:

- Chapter I: General Provisions;
- Chapter II: Economic and efficient energy consumption and management in the industrial sector;
- Chapter III: Economic and efficient energy consumption and management in the buildings sector;
- Chapter IV: Economic and efficient energy consumption and management in transportation sector;
- Chapter V: Economic and efficient energy consumption and management for energy-consuming products/equipment. This chapter includes: Responsibilities of manufacturers and importers of energy consuming products/equipment; MEPS for energy consuming products/equipment; Energy-efficient product labeling; Energy-efficient product testing; List of energy consuming products to be selected for management and labeling program; Elimination of products with high energy consumption;
- Chapter VI: Economic and efficient energy consumption and management in every-day life;
- Chapter VII: Development and usage of renewable energy;
- Chapter VIII: Methods for encouragement and promotion of economic and efficient energy consumption;
- Chapter IX: State management of economic and efficient energy consumption. It prescribes the detailed responsibilities for the relevant government agencies and related organizations;
- Chapter X: Evaluation, inspection and penalties;
- Chapter XI: Provisions for implementation.

However, even if development of this regulation and its future implementation are initiated by the Government of Vietnam, several market actors fear that a lack of institutional capacity (financial, human resources and skills) could hinder the successful development and implementation of these activities.

2.3.2 Activities Completed, Ongoing or Planned

Current Status of the National Program

The government is currently implementing the standards and labeling components of the national program for energy efficiency and conservation plan under MOIT's supervision. The period between 2006 and 2010 is designated as a national program pilot phase where the introduction of standards and labeling of five products is planned. The second phase that will be more intensive will take place from 2011 to 2015. It will include the adoption of a global policy for standards and labeling and the expansion of the initial efforts to cover five additional product categories. This national program is

funded by the State and is also supported by GEF, UNDP and the World Bank for the implementation of some components.

The main barriers mentioned by MOIT and other stakeholders during the mission are the lack of sufficient resources (human and financial). MOIT also strongly emphasized that, while they had very good exposure and understanding of the general methodology to implement the EE S&L program, they have an urgent need for know-how and hands-on support on the detailed steps to implement those concepts in practices.

The current context makes the implementation of the ambitious national program very challenging. In addition, MOIT stressed the need to increase coordination among stakeholders.

Market Research

In terms of market research, there is very little information about the energy end-usage in household, commercial, institutional and industrial sectors that is up-to-date. The only penetration study for equipment and appliances in households was carried out in 2001 as part of Phase 1 of the World Bank DSM project. This project included a 3,000-household survey that provided equipment penetration data in households and a very rough (no load metering, mainly estimates) unitary end energy use evaluation for different products. The study results were compared to the consumer billing data provided by EVN ensuring that the total consumption was accurate. However, the lack of information/measurement about part load energy consumption of various products and the pattern for usage in households were noted as one of the limitations of the study. Further load research activities were recommended to complement this primary evaluation of the end-usage by equipment. The data is now considered outdated as the living standard in Vietnam has increased significantly over the last years. Also, the cost of some of the equipment, like air conditioners, has been reduced significantly in the recent years resulting in a rapid surge of sales for this end-usage. EVN notes that the air conditioning load is increasing rapidly in all sectors. This has a very important impact on the country's peak demand.

The Energy Institute is currently carrying out a household study to update the penetration data for equipment. However, no additional load research activities are planned to improve the unitary energy consumption estimate of the different products. This would be needed in the future to obtain an accurate picture of which categories of equipment consume the most energy.

In the other sectors, there is even less information available. One industrial customer survey including 200 facilities was carried out in 2007. The results are not yet available.

The only other source of information could be extracted from energy audits that were done for 65 buildings (of mixed types: hospitals, office buildings, military, commercial, etc) by the Energy Institute over the years, but the accuracy and the homogeneity of the energy balance and reduction potential that can be found in those studies is unknown. No effort is planned to integrate the results of the studies into

a common database. In addition, the number of facilities visited is small (13 audits in 2007) so the data is not statistically valid. Another survey for 30 additional industrial customers is planned for 2008-2010.

Beside the limited activities planned under the national program, there is a clear need for additional market research or load research activities to support decisions for future S&L progress.

Equipment Targeted for Standards and Standards Development Status

The World Bank DSM-Phase 1 project supported capacity-building in the field of load research and the elaboration of draft standards (including test procedures and MEPS) documents for small- and medium-size, three-phase, electric motors , linear fluorescent lamps and electromagnetic ballasts. Following this project, the first two products targeted for standards and labeling were linear fluorescent lamps (size T8) and electromagnetic ballast that were promulgated in 2006 and are currently implemented under a voluntary scheme.

After a round of discussions with manufacturers, importers, and sellers that highlighted several issues that could hinder the implementation process, the draft standard for motors was not implemented. Most notable among these issues are that there are few locally produced motors, most are imports. The motors are also not always stand alone units, often arriving as components in more complex equipment.

MOIT, in collaboration with other key decision makers, selected six products as priority for the on-going national program:

- Air conditioners;
- Fans;
- Refrigerators;
- Hot water heaters;
- CFLs;
- Electronic ballasts.

The development of standards for these products will be undertaken by MOIT AND MOST with the various support projects from the World Bank and UNDP. MOST and VSQC are currently working on the development of standards for air conditioners and refrigerators. The other products will be taken up after progress on these.

The national program targets ten appliances for inclusion in the standards and labeling scheme through 2015. The remaining categories of equipment to be selected for these activities are not yet decided. Some evaluations of the market, load research, and penetration potential could help the Vietnamese stakeholders select the most appropriate ones.

The VEEPL project is also ongoing and includes several procedures related to standards and labeling. Four products are targeted in this project. The work included identification of relevant international test

procedures, MEPS and efficiency requirements for labeling. This work is nearly complete and the proposed test procedure and labeling specifications should be available for final review in the first half of 2008.

- Linear fluorescent lamps T8 (upgrade of the existing standard)
- CFLs
- High pressure sodium lamps
- Ballasts for high pressure sodium lamps,

CFL standards and labeling schemes were initially planned in the second semester of 2008. Because of the perception of customers' needs, and considering the interest of EVN in the peak reduction that will result from the introduction of CFL, it is possible that this project will receive a higher priority and be implemented ahead-of-schedule in the first semester of 2008. The Government is also considering whether they should offer a financial incentive (subsidies, rebates, etc) to promote high efficiency and high quality CFL.

The testing procedures are typically based on the corresponding ISO and IEC testing standards and are transposed into national standards. The VEEPL project unit will also consider potential harmonization with existing Vietnamese, regional or international standards.

Planned Activities

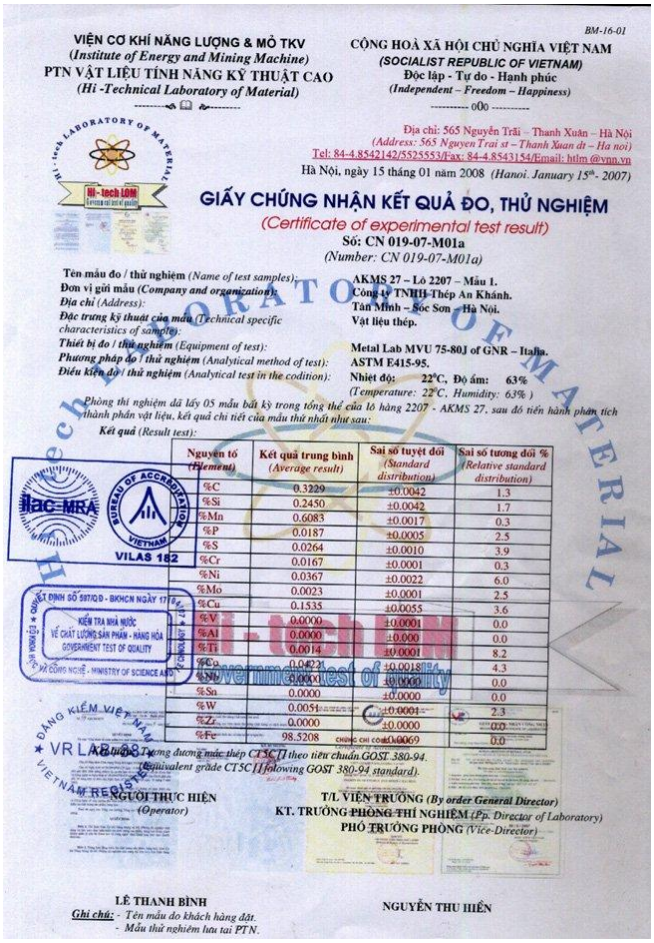
At the beginning of 2008, the following activities are being considered:

MOIT is launching a call for proposals to hire a consultant to help in the implementation of the air conditioner standard and labeling program. The project is expected to be launched in the first semester of 2008. This project is financed by the World Bank.

Five laboratories have been approved by MOIT to perform lighting product testing. Tests from laboratories located abroad can also be considered acceptable after review by MOIT. Figure 4 shows the RALACO industry lighting laboratory in the suburb of Hanoi. The laboratory is fully equipped to perform energy efficiency testing for CFL and electronic ballasts.

Figure 4 – RALACO Laboratory

The Government of Vietnam approved the budget for the construction of the first facility that will perform energy efficiency testing for air conditioners and refrigerators. The laboratory will be located within Hi-Tech laboratory facilities. The Hi-Tech personnel are currently designing the facility and preparing the tendering documents. The facility is expected to be operational in one or two years from now. This delay will probably be the most constraining factor in the schedule for implementation of the labeling scheme for refrigerators and air conditioners. The Hi-Tech personnel expressed interest in receiving support for the design (but it may be difficult to provide timely support as this activity will be completed soon), implementation, start-up, writing of detailed internal procedures for testing and reporting and preparation for certification by the Vietnam certification body. Figure 5 shows the certificate of the Hi-Tech laboratory from the Vietnam Laboratory Accreditation Scheme (VILAS).



VIỆN CƠ KHÍ NĂNG LƯỢNG & MỎ TKV
(Institute of Energy and Mining Machine)
PTN VẬT LIỆU TÍNH NĂNG KỸ THUẬT CAO
(Hi -Technical Laboratory of Material)

BM-16-01

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Hà Nội, ngày 15 tháng 01 năm 2008 (Hanoi. January 15th- 2007)

GIẤY CHỨNG NHẬN KẾT QUẢ ĐO, THỬ NGHIỆM
(Certificate of experimental test result)
Số: CN 019-07-M01a
(Number: CN 019-07-M01a)

Tên mẫu đo / thử nghiệm (Name of test samples): AKMS 27 – Lô 2207 – Mẫu 1.
Đơn vị gửi mẫu (Company and organization): Công ty TNHH Thép An Khánh.
Địa chỉ (Address): Tân Minh – Sóc Sơn – Hà Nội.
Đặc trưng kỹ thuật của mẫu (Technical specific characteristics of sample): Vật liệu thép.
Thiết bị đo / thử nghiệm (Equipment of test): Metal Lab MVU 75-80J of GNR – Italia.
Phương pháp đo / thử nghiệm (Analytical method of test): ASTM E415-95.
Điều kiện đo / thử nghiệm (Analytical test in the codition): Nhiệt độ: 22°C, Độ ẩm: 63%
(Temperature: 22°C, Humidity: 63%)

Phòng thí nghiệm đã lấy 05 mẫu bất kỳ trong tổng thể của lô hàng 2207 - AKMS 27, sau đó tiến hành phân tích thành phần vật liệu, kết quả chi tiết của mẫu thứ nhất như sau:

Kết quả (Result test):

Nguyên tố (Element)	Kết quả trung bình (Average result)	Sai số tuyệt đối (Standard distribution)	Sai số tương đối % (Relative standard distribution)
%C	0.3229	±0.0042	1.3
%Si	0.2450	±0.0042	1.7
%Mn	0.6083	±0.0017	0.3
%P	0.0187	±0.0005	2.5
%S	0.0264	±0.0010	3.9
%Cr	0.0167	±0.0001	0.3
%Ni	0.0367	±0.0022	6.0
%Mo	0.0023	±0.0001	2.5
%Cu	0.1535	±0.0055	3.6
%V	0.0000	±0.0001	0.0
%Al	0.0000	±0.000	0.0
%Ti	0.0014	±0.0001	8.2
%Co	0.0421	±0.0018	4.3
%Nb	0.0000	±0.0000	0.0
%Sn	0.0000	±0.0000	0.0
%W	0.0051	±0.0001	2.3
%Zr	0.0000	±0.0000	0.0
%Fe	98.5208	±0.0069	0.0

Tương đương mác thép CT5C [] theo tiêu chuẩn GOST 380-94.
(Equivalent grade CT5C [] following GOST 380-94 standard).

NGƯỜI THỰC HIỆN
(Operator)

T/L VIỆN TRƯỞNG (By order General Director)
KT. TRƯỞNG PHÒNG THÍ NGHIỆM (Pp. Director of Laboratory)
PHÓ TRƯỞNG PHÒNG (Vice-Director)

LÊ THANH BÌNH

NGUYỄN THU HIỀN

Ghi chú: - Tên mẫu do khách hàng đặt.
- Mẫu thử nghiệm lưu tại PTN.

Figure 5 – VILAS 162 Certificate for Hi tech - LOM

There is no other known plan for the construction of testing facilities in Vietnam at this time.

MOIT finalized the design of the endorsement and comparative labels in 2007 based on a competition between various design firms and a review and consensus-building process amongst stakeholders. There was no consumer research or focus group to confirm public acceptance/readability of the labels. Figure 6 below shows the label design selected.

The circular 08/2006 /TT-BCN on guideline procedures for energy labeling for energy consuming products was issued on November 16, 2006 and is described in the policy and regulation section of this report.

The labeling scheme for the T8 linear fluorescent lamp and the electromagnetic ballast was launched in 2007 on a voluntary basis. Manufacturers have already begun to participate in the labeling program with some products certified by two of the lighting companies. Figure 6 shows an example of a label certification given to one product while Figure 7 shows some products bearing the endorsement label.

Figure 6 – Endorsement Label

Figure 7 – Some Products with Endorsement Labels

Figure 8 – Certificate Issued by MOIT to the Manufacturer

Figure 8 shows the certificate issued by MOIT to a lighting manufacturer permitting them to put the endorsement label on some products that meet the threshold of energy efficiency for the endorsement label. In the background of the certificate we can see the endorsement label and on the bottom left is the logo of the national energy efficiency program.

For future work on refrigerator and air conditioner labels, MOIT is considering the introduction of a comparative label or a combined label (comparative and endorsement). See Figure 9. The design of this label was prepared via a national competition among graphic design firms. To date, the label has not tested by customer focus groups or any other customer oriented testing methods.

Figure 9 – Proposed Vietnamese Comparative Label

In the first year of the program, MOIT is only considering a voluntary labeling scheme, but as soon as 2010 they expect to introduce a mandatory scheme for some products together with MEPS. The Deputy Prime Minister recently asked (February 2008) to the EECO to prepare a roadmap for labeling equipment for the period 2008-2015. So the exact planning for those activities should be available at MOIT soon after approval.

Limited funding is available for outreach. Thus, the level of awareness and understanding of the label among the general population, retailers, and manufacturers is presently very low. There is a clear need to foster additional dissemination and education activities.

There is no integrated marketing plan for the various targeted audiences and this is an area of support that was clearly identified by MOIT during our meetings.

No monitoring activities have been undertaken up to now and nothing specific is planned for the future even though the need for monitoring has clearly been recognized. This is another area where MOIT expressed the need for hands-on support on the detailed operational support. The lack of baseline information about the extent of energy-efficient products already in the market was noted as a key issue to take in consideration when designing monitoring activities. It was agreed during the mission that even if the first monitoring activity is less than perfect because of the limitation on data availability, it will be a very useful experience to identify data required for an accurate impact evaluation and to discuss how these data collection operations could, in the future be integrated in the program implementation plan and day-to-day program management.

2.3.3 Other Regional Initiatives

Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling Project (BRESL) of UNDP-GEF

The BRESL project is a regional project targeting seven countries including Bangladesh, China, Malaysia, Pakistan Thailand, Vietnam and Korea (as observer). It is anticipated that this UNDP-GEF project will be initiated in April 2008. It is presently in the final stages of approval by the GEF Secretary.

The project will focus on building capabilities and interest to pursue energy EE S&L efforts in each of the participating countries by providing them with technical assistance. This will help the countries to prepare and start the implementation of standards and labels on a series of targeted products. The project will focus on six products: (i) refrigerators; (ii) room air conditioners; (iii) electric motors; (iv) ballasts for fluorescent tubes; (v) electric fans; (vi) compact fluorescent lamps. These appliances and equipment account for the majority of electricity consumption in the residential and industrial sectors, and are covered in the national EE S&L programs for a number of Asian countries. The harmonization objective of the project will encourage regional trade in energy-efficient products. Harmonization is envisioned to serve the interest of all countries involved, whatever their level of

development in EE S&L. The BRESL project has five major components consisting of complementary activities designed to remove barriers to EE S&L and focusing on: (i) EE S&L policy making; (ii) EE S&L capacity building; (iii) EE S&L manufacturer support; (iv) EE S&L regional cooperation; (v) EE S&L pilot projects. The expected outcomes resulting from BRESL include: (i) new minimum energy efficiency standards for the target products adopted in at least four countries; (ii) at least four countries to adopt new or improved appliances and equipment energy efficiency labeling schemes; (iii) EE S&L programs operating in at least five BRESL countries; (iv) regional cooperation on EE S&L efforts; (v) majority of appliance/equipment manufacturers in the region recognizing the benefits and opportunities for EE S&L efforts to increase their profits; (vi) mutual recognition agreements and product certification and posting procedures in place; (vii) increased market share of energy-efficient equipment/appliances in the different countries and in the region as a result of the EE S&L programs; (viii) energy savings from the utilization of energy-efficient appliances/equipment in the end use sectors in each BRESL country. Total budget for BRESL is one million USD but this includes a significant portion for regional activities. The exact amount that can be considered as support to each individual participating country is not yet quantified.

Efficient Lighting Initiative (ELI)

The ELI Quality Certification Institute was formed to take control of, and move ELI to sustainability, following the successful completion of this GEF funded project.

The GEF project, implemented through the International Finance Corporation, aimed to create a series of lighting energy and performance standards, which defined the best performing products available within a range of developing and transitional economies. Thus, regulators, program managers, market aggregators, enforcers and other stakeholders within developing and transitional economies were presented with predefined specifications that could reduce the time and skills required to develop and implement similar specifications locally. Further, the project aimed to implement a system whereby these products could obtain independently verified endorsement that their performance was at, or exceeded, the defined performance standards. Upon completion of the project, the IFC sought an appropriate long-term home for the initiative and identified the China Standard Certification Centre (CSC) as an appropriate location. As agreed with the IFC, CSC established a group, ELI, to take over efficient lighting initiative operations on behalf of IFC.

ELI has a clearly defined a strategy targeted to developing countries and transition economies. ELI has had very good cooperation with Vietnamese partners in the field of lighting energy efficiency. VQSC is planning to adopt ELI CFL specifications in the development of Vietnam's national CFL energy efficiency standards.

2.4 KEY MEETINGS HELD AND ISSUES RAISED DURING THE CLASP MISSION AND WORKSHOP

This section briefly summarizes the meetings that took place during the mission. The information gathered during the meetings about the current context for S&L in Vietnam and the future plan, is presented in section 2.3. The comments received about the support options are presented in section 3.4. Table 4 summarizes the various meetings held by the mission team during the week. Appendix 2 presents a description of each meeting held and provides some photographs taken during the visits.

Table 4 – List of Individual Meetings Held

Name / Title	Ministry / Department or Company
Mr. Nguyen Dinh Hiep Deputy Director	Ministry of Industry and Trade (MOIT) Science and Technology Department
Mr. Phuong Hoang Kim	Ministry of Industry and Trade (MOIT) Planning, Energy Efficiency & Conservation Office
Mr. Hoang Duong Thanh Project Manager	Ministry of Industry and Trade (MOIT) Energy Efficiency & Conservation Office
Mr. Nguyen Ba Vinh Project Manager	Ministry of Science and Technology (MOST)
Mr. To Dinh Thai Policy & Institutional Coordinator	Ministry of Science and Technology (MOST)
Mr. Luong Van Phan Deputy Director	Ministry of Science and Technology (MOST) Member of STAMEQ, Standard, Methodology and Quality Authority Vietnam Standard and Quality Center
Prof. Dr. Phan Hong Khoi Project Manager	GEF / UNDP VEEPI
Mr. Tran Hong Ky Operation Officer	World Bank Vietnam
Mr. Le Van Hung Program Officer	Sustainable Development Cluster, UNDP
Mr Cao Ngoc Dau Head of Institute	Mechanic, Energy and Mining Institute
Mr Bach Dong Phong	Mechanic, Energy and Mining Institute
Mr Nguyen Doan Thang General Director	Rang Dong Light Source and Vacuum Flask Joint Stock Company (RALACO)
Mr. Tran Manh Hung Chief, Economy and Forecast Development	Ministry of Industry and Trade (MOIT) Institute of Energy
Mr. Do Gia Phan Vice-Chairman General Secretary	Viet Nam Consumer Protection Association (VINASTAS)

3 SUMMARY OF WORKSHOP

This section presents the workshop/training activities held on the last day of the mission in Hanoi. This training session targeted a limited audience of about 20 key players in the market and was designed both to review base concepts and best practices of standards and labeling, but also to pursue discussions on barriers, challenges and support needs.

3.1 KEY TOPICS PRESENTED

Appendix 1 presents the day agenda for the workshop. The main topics covered included:

- CLASP Introduction
- Advantages of implementing S&L
- Energy Efficiency Labeling Development Process
- CLASP Guidebook
- Policies and regulations related to S&L
- Appliances that can be targeted and how to set priorities in a S&L program strategy
- Top runner standards and energy-saving labeling programs in Japan
- Discussion: priorities in Vietnam for S&L
- Baseline creation and Policy Analysis Modeling System (PAMS)
- Best practices in the development of label design and the importance of market research
- Equipment testing
- Label promotion and communications campaign/how to promote labeling
- Implementation plan
- Discussion: Potential support activities

3.2 SYNTHESIS OF ATTENDEES

The workshop was designed to have a limited number of participants in order to keep the discussion sessions productive and to the point. MOIT's main stakeholders were present, including Mr. Nguyen Dinh Hiep and Mr. Hoang Duong Thanh. MOST, the most important stakeholder related to standards development, was represented by Mr. Phan. The institute of mining (Hi-Tech) where the new air conditioner and refrigerator laboratory will be installed was also represented. Various ministries including the Ministry of Finance, the Association of Consumers and the Office of Energy Efficiency were present. Appendix 1 also includes a complete list of attendees and their contact information.

The quality of attendees for this workshop was quite satisfactory considering the fact that there was no bilateral agreement between CLASP and the Government of Vietnam before undertaking this project,

about one month and a half before the actual event. The week of meetings during the mission was very productive and there is a strong interest from the Vietnamese stakeholders on standards and labeling issues. The workshop was very productive with the presentation covering several key concerns of the Vietnamese stakeholders. This showed up particularly in the discussion sessions that were held in the morning and the afternoon where several questions, clarifications and discussions about international experiences and best practices were raised by the participants. The participants showed a lot of interest in regional activities and more particularly in the recent Chinese experiences in the field of standards and labeling.

3.3 SUPPORT OPTIONS IDENTIFIED AND TESTED DURING THE WORKSHOP

During the workshop, a session was devoted to the discussion of various support options. The potential support options were discussed prior to the workshop with high level representatives from MOIT to ensure they were in agreement with MOIT's vision for future development of EE S&L programs in Vietnam. Various options with a short description were presented during the workshop and exchanges were held on the different topics with the participants. The options presented were labeled from A to L. The following section (3.4) will describe in detail the support options that are proposed under four identified general categories:

Table 5 – Options Presented during the Workshop

Support Options
Category: General Capacity Building
A - Capacity building and continuous support to Energy Efficiency & Conservation Office for the development and management of labeling program (expert advisors).
B - Support for elaborating the general policies for the development and implementation of the labeling program.
C – Support to the Vietnam Standards and Quality Center to develop or upgrade the energy efficiency standards (integration/harmonization of activities).
D - Capacity building to the Energy Efficiency & Conservation Office to demonstrate the CLASP Policy Analysis System (PAMS) on refrigerators.
Category: Design of S&L Programs
E - Detailed program procedures and guidance, development and writing for the labeling programs.
F - Support to train the Energy Efficiency & Conservation Office and the Institute of Energy in implementing residential market research including surveys with stratified samples, billing analyses, etc. The market research can then be used to support the future selection of products.
G - Support the Energy Efficiency & Conservation Office to carry out technical and economic analyses to determine the savings potential associated with different products. This activity can help MOIT to determine which category of products should be targeted next.
Category: Implementation of S&L Programs
H - Capacity building for manufacturers on the standards and labeling system including the test procedures and the impact on equipment design.
I - Capacity building for manufacturers and for retailers, including salesmen, on the best way to promote

and sell higher efficiency products.
J - Refrigerator and AC standards test facility: Support during installation and start-up, development of detailed test procedures and training toward a future accreditation.
K – Support to develop integrated market communication strategy and plan.
Category: Monitoring and Evaluation of S&L Programs
L - Support to set-up a monitoring and evaluation activity within Energy Efficiency & Conservation Office on process, market and impact evaluation and support to carry out the monitoring of labeling programs.

3.4 FINDINGS OF SURVEY AND WORKSHOP DISCUSSIONS ON POTENTIAL SUPPORT OPTIONS

The following approach was used to analyze the survey results. First, a group of stakeholders from MOIT and MOST were awarded a higher priority in the evaluation because of their position as key decision makers and their broader vision of the various issues faced in the development of EE S&L in Vietnam. The remaining stakeholders were also considered but with a lower weighting factor in the analysis. Finally, some of the respondents ranked all options as equally important and were eliminated as this kind of answer provides no clue on how the various options could be prioritized. The final result was then reviewed by the international experts who, based on their experience in the field, fine tuned the rankings. After this evaluation, a meeting with MOIT was organized to briefly discuss the options and request feedback on the ranking.

After these different steps, the support options were classified into three groups according to their priorities. The following discussion explains the main rationale for classifying each option.

High Priority Group

This group constitutes four different activities that the most important stakeholders agree are of a high priority. Each of them is discussed below.

Priority 1 – Support to the Testing Laboratory

This option ranked the maximum points with the most directly involved stakeholders at MOIT, MOST and the Institute of Energy and Mining Mechanics (Hi tech - LOM). This is indeed a very important activity especially considering the fact that the government already agreed to fund the construction of the new air conditioning and refrigerator laboratory and that no expertise exists in the country (this is the first laboratory of this kind in Vietnam) to perform the various task associated with the detailed design, selection of equipment, supervision for installation, start-up, employee training. Support in this phase of the laboratory implementation is crucial to ensure that best practices for design and operation will be integrated in the process.

Priority 2 - Support to Set-up Monitoring and Evaluation Activities

This option ranked second with the main stakeholders for several reasons. First, MOIT perceives the needs to evaluate the process, market evolution and energy impact of the ongoing activities and the results of the first wave of voluntarily-labeled products to provide feedback to the design team on the efficiency of the program. Second, with additional products to be labeled in the near future, MOIT wants to know how they can incorporate the necessary data collection activities in the program development process. Finally, MOIT recognizes that the impact evaluation results can provide a powerful tool to justify the effectiveness of the labeling program to the highest government level and thus, can provide a rationale to strengthen the EE S&L policy in Vietnam

Priority 3 – Support to Develop Integrated Market Communication Strategies and Plan

This option ranked third among the main stakeholders. The lack of customer awareness is perceived as a risk to the current voluntary labeling scheme as the customer knowledge and recognition of the label value is essential to foster the interest of manufacturers, importers and retailers to provide higher efficiency equipment to the market. MOIT would like to receive support at all stages of the preparation and delivery of an effective awareness and information campaign. For instance, (i) how should a marketing plan be prepared?; (ii) what kind of media mix has proven to be effective in other countries?; (iii) how to establish a program image in the market; (iv) what kind of slogan could be effective to create a "buzz" in the market?; (iv) what kind of support activities could be undertaken besides the mass media campaign, etc?

Priority 4 – Assistance on Technical and Economical Analysis for Energy Using Equipment

This option ranked fourth in the analysis. The various stakeholders perceive that the initial selection of products for labeling was mainly done using an empiric approach, but was probably good considering that equipment with high potential of efficiency improvement was selected. However, they also recognize that the selection process could be made more systematically using best practices learned in other countries. They would appreciate receiving support to carry out technical and economical analyses for different candidate products for the future phase of EE S&L development and implementation.

Medium Priority Group

The medium priority group comprises the next four options that ranked highest in the survey.

Priority 5 – Support to VSQC to Develop or Upgrade the Energy Efficiency Standards

MOST expressed the need for support in developing and upgrading energy efficiency standards for future products to be included in the EE S&L program. The VSQC has already good experience in handling the adoption of standards from ISO or IEC into national standards, but some support is needed to ensure that the efforts made are as much as possible harmonized with ongoing activities in

Asian countries. Support could also be provided to the process of establishing appropriate standards for the comparative label and for the future introduction of MEPS.

Priority 6 – Capacity Building for the Energy Efficiency and Conservation Center

The Energy Efficiency and Conservation Center is a relatively young organization within MOIT. Several staff members were assigned to the center in the last year and more will join in the near future as the quantity of products included in the EE S&L program continues to grow. This rapid increase in human resources within the context of a heavy workload to design and implement S&L activities makes it very difficult to properly train and integrate new staff in the Center's operations. Capacity-building activities to help strengthen the group's skills as it grows are considered critical to the success of the center. Also, while the current staff has a good general knowledge of the theoretical processes to develop and implement S&L programs, they would welcome hands-on training by experienced international experts that can help transfer best practices learned abroad to the Vietnamese context.

Priority 7 – Support to Carry-Out Market Research Activities

Market research is needed to support the development of EE S&L activities. Market research is critical to acquiring better knowledge of the energy end-usage structure for various sectors of the Vietnamese market. There is a need for updated data on the penetration of various types of products in the market, the perceptions of the customers of these technologies, the perceptions of retailers and manufacturers, the market characterization including the market share of various classes of efficiency for equipment, the offerings by retailers, the salesmen's ability to inform the customers, etc. Market research will also be needed in support of the monitoring and evaluation activities.

Priority 8 – Support to Develop Incentives Policies

The national plan already includes a general provision for the development of incentives to foster the penetration of high efficiency equipment in the market. However, very little is being done on this aspect of the program as the scarce resources are focused on the implementation of the endorsement label component and preparation for the introduction of the future comparative label scheme. Some support policies such as financial incentives and a government purchasing program for high efficiency equipment could be considered. These support options would include provision of hands-on support and capacity building to the Energy Efficiency and Conservation Center on how to develop these kinds of policies. This activity was initially in the lowest priority group but the international experts recommended that it be upgraded to the medium priority group instead, due to the fact that international experience demonstrates the positive impact that these types of complementary policies can bring to a national S&L program.

Lower Priority

Priority 9 – Retailers Capacity Building and Training

There is currently no program activity to increase the awareness and information about energy efficient products focused on retailers and their customers. This support activity can thus include the development of a training module for retailers and the delivery of "train the trainers" sessions to prepare a group of national experts that will be able to disseminate the material and sessions in various cities or for specific retail groups in the country. This activity is, however, in the lower priority group recognizing that it is challenging to implement this type of training in a market dominated by small shops where the owner is not always willing to free up time for his employees for external training. Also, the rate of employee turnover, salary and remuneration bonus structure for the salesmen often run counter to the promotion of the most efficient products.

Priority 10 – Detailed Program Procedures and Guidance

MOIT mentioned that support for the development of detailed program procedures and guidance for their EE S&L program would be another useful area of support. The detailed program procedures can be useful in indicating how the program is currently implemented in the market compared to international best practices. In particular, the handling of various exception cases as well as future enforcement activities, once the S&L and MEPS will become mandatory, are others areas of interest.

Priority 11 – Capacity Building for the PAMS Model

The CLASP PAMS model is considered useful but did not get a very high priority in the list of options. Maybe some training for the PAMS model could be bundled together with option G that focuses on the implementation of technical and economical analyses for specific products or for the market. This limited and focused application of the tool may be an interesting pilot for MOIT to determine if it can be used more widely in the future.

Priority 12 – Capacity Building of the Manufacturers on S&L Program

Capacity building for manufacturers was ranked the lowest in the list of support options. MOIT feels that if the previous support options are implemented properly, they can afterward handle the communication and capacity building for the manufacturers from that point.

4 CONCLUSIONS

The Government of Vietnam has clearly demonstrated in the recent years its commitment to energy efficiency and to EE S&L program and activities. This interest from the Vietnamese Government was first shown by its agreement at the beginning of the 2000 to implement World Bank financed energy efficiency programs including the development of draft MEPS and testing procedures for motors and lighting products. Thereafter, the Government worked with different donor agencies including UNDP and GEF to implement follow-on work and additional programs in the public lighting sector and the small and medium enterprises sector. In parallel with these project based activities with international financing organizations, the Government of Vietnam prepared different decrees, circulars, and decisions to launch its own national set of activities financed by the national treasury. These activities included preparing and launching a first group of endorsement labeling program for lighting products. These first components of the national EE S&L programs will be further strengthened with the upcoming energy efficiency law that includes several provisions to provide a more formal legal framework for future activities. The decision to introduce refrigerator and air conditioner comparative labels and MEPS has been made and budget for the construction of the first testing facility for those products is already committed. The national program that was launched in 2006 paves the way for a future set of activities with an ambitious target to introduce ten categories of products in the national EE S&L programs.

All this indicates a coherent vision and committed engagement from the Government of Vietnam toward energy efficiency and EE S&L activities and affirms its role as a major contributor in planned future efforts and activities. However, even if the willingness and commitment to implement EE S&L policies and programs is there, the country faces serious barriers including the limitation of resources (human and financial), experience, and the need to balance S&L commitment with all the other national priorities. In such a context, there is a clear opportunity to develop, through outside funders, various projects to help the Government of Vietnam achieve its objectives. These projects could provide leverage that could help the Government of Vietnam make a more efficient usage of its limited resources.

4.1 SUGGESTED NEXT STEPS FOR S&L

The current context of the country's EE S&L development is still in the early stages, but there is clear political support for the introduction of an aggressive set of measures through 2015. The Government of Vietnam is developing the energy efficiency law that will further strengthen the legal framework for the implementation of EE S&L activities. The Government of Vietnam has also demonstrated its commitment by collaborating with donor agencies to implement programs and projects that support the ultimate objective of introducing EE S&L in Vietnam. Despite this clear intention from the Government, limitations in human and financial resources leave open several areas for additional assistance. The mission ultimately identified 12 areas of future work classified according to three levels

of priorities. It is highly recommended that these opportunities be further addressed. A first group of activities that could be provided by CLASP to the Government of Vietnam is recommended next.

4.2 TECHNICAL ASSISTANCE OPPORTUNITIES FOR S&L WITH LIKELY RESULTS AND OUTPUTS OVER TIME

It is recommended that a plan be developed to support the four High-priority options for EE S&L as discussed with MOIT and other relevant stakeholders. Further support can be considered after this initial set of activities.

The next table highlights likely results and outputs expected from this support over time.

Table 6 – Likely Results and Expected Outputs

Support Options	Results and Outputs
Support to the Testing Laboratory	Laboratory operational with relevant written procedures, and training provided to operators according to international recognized practices.
Support to Set-up Monitoring and Evaluation Activities	Procedures and database for the support of monitoring and evaluation activities in place, and operational. Staff from MOIT trained and able to perform monitoring and evaluation activities in the future.
Support to Develop Integrated Market Communication Strategies and Plan	An integrated market communication strategies and plan are developed and ready for implementation. Staff from MOIT is trained in the process of developing an integral market communication strategy.
Assistance on Technical and Economical Analyses for Energy Using Equipment	Technical and economical analysis models are prepared and operational for the Vietnamese context. Staff from MOIT is trained in how to prepare and develop technical and economical analyses.

APPENDIX 1 – WORKSHOP AGENDA AND LIST OF PARTICIPANTS

AGENDA
Energy Efficiency Standard and Labelling in Vietnam:
A Workshop Sponsored by the Ministry of Energy Trade and Industry (METI) of Japan and executed by the Institute of Energy Economics Japan (IEEJ) and
January 18, 2007

Location:
Hanoi Press Club
59 A Ly Thai To St., Hanoi - S. R. Vietnam
Tel: (84-4) 934-0888
Fax: (84-4) 934-0899
http://www.hanoi-pressclub.com

8h45 Inscription

9h00 Welcome – Mr. Pierre Baillargeon, Econoler International (A CLASP Implementing Partner) - Canada
9h05 Welcome – MOIT
9h10 CLASP Introduction

Presentations

9h15 Advantages of Doing S&L – Mr Li Tienan, China Standards Certification Center (A CLASP Implementing Partner) - China
9h30 Energy Efficiency Labelling Development Process – Mr Li Tienan
9h50 CLASP Guidebook – Mr. Pierre Baillargeon
10h10 Policies and regulations Related to S&L – Mr. Li Tienan

10h25 Pause

Presentations

10h45 Appliances that Can be Targeted and how to Set priorities in a S&L Program Strategy – Mr. Pierre Baillargeon
11h15 Top Runner Standards and Energy-saving Labeling programs in JAPAN – Mr. Hidefumi Katayama, Ph. D. – The Energy Conservation Center, Tokyo

Discussion
11h35 – Priorities in Vietnam for S&L

12h30 Lunch

Presentations

13h30 Baseline Creation and Policy Analysis Modeling Tool (PAMs) – Mr. Pierre Baillargeon

13h45 Best Practices in the Development of Label Design and the Importance of Market Research – Mr Li Tienan
14h00 Equipment testing– Mr. Pierre Baillargeon
14h20 Label Promotion and Communications Campaign/How to Promote Labelling, - Mr Li Tienan

14h40 Pause

Presentations
15h00 Implementation plan – Mr Pierre Baillargeon

Discussion

15h20 Potential support
16h00 Closing

LIST OF PARTICIPANTS

NAME	ORGANIZATION	EMAIL	TEL
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Mr.Nguyen Duy Son	Ministry of Finance	nguyenduyson@mof.gov.vn	Tel: (844) 826 2245 Fax: (844) 826 2266
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APPENDIX 2 – MEETINGS HELD AND PHOTOGRAPHS OF THE STUDY TOUR AND WORKSHOP

MOIT

Several meetings were held with MOIT to discuss past, current and future EE S&L initiatives. The meetings with MOIT included discussions with Mr. Nguyen Dinh Hiep, Mr. Phuong Hoang Kim and Mr. Hoang Duong Thanh. The objective of the first meeting, which took place at the beginning of the mission, was to learn about MOIT activities. We also inquired about the main players relevant to the standards and labeling programs and their responsibilities. MOIT provided support for the organization of some meetings and for the official workshop invitations. The second meeting was held on the fourth day of the mission to discuss the various support options that could be presented to the stakeholders during the workshop. Another exchange took place the following week to request comments and feedback on the proposed ranking of support options. The feedback from MOIT was taken into consideration for the preparation of the workshop discussion sessions. Other meetings were held to clarify some details of the program.

MOST

Two meetings were held with MOST to discuss various aspects of the ongoing operations. The first meeting with the managers of the standards and labeling program provided an overview of the current context and how MOST's various experts were interacting during the program development and execution. Mr. Nguyen Ba Vinh and Mr. To Dinh Thai attended this meeting.

The second meeting was held with VQSC to discuss the process and activities related to the development of Vietnam energy efficiency standards including the transfer of international testing procedures and energy efficiency criteria for the labeling system. This second meeting was attended by Mr. Luong Van Phan, Ms. Doan Thi Thanh Van, Ms. Nguyen Quang Ngoc and Ms. Bui Ngoc Bich.

Institute of Energy

A meeting was held with Mr. Tran Manh Hung to discuss market data availability and the current and/or future market research activities.

UNDP's Country Office

A meeting was held with UNDP (Mr. Le Van Hung) to discuss their current strategy and initiatives related to EE S&L. Details of the ongoing projects including "Vietnam Energy Efficiency Public Lighting" (VEEPL) and "Promoting Energy Conservation in Small and Medium Scale Enterprises" were discussed with him. Regional EE S&L cooperation and harmonization projects (BRESL) were also examined. A general exchange was held on barriers in the market and the institutional capabilities

of the various players in the field of energy efficiency in Vietnam. There were follow-up discussions with Mr. Hung during the workshop sessions. His insights were very informative and valuable.

VEEPL PMU

A meeting was held with VEEPL Project Management Unit to discuss the ongoing project and more specifically the operations relating to standards and labeling. Dr. Phan Hong Khois and Dr. Nguyen Thi Bac Kinh participated in this meeting as well as in a following meeting with a lighting product manufacturer, RALACO.

World Bank

With Mr. Tran Hong Ky from the World Bank Vietnam Office, we discussed the ongoing energy efficiency project and in particular the component related to the EE S&L for air conditioning products. Discussions were also held on the general barriers existing in the market and the institutional capabilities of various market actors.

Hi Tech Laboratory of Material (Hi tech - LOM)

A meeting was held with the Institute of Energy and with the director of Hi tech LOM to discuss the ongoing progress related to the construction of a new air conditioner and refrigerator equipment test laboratory. Other staff members from the laboratory joined the meeting. After the discussion, the mission moved to the location of the future laboratory for a visit. Items that were talked over were the steps planned for the construction and what type of support or expert advice was currently required or forecasted for this activity. The Hi-Tech Laboratory is accredited by VILAS.

RALACO

A meeting and factory visit was organized at RALACO headquarters. This company manufactures lighting products and is the largest manufacturer in the country. The meeting started with the General Manager of the company together with the Head of Production, Head of Product Development and Head of Quality Control (test laboratory). The discussion included a review of the manufacturer's perception and interest for the energy standards and labeling program and the general characteristics of the lighting market sector in Vietnam. This company has already joined the EE S&L scheme and received a certificate to label their linear fluorescent lamps and their electromagnetic ballasts. The meeting was followed by a site visit to see the production lines for linear fluorescents, CFLs and ballasts. Next was a visit of the testing laboratory where the products' quality, lifetime and energy efficiency performance are tested.

Vinastas

Vinastas, the national consumer protection and standards association, was visited by the mission to discuss the current activity and overall capability of this NGO. Vinastas offered a presentation of their

vision on the energy efficiency labeling program and this was followed by further discussion. General discussion about the market barriers and the perception of the consumers about energy efficiency and their current awareness were also held. Mr. Do Gia Phan, Vice President and general secretary of Vinastas attended with a colleague.

Figure 10 – Meeting with VSQC

Figure 11 – RALACO's Showroom

Figure 12 – RALACO – Visit of the Plant

Figure 13 – Meeting at Vinastas

Figure 14 – Photos taken during the Workshop

Figure 15 – Workshop Organization Team