MID-TERM EVALUATION

Vietnam Energy Efficiency Public Lighting (VEEPL)

Government of Viet Nam
United Nations Development Program
Global Environment Facility

FINAL VERSION

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Mr. Jan van den Akker
International consultant

Mr. Nguyen Van Phuc
National consultant

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
APR	annual progress report
AWP	annual work plan
CFL	compact fluorescent lamp
CO	Country Office
CO_2	carbon dioxide
DoUIT	Department of Urban and Technical Infrastructure (of MoC), now called Administration of Technical Infrastucture
ECC	HCM City Energy Conservation Center
EE	energy efficiency or energy-efficient
EEA	energy efficiency agents
EEL	energy-efficient lighting
EEO	Energy Efficiency Office of MoI (also referred to as ESO)
EEPL	energy efficient public lighting
EE&C	energy efficiency and conservation
ESCO	energy service company
EVN	Electricity of Vietnam
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GWh	gigawatt-hour
Hapuelco	Hai Phong Urban and Electric Lighting Co.
Hapulico	Hanoi Lighting and Urban Equipment Co.
HPS	high-pressure sodium lamp
HPM	high-pressure mercury lamp
HCMC	Ho Chi Minh City
HUT	Hanoi University of Technology
ICE	Institute of Construction Economics of MoC
IEP	Institute of Engineering Physics of HUT
IFS	Institute of Financial Science of MoF
IoE	Institute of Energy of EVN
IMS	Institute of Materials Science of VAST
ISTA	international senior technical advisor
KCT	Science and Technology Television Club (STTC)
kt / kton	kiloton
MEPS	minimum energy performance standard
MoC	Ministry of Construction
MoF	Ministry of Finance
MoI	Ministry of Industry, also referred to as MoIT
MoIT	Ministry of Industry and Trade
MoST	Ministry of Science and Technology
MW	megawatt
NEX	national execution
NLAC	National Lighting Advisory Committee
NPD	national project director
NSTA	national senior technical advisor
O&M	operation and maintenance
PECSME	Promoting Energy Conservation in Small and Medium-Scale Enterprises Project
PIR	project implementation review
PL	public lighting
PLIC	Public Lighting Information Center (of VULA)
PM	project manager

PMU	project management unit
PO	project owner
PSC	project steering committee
QUATEST	Quality Assurance and Testing Center
R&D	research and development
Ralaco	Rang Dong Light Source and Vacuum Flask Joint Co.
Sapulico	Public Lighting Company of HCMC
TWG1	Technical Working Group and EEL Standards
TWG2	Technical Working Group on EEL Technology Transfer
ULC	Urban Lighting Consultancy Research Center
UNDP	United Nations Development Program
USD	US dollar
VTV	Vietnam Television
VAST	Vietnamese Academy of Science and Technology
VEEPL	Vietnam Energy Efficient Public Lighting Project
VINAKIP	Vietnam Joint Stock Electrical Tools Co.
VND	Vietnamese Dong
VULA	Vietnam Urban Lighting Association
WB	World Bank

EXECUTIVE SUMMARY

As Vietnam's economy continues to grow quickly (with figures of 7-8% annually), demand for electric energy will grow even faster (with 15% during 2001-2005). Current demand for electricity is only just being met, particularly at peak, and supply remains unstable. The challenge for the government of Viet Nam is to meet the exploding demand for electricity. Thus, the Government is pressuring local government to reduce their energy bills, e.g. by cutting back on their public lighting expenditures. Public lighting in Vietnam, including street lighting and lighting of public offices, schools and hospitals, is still small.

This has been done by cutting back lighting at night, but this action compromises lighting quality and safety and security. Therefore, cities are becoming interested in other options, such as putting in automatic control centers (enabling to match luminance with lighting needs at certain hours), higher-efficiency lamps (e.g. high-pressure sodium lamps, HPS instead of mercury lamps) and more efficient luminaires. In public buildings, such as schools, lighting is not always optimal. Better lighting design and EE lamps (e.g., by using T8 instead of T10 tubular fluorescent lamps) improve lighting efficiency and quality as well as energy efficiency.

However, a number of policy-institutional, financial, informational and capacity barriers exist, which result in market failures, preventing desired market operation for the introduction of such energy-efficient public lighting (EEPL) as mentioned above. The lowering of market barriers results in market transformation into a market situation that is more facilitating and close to ideal market conditions, as above. For this reason, the United Nations Development Program (UNDP) and the Vietnamese Academy of Science and Technology (VAST) decided to establish the Vietnam Energy Efficient Public Lighting Project (VEEPL). Funds were applied for to the Global Environment Facility (GEF). The project was endorsed by GEF Secretariat in 2005 and project started in 2006. Total investment during the execution of VEEPL project in 2006 – 2010 is estimated at USD15.6 million of which GEF contribution is USD 3.00 million.

As the project is approaching its mid way of implementation, the **purpose** of this mid-term evaluation is to review the progress of the project with its stated project activities, outputs and outcomes up to date and to evaluate their adequacy and relevance, thereby providing advice and an opportunity for the project management team to complete any pending tasks and to address any eventual shortcomings before the finalization of the project by the end of 2010. Two independent consultants, Mr. Jan van den Akker (Netherlands) and Mr. Nguyen Van Phuc (Viet Nam) were selected as evaluators and a mission was undertaken to Vietnam in the last two weeks of June 2008. During the mission, extensive discussions were held with representatives and staff from VAST, UNDP and other stakeholders, project progress and technical reports were reviewed and project demonstration sites in Hanoi, Ho Chi Minh City and Quy Nhon were visited.

The UNDP Project Document mentions as its project **goal** (global objective) "the reduction of greenhouse gas emissions from fossil fuel based power generation in Vietnam". The project **purpose** (development objective) is the "improvement of lighting energy utilization efficiency through the removal of barriers to the widespread application of energy efficient lighting systems in the public sector in Vietnam.

The project's **components (outcomes) are**:

- *Public lighting policy development* – activities that strengthen and improve the local and national policy and regulatory framework and encourage feasible energy efficient public lighting projects in Viet Nam.
- *Public lighting technical support program* – activities that strengthen the capacity of relevant GOV agencies on energy efficient public lighting product testing, market monitoring and enforcement of standards with consumers.
- *Public lighting financing program* – activities to encourage the government, financial/banking and private sectors, to provide financial assistance for the development and implementation of energy efficient public lighting system projects.
- *Public lighting system demonstration program* – activities to provide Vietnamese stakeholders with direct experience with the design, development, financing and implementation of cost -effective, energy-efficient public lighting system projects.
- *Information dissemination* – establishment of a network of technical expertise in energy efficient public lighting in Viet Nam and the production of high quality, affordable, accessible and up-to- date information services, continuing education, and awareness improvement on the application of energy efficient public lighting systems.

The **main outputs** of the project so far can be summarized as follows:

- *Public lighting policy development*
  (1) A proposal and outline of Strategy on Urban Lighting Development up-to 2020 completed; (2) A draft circular on public lighting (PL) management completed and submitted to the Ministry of Construction (MoC), (3) A decision on integration of Urban lighting plans in the city construction planning issued by MoC , (4) A Handbook on Economic and Technical Tools published and distributed.

- *Public lighting technical support program*
  (1) Study and development of Energy Performance Standards (EPS) for standards and labeling for energy-efficient (EE) lighting products (CFLs, T8, HPS, ballasts for CFL, HPS and road luminaires) completed; (2) Study and development of MEPS for streets, schools and hospitals completed; (3) Quality of 05 types of EEL products (CFLs, T8, ballasts for HPS and road luminaires) improved; (4) Testing capacity 3 labs (QUATEST1, HUT, IMS) enhanced;(5) Handbook of the guideline on use of design software: published and distributed; (6) Lighting Forum established and posted on the VEEPL Website

- *Public lighting financing program*
  (1) A report on applicable appropriate EEL financing schemes completed;

- *Public lighting system demonstration program*
  (1) Feasibility analyses on demo schemes completed; (2) 8 EEL models demonstrated in Ho Chi Minh, Quy Nhon and Hanoi cities; (3) An action plan for dissemination of demo results (case studies, benchmarks, identified potential cities/towns for replication) completed;

- *Information dissemination*
  (1) PL database facility established with currently contains full data of 19 cities/towns and four lighting manufacturers collected and analyzed; (2) Newsletters: No1, No2 and No3 (1500 E./No); 1 VEEPL Brochure (2000 issues; 1 Leaflet (1500 issues); 6 video

clips produced and shown on VTV; 20 papers published in journals/magazines); 4 Interview on VTV and Radio Vietnam Voice; VEEPL Website updated (more than 19,000 visits) and (3) PL Information Center (PLIC) set up and in place; PLIC brochure (1000 issues).

Significant efforts and energy have been invested by VEEPL in exploratory research, technical assistance to manufacturers, capacity building and with the demo projects in HCMC, Quy Nhon and Hanoi. In terms of budget expenditures, the level of disbursements more-or-less in 2006 and 2007 follows the rate of implementation as detailed in section 2.1 of this report.

The information associated has been captured into a large number of reports. These deliverables (over 30 reports produced in the various components by project partners or subcontractors) might be taken as an indicator for the level of effort involved and the good progress being made.

However, analysis made by UNDP and the Evaluation Team indicates that the quantity of outputs produced is OK, but that quality of the reports produced differs. To the Evaluators' opinion:

- *Most success in terms of impacts has been obtained in the more technological components 2 (standards and support to industry) and 4 (demonstration schemes); here we can give a rating of satisfactory*
- *Less impact is noticeable in the policy development (component 1) and awareness raising component 5 (between marginally satisfactory and marginally unsatisfactory)*
- *The Evaluators give a rating of unsatisfactory for component 3 (finance mechanism).*

The **difference in achievements** between components can be attributed to the following:

- *Way of awarding subcontracts and monitoring of outputs and impacts.* Stakeholder mobilization and a close network has been created with stakeholders from lighting companies, cities, lighting manufacturers, schools and government officials from city councils as well as national ministries. This is a very positive impact of the project. On the other hand, it has led to a tendency of 'closed shop', in which subcontracts are 'given' to members of this network (based on short-listing a few of them), rather than through a real open procedure in which national and international experts are invited to bid as well. As long as subcontracts are given to organizations according to their expertise (mostly technology-oriented) this has led to reasonable results, notably in the technical support and demonstration components 2 and 4, but when subcontracts are given to organizations in areas in which these do not have proven expertise this has sometimes resulted in very substandard results. This was notable in the areas of policy and planning analysis, identifying innovative finance and to some extent in awareness creation. However, the 'closed shop' way of awarding work to network associates and project partners, makes it difficult for the Project Management Unit (PMU) to reprimand their peers if the deliverable does not happen to be up-to-standards[1].

[1] The Project Management Unit (PMU) has the following comment to the Evaluator's opinion; "the procurement (subcontractor and consultant recruitment) has absolutely been conducted in conformity with the National Execution Manual and on the basic of partner network establishment through the procurement results. VEEPL project has selected the right stakeholders and conformed to the procurement regulations of UNDP. What have been achieved from the project implementation in term of policy development, technical assistance, demonstration and communication are good and in line with the design of Project Document. Some activities even exceeded the targets set forth such as various policy proposals (Decree, Strategy) have been being developed and issued by MoC and the Government".

- *Technology orientation.* VAST is a leading national institution for scientific and technological research and has shown capability in managing projects successfully. However, we observe that the project is being managed as if it were a *technical* academic project, while the project is about the higher goals of removing *non-technical* barrier to a nascent market of EE technology. This may explain the extreme orientation to producing reports as if they were a series of research papers, instead of focusing on the broader aim of integrating the results of the reports into understandable documents of information that are so convincing by their attractiveness in layout and message alike that they can convince decision-makers into action, both at lines ministries, the provincial People's Committee as well in similar structures and local level.

- *Project management.* Leading staff in PMU, i.e., National project director, Project manager and National senior technical advisor (NSTA), are renowned scientists in their field. However, Evaluators noticed that critique might be interpreted as attacking their academic credentials, thus creating an 'us-against-them' atmosphere, especially when such critique is coming from UNDP Country Office and the International senior technical advisor (ISTA).

- *Sustainability and replicability.* In terms of *replicability*, the demonstration schemes have been technically shown to work in Ho Chi Minh and Quy Nhon cities (street lighting) and Hanoi (schools). From the policy side some progress has been made on integrating public lighting into urban spatial planning. However, the financial side has been largely left untouched, and one cannot speak of 'technology delivery' model being developed yet, integrating technology, economic and financial aspects, in a way that it can be showcased and replicated[2]. Regarding *sustainability* of VEEPL's activities, it is not clear which institution will have the mandate and the capacity to continue the promotion of EEPL in Vietnam after the project will end in 2010. The Vietnam Urban Lighting Association (VULA), being an association of lighting manufacturers, government representatives, would ideally be placed to play a promotional role, but may not have sufficient capacity (staff, financial resources) to do so. In terms of policy-making and formulation of standards and labeling, the appropriate Ministries, such as MoC, MoI and MoST will play a crucial role. A second concern is about the availability of all the information and knowledge generated, since currently it is difficult for outsiders and even VEEPL consultants to have access to the more than 30 technical reports produced by VEEPL.

The Evaluators have the following **recommendations**:

<u>Project management</u>

The PMU should adopt a culture of being more 1) outward looking, 2) less rigid and 3) delegating authority.

- Regarding the first, policy formulation and setting up innovative finance will definitely require specific expertise that may be outside the one expects to find in a technology institute or in the VEEPL network as a whole. Now we go to the second phase of integrating results into a policy and sound strategy and financial instruments, the PMU should not shy away from inviting such expertise by broadening its network to actors whose specialty, for example, is policy making and banking, and by contracting outside consultants and subcontractors;

[2] It should be noted that, ccurrently and in the future, local governments cover all the expenditures for public lighting (installation, operation, maintenance and electricity bills) through the state budget allocation.

- Regarding the second, the coordinators of the various components should work as a team,
- Regarding point three, coordinators should be made more responsible (but also accountable) for their activities. Also, the ISTA should not be regarded as an 'outsider', but should form with NSTA and PM the 'core management team' of the PMU. The Evaluators have noticed that right from the beginning PMU did not feel the need for an ISTA, but prefer more targeted international consultancy in the various components. We think the services of an ISTA are needed now that the project evolves from having laid a technological base into more policy-making, informational and economic-financial issues. Budgetary concerns should not be an issue, as current system of subcontracts should be revised anyhow and money can thus be made available to be able to afford both an ISTA as well as the necessary short-term national and international consultancy, as will be discussed below.

Removing barriers in an integrated way to achieve market transformation

Significant efforts and energy have been invested by VEEPL in exploratory research, technical assistance to manufacturers, capacity building and with the demo projects in HCMC, Quy Nhon and Hanoi. The information associated has been captured into a large number of reports, although they differ in quality and, in terms of achievements, most success has been obtained in the components 2 and 4, but less impact is noticeable in policy development (component 1) and little impact in component 3 (finance mechanism). This may not be a surprise, since the nature of the executing agency, VAST, is that of a technology institute, so one can naturally expect that more results have been in the two technology-oriented components 2 and 4.

- An assessment should be made of the final reports and the quality of the analysis and recommendations therein by PMU management (PM, NSTA, ISTA) with the aid of an outside consultant (national or international). The central idea is that, almost half-way, some stock-taking should take place to ascertain as to where the info generated in the reports has led to. The analysis and recommendations in these reports should be reviewed in a holistic approach, i.e. in an integrated way (meaning outputs produced under one component can have meaningful input in other components) and with the idea in mind how recommendations will lead to higher-level goal of lowering of barriers to achieve market transformation. Where gaps exist, such gaps should be identified and evaluated. As a consequence, the objective and methodology of the remaining activities and subcontracts should be reviewed and where needed revised, while new activities should be introduced if needed and some activities/subcontracts may need to be redone. This will imply deviating from the original list of activities as laid down in the project document (adaptive management) and updating the list. We recommend that not only a work plan 2009 is made, but a work plan is drafted too by PMU for the whole remaining 2008-2010 period. Given that this is a GEF project, it should be noted that the components' objectives cannot be changed. Deviation from the original list of activities in each project component can only be for the purposes of bolstering or enhancing the achievement of the component objective; and for modifying activities to suit present conditions and/or circumstances thereby ensuring the achievement of the component objective.

- In the future, the practice of hiring consultants and subcontractors should be opened up by announcing vacancies by mass e-mail distribution and/or by announcing in national newspapers and on the VEEPL and UNDP website. The current practice of short-listing partners and picking members from the VEEPL network is not sufficient to attract expertise in a competitive way;

- Although a quality control mechanism is in place, it is not functioning well. Thus, a number of opportunities exist for further improvement of output quality insurance:
  - The reports should be subject to certain rigor in providing name of authors, presenting results, including table of contents, data sources used, methodology used, recommendations and action plan for follow-up;
  - Terms of Reference (ToRs) should be clear, reflect earlier work done in other outputs/activities and should make clear how it feeds into the desired outcome and overall objectives of the project;
  - Core management personnel (PM, NSTA, ISTA) should sign off reports;
  - To insure that reports are actually used, it would be useful to include the main beneficiaries in the process of drafting/revising ToRs, selection of contracted party and evaluation of the final report or output. For example, if drafting a report on as standard for appliance X, someone from MoST should review. In case of a report on financing schemes, representatives from MoF , a commercial and state-owned financial lending institution could be on board;

- The logical framework should be revised in accordance with the new work plan 2008 - 2010. In addition, indicators should be revised in such a way that they quantitatively and qualitatively measure the output achievement and more indicators should be included that measure impacts (outcome) instead of lower-level outputs. This could be the task of ISTA and/or external consultant;

- Regarding impact evaluation, a national consultant has been hired, resulting in a report on 'methodology and tools for the calculations of energy savings and CO_2 emission reduction'. The report describes the methodology in a detailed way. However, the Evaluation Team has two observations. First, referring to a 'tool' means that besides a report an Excel spreadsheet should be made available for others to check and replicate CO_2 emission reduction calculations. Second, impact analysis is much wider than just measuring energy and CO_2 reduction, but should encompass social and economic indicators as well.

Sustainability

The Evaluation Team has the following recommendations:

- All final reports of the various subcontracts or 'standard letter' assignments should be made publicly available as downloads on the VEEPL website; in case this in not technically feasible or confidentiality is an issue, at least a good executive summary should be made available; 'Easy-to-read' leaflets and two/four-pagers should be made that summarize the essence of a report or group or reports, using tables, graphs in a colorfully attractive layout. Copies of the final versions of project reports, including the project activity reports should be provided to UNDP-Hanoi in both Vietnamese and English languages.

- An outside consultant should be hired to assess the stakeholders' capacity and interest of the main players in VEEPL (in particular of VAST, MoC and VULA) to continue EEPL promotional activities after 2010. VULA would be the obvious candidate since it is already managing the database and PL Information Center (PLIC). In the end the VEEPL website should be hosted by VULA. However, the commitment of VULA should be confirmed and its capacity to promote EEPL should be strengthened, in terms of having core staff and budget available, rather than VULA associates making themselves available on a part-time basis. This capacity assessment should result in clear recommendations for a post-2010 exit strategy that should be designed by PMU.

Replicability

- Currently, the Newsletter is distributed at a limited scale. The Newsletter should be expanded to a wider public to become a more effective tool for information dissemination for such a specialized community as in the case of public lighting. The Newsletter can play a critical role in reaching out to policy and decision-makers and provide opportunities for networking, promotion of EE products and services and sharing of experiences.

- Promotion and awareness creation should differ according to the various categories of target audiences, e.g. (1) policy/planning decision-makers at national, provincial and local level, (2) designers/architects/lamp manufacturers/lighting consultants, (3) staff responsible for procurement, maintenance and operation of PL systems, (4) general public. Since the number of people involved in PL system presents only a small fraction of the Vietnamese population, probably face-to-face meetings and well-targeted workshops are the most effective communication tool rather using mass media. However, when targeting staff in public office by means of newspapers and magazine ads may be fruitful. Anyway, using mass media should be coordinated with the efforts of MoI's National Energy Efficiency Program; maybe the VEEPL project can piggyback on EE awareness campaigning already being undertaken. Second, printed materials, such as the above-mentioned report summaries, stickers, brochures, leaflets, can create significant level of awareness, especially when distributed in targeted group meetings.

- A 'technology delivery model' goes further than just demonstrating technology (say, e.g. 1000 efficient street lighting in street A in city B in Vietnam) but linking it with an appropriate financing scheme and feeding the results into local and national policy making. Here, a thorough assessment should be done on current financing flows for public lighting (street lighting), the potential role of banks (such as Vietin bank or Vietnam Development Bank) in setting up EEPL schemes as commercially viable projects) as well as the role of the actors involved (schools, public lighting companies, power companies, people's committees) and of the institutional limitations these actors may face in getting involved in such schemes. If the finance barrier can be tackled (in general, initial investment in EEPL will be more expensive than normal PL schemes although more cost-effective over the technology's lifetime) than the model showcased in HCMC, Quy Nhon and the Hanoi schools can convince local decision-makers to be replicated in other cities.

- Such EEPL technology delivery model should be supported with appropriate policy instruments that promote EE with a 'carrot and stick' approach. The project has in policy so far concentrated on the 'stick' (decree, standards) that force people to do something, and the Evaluators do not deny that VEEPL has contributed to progress here. But an appropriate policy should also have a 'carrot' component (e.g., financial incentives and providing independent information) and here the link between components 1 and 3 becomes crucial. Similarly, components 2 and 1 should be linked. For example, it is nice to have formulated MEPSs (apart from the EPS for the labeling schemes), but if in future no government decision will be made to actually have mandatory MEPSs the output (the MEP) has been achieved but impact will have been zero (no introduction or enforcement). This may, e.g. require extending activities in Component 1 in lobbying

government officials and even parliamentarians, Ministers, etc., with the aim of having mandatory MEPSs by the year 2010.

- Thus, urban lighting, in particular the activities of Component 1, should be clearly embedded in the overall energy efficiency efforts of national and local governments, in particular the National Energy Efficiency Program as well as with EVN on demand-side management activities. For this, VEEPL should closely coordinate with the Ministries involved, such as MoI (Energy Efficiency Office), MoST, MoF and EVN. One way to achieve this is by putting representatives of these organizations (if not there already) on the Steering Committee of VEEPL.

The following table attempts to summarize main issues and suggested actions;

Problem/issue	**Cause**	**Action (numbers in chronological order)**
1. Management style is inward-looking, rigid and centralised: 1a. Inward-looking: VEEPL has managed to mobilise some actors in a closed network. The bad side is that contracts and standard letters are given to project partners and other actors (closed shop) rather than real transparent procedures. As long as contracts are given to entities with the right expertise this has led to reasonable results (demos, industry support), but in other cases this has not been the case 1b. Rigid: VEEPL's own quality control exists on paper but is not put into practice; even feeble reports have been signed of by PM and NSTA as good. 1c. Regarding day-to-management, decisions are made by PMU and NSTA with little role of coordinators, while ISTA is not considered part of PMU team	I Background of VAST and PMU management, which is technological-academic, - PMU may be capable of judging quality of deliverables in the technological, but less so in areas outside the typical VAST expertise, i.e. financial, informational and policy-making. II Management style: - 'Closed shop' implies that for PMU it may be difficult to criticize subcontracted project partners; - Conflicts of interest can incur if independent reviewers are chosen from the network and are not independent anymore - Website is weak, more information should be made available	B. Change management style B.1 Form core management team within PMU, consisting of PM, NSTA and ISTA and change in culture: outside support should not be shunned, but encouraged; If this cannot be achieved in an effective way, UNDP should not hesitate to take back some management functions (including going from NEX to DEX) B.2 Change quality control system. For new assignments a quality team should be formed that: - reviews/updates ToR according to new work plans (point 2) - selects consultants & subcontractors in transparent way (e.g. by publishing in newspapers or e-mail distribution) - signs off reports. The team consists of core team management team and one outside evaluator with proven expertise B.3 Make reports available in PDF format on website as standard practice (with at least executive summary

		of confidential materials) B.4 Stronger role of project Steering Committee
2. Project design has some flaws: 2a. Indicators are output-oriented and quantitative rather than impact-oriented and qualitative 2b. From the onset, the structure of 'standard letter' construction and subcontracts has favoured the above-mentioned 'closed shop' 2c. No link is made with overall energy conservation strategy of Vietnam; No justification is given why public lighting should be stressed over other EE options	III Background of VAST and PMU management, which is technological-academic, - Project is designed as if it were an academic project, with the aim of producing reports and deliverables, rather than a cap. building project in which such outputs are a means to achieve the higher goals of impacts; IV Other actors should have been involved from the onset, especially in the area of policy making (MoI, MoST), finance (MoF, financial sector) and information (e.g. PR company)	C. Perform the following assessments: C.1 Hire external consultants to review and assess deliverables with PMU 'core management' (PM, ISTA, NSTA); - Revise list of activities from a holistic approach, building on results of deliverables so far, identifying gaps (especially in area of policy-making, PR, financial-economic analysis and financial mechanism); - Make a work plan / budget 2008-2010; - Revise logical framework accordingly and put in quantitative and qualitative indicators as well as impact indicators C.2 Stop subcontracting & assignments until B.1 is done
3. Sustainability and replicability: - Demo's have been done, but there is no convincing 'technology delivery model' which integrating techno demo with viable financial schemes supported by policy instruments - It is not clear which institution will or can continue VEEPL promotional activities	V Rigid management style (see above): - No integration of results of individual components into integrated results/impact-oriented recommendations - No clear exit strategy for post-VEEPL period	D. Perform the following assessment: D.1 Hire external consultants to redo the following activities in an integrated way: (1) economic analysis of EEPL/demo system, (2) benefit analysis (if EEPL is implemented, who will profit, PC, PLC, power company, central government), (2) analyse source of finance and financing mechanisms, (3) institutional analysis (e.g. decision-making on in People Committee, PLCs, etc.) , (4) policy instruments to promote EEPL that fit within the

		overall national EE strategy coordinated by MoI; (5) define appropriate 'technology delivery model' that could be tested for further replication D.2 Assessment of willingness and capacity organisations , such as VULA, VAST, EEO to sustain (part of) activities post-VEEPL and formulate exit strategy D.3 Hire external consultant to formulate a PR and awareness plan
4. Suggestions by UNDP management on the above issues has been ignored	VI Management style: - Tendency of 'us-against-them when confronted with critique, especially when coming from ISTA and UNDP;	A. Immediate actions: A.1 Discuss Evaluation Report at next PSC meeting A.2 PMU should respond to UNDP on proposed actions, how they will be implemented and within which timetable A.3 UNDP should made clear that if actions agreed upon are not implemented this could have financial consequences for VEEPL; even going from NEX to DEX

Some **lessons learnt** are:

- The building of strong working PMU is important that brings together a multi-disciplinary core team as well as short-term consultants and subcontractors is important. The latter should be contracted by open and transparent procedures;
- Creating a strong partnership and effective coordination with project partners and stakeholders from national and local governments, local and international industry, financial sector, NGOs/research institutes and beneficiaries (public lighting companies, schools, public offices) is important to promote EE PL;
- In capacity building and institutional strengthening projects, the main aim is not only improving the development and support base for the particular technology the project focuses on, but ultimately removing technology, policy, informational and financial-economic barrier in a integrated way, using a results-based holistic approach in implementing

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1. INTRODUCTION

1.1 Background

The power sector

Viet Nam is located in the Southeast Asian region with a population of 82 million. Viet Nam's rapid economic growth of 7-8 percent has contributed to progress in improving its overall human development index, particularly in education, health, and increased standard of living. Viet Nam has one of lowest per capita levels of energy consumption in the world.

However, as the economy expands, the consumption of energy in Viet Nam is expected to grow 70% faster than GDP. By 2010, the consumption of electricity in Viet Nam will be 5.5 times the 1995 levels (77,406 GWh in 2010 compared with 14,636 GWh in 1995) and grew with 15% during 2001-2005. Electricity generation was 53,462 GWh in 2005, of which 22% produced by independent power producers and 78% by the state-owned utility EVN (36% hydro and 52% fossil fuels). Available capacity was 10,937 MW with maximum power demand was 9,255 MW[3]. Thus, current demand for electricity is only just being met, particularly at peak, and supply remains unstable. The challenge for the government of Viet Nam is to meet the exploding demand for electricity, relieve the shortages that currently pose significant barriers to economic development, and honor international commitments to greenhouse gas emission reductions.

Energy efficiency

Since early 2000, the government has paid attention to reducing the pressure on energy supply by issuing:

- *Electricity Law (2005)*, which devotes one chapter to EE in power generation, transmission, distribution and efficiency;
- *Governmental Decree 102/2003* to set foundation for energy efficiency & conservation (EE&C) under the responsibility of MoI.
- *MoI Circular 01/2004*, to enforce the Decree and serving as guidelines for EE&C in factories,
- *MoI Circular 08/2006*, to enforce the Decree and serving as guidelines for EE standards and labeling;
- *EE building Code (40/2005)*, to reduce energy loss in commercial buildings,
- *Prime Minister Decision 79/2006*, establishing the National Energy Efficiency Program (described in more detail in Box 1);
- *Prime Minister Decision 80/2006*, on increasing of the public spending on electricity saving,
- *MoI Decision 919/2006*, establishing the Energy Efficiency Office (EEO) within the Ministry of Industry (MoI).

Between 2003 and 2007, the World Bank provided support with technical assistance and a USD 5.5 million GEF grant to EVN to develop its demand-side management (DSM) program (e.g. time-of-use metering) and MoI in the commercialization of CFLs and fluorescent tube

[3] *Source: Review of Vietnam Energy Efficiency and Conservation Policy,* Mr. Phuong Hoang Kim, Energy Efficiency Office, Ministry of Industry

lamps. The project built upon an earlier phase on DSM supported with some GEF funds, focusing on public lighting and setting up a DSM cell within EVN.

Energy-efficient public lighting (EEPL)

In order to reduce their energy bills and to help reduce greenhouse gas (GHG) emissions, the Project Owners (Government officials responsible for investment on lighting, new or retrofits, in schools, hospitals, and other public places termed POs) would hire services of Energy Efficiency Agents (manufacturers and vendors of energy efficient lighting products and services termed EEAs) to ensure all new and/or replacement lighting installations are most energy efficient (see figure 1).

However, a number of barriers, which result in market failures, prevent desired market operation as above. The lowering of market barriers results in market transformation into a market situation that is more facilitating and close to ideal market conditions, as above. In Vietnam these market barriers/failures have been identified as[4];

- Institutional:
  - lack of national and local level policies to provide incentives for EEPL
  - lack of policy instruments (energy performance standards for infrastructure and equipment, labeling, consumer education/awareness etc)
  - lack of ability to enforce policy instruments (testing, auditing and certification facilities and capabilities)
  - lack of availability of skills to provide professional services for design, development and implementation of EEPL systems
  - lack of legal instruments to support development of ESCO sector;
- Financial:
  - lack of funding resources available to POs for execution of their EEPL projects
  - lack of viable financing mechanisms to provide funding for EEPL projects under ordinary business norms;
- Socio-Psychological:
  - lack of awareness and appreciation about the benefits of EEPL
- Lack of ability to conduct sophisticated cost benefits analysis
- Lack of awareness and willingness to utilize commercial financing resources for EEPL projects.

1.2 Project objectives and strategy

To address the above-mentioned barriers, the United Nations Development Programme (UNDP) and the Vietnamese Academy of Science and Technology (VAST) developed a project to promote the application of energy efficient lighting in the country's public sector entitled Vietnam Energy Efficient Public Lighting Project (VEEPL). The project was applied for Global Environment Facility (GEF) financial support. The project was designed and the Project Document was prepared during 1999-2004, and approved by the GEF Secretariat on February 2005. Nevertheless, the project activities did not really start until about 9 months after.

The UNDP Project Document mentions as its project **goal** (global objective) "the reduction of greenhouse gas emissions from fossil fuel based power generation in Vietnam". The project

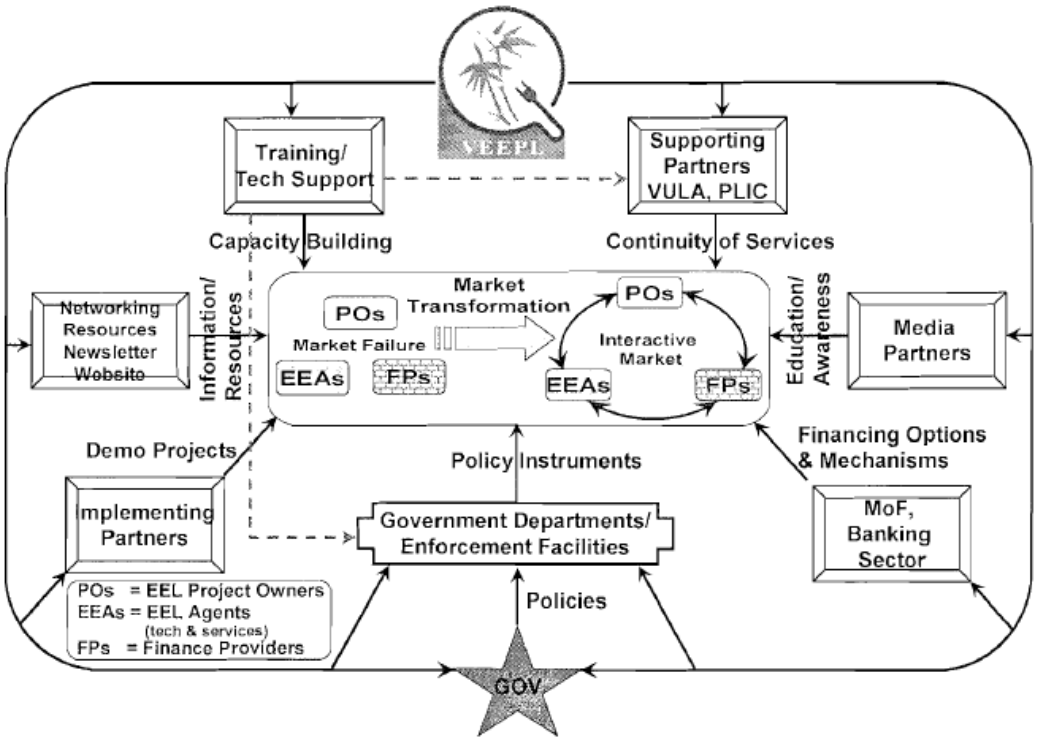
[4] Source: VEEPL Project Document

purpose (development objective) is the "improvement of lighting energy utilization efficiency through the removal of barriers to the widespread application of energy efficient lighting systems in the public sector in Vietnam. It is estimated that by the end of VEEPL project in 2010, the greenhouse gas (GHG) emissions will have been reduced by a cumulative amount of 171.2 kilotons of CO_2. The energy savings (and GHG emission reduction) in public lighting would be derived from the installation of energy efficient public lighting (EEPL) equipment (energy-efficient lamps, high efficiency luminaries, automatic light efficiency control systems) in streets, schools, and hospitals. Total investment during the execution of VEEPL project in 2006 – 2010 is estimated at USD15.6 million of which GEF contribution is USD 3.00 million.

The VEEPL Project Document mentions the following project components that are designed to overcome these barriers with a comprehensive and coordinated array of technical, policy and informational resources:

- **Public lighting policy development** – activities that strengthen and improve the local and national policy and regulatory framework and encourage feasible energy efficient public lighting projects in Viet Nam.
- **Public lighting technical support program** – activities that strengthen the capacity of relevant GOV agencies on energy efficient public lighting product testing, market monitoring and enforcement of standards with consumers.
- **Public lighting financing program** – activities to encourage the government, financial/banking and private sectors, to provide financial assistance for the development and implementation of energy efficient public lighting system projects.
- **Public lighting system demonstration program** – activities to provide Vietnamese

Figure 1 Framework of VEEPL project



Source: Shahab Qureshi, ISTA, VEEPL project

stakeholders with direct experience with the design, development, financing and implementation of cost -effective, energy-efficient public lighting system projects.

- **Information dissemination** – establishment of a network of technical expertise in energy efficient public lighting in Viet Nam and the production of high quality, affordable, accessible and up-to- date information services, continuing education, and awareness improvement on the application of energy efficient public lighting systems.

1.3 Evaluation methodology and structure of the report

Items 3.2 and 4 in the Terms of Reference (see Annex A)

As the project about half way implementation, the **purpose** of this mid-term evaluation is to review the progress of the project with its stated project activities, outputs and outcomes up to date and to evaluate their adequacy and relevance, thereby providing advice and an opportunity for the project management team to complete any pending tasks and to address any eventual shortcomings before the finalization of the project by the end of 2010. The detailed Terms of Reference are given in Annex A.

Two independent consultants, Mr. Jan van den Akker (Netherlands) and Mr. Nguyen Van Phuc (Viet Nam) were selected as evaluators and a mission was undertaken to Vietnam in the last two weeks of June 2008. During the mission, extensive discussions were held with representatives and staff from VAST, UNDP and other stakeholders (as listed in Annex B).

During the mission, the external evaluation mission drew up a table of contents that covers the issues to be addressed as mentioned in its Terms of Reference and follows the structure of this report:

- Introduction (project description and evaluation method)
- Findings on project progress
  - Project's performance in terms of results (achieving objectives and outputs by means of realized activities and inputs used) and impacts, quantitatively and qualitatively measured by indicators (as set in the project document and the annual project review documents)
  - Description of project impacts
  - Evaluator's assessment of the project design and execution
- Conclusions and recommendations
  - Conclusions, taking into account sustainability and replicability issues
  - Lessons learned and recommendations

The Evaluator adopted the following **methodology of evaluation**:

i) Review of project reports, such as the Project Documents, APR-PIRs (annual project implementation reviews),

ii) Meetings with the main project partners and stakeholders during the mission to Viet Nam.

The report is divided into three sections. This first section provides general background of the project, purpose of evaluation, project implementation setup, partners/stakeholders and evaluation methodology. The next section dwells on findings regarding project management and achievements. These findings are described within the logical framework design of the project, as described in the Project Document and progress reports. In the third section, conclusions from the observations and findings are discussed in the context of project objectives. These also pertain to sustainability and replicability of project. The section ends with recommendations for the further direction of the Project and some lessons learnt.

1.4 Project set-up and stakeholders

Figure 2 provides an overview of the implementation arrangements of the VEEPL project. The Vietnamese Academy of Science and Technology (VAST) is the national executing agency under the 'national execution' (NEX) modality. The Vice-President of VAST was appointed as *National Project Director (NPD)*[5] who heads the *Project Management Unit (PMU)* and is responsible for the successful execution and implementation of the project toward achieving project objectives, and accountability to UNDP and the Government for the proper and effective use of the project resources

Day-to-day operations of the PMU as well as the overall operational and financial management and reporting of the UNDP funds are under the responsibility of the *Project Manager*, supported by a National Senior Technical Advisor (NSTA) and an International Senior Technical Advisor (ISTA)[6]. In addition, the team consists of 3 component coordinators, 2 administrative staff and an accounts officer[7].

A *Project Steering Committee (PSC)* was set up to achieve coordination between the various project partners[8] and to ensure high-level guidance to the PMU and to ensure that the outputs produced meet the requirements of the government and all beneficiaries. The PSC was originally chaired by the President of VAST[9]. PSC usually meets twice a year and provides an opportunity to discuss the project progress reports, such as the Annual Project Progress Report (APPR) and Project Implementation Review (PIR) reports.

As designated by the UNDP resident Representative, a Program Officer acts[10] as focal point of the UNDP Country Office (CO) in Viet Nam in facilitating and monitoring project implementation. The UNDP participates in project review, steering committee meetings, work and budget planning meetings and monitoring and evaluation visits. In addition, the UNDP CO provides a range of project services, such as recruitment of project personnel, overseas travel and procurement of equipment upon request from the PMU.

The Project Documents and PIRs mention the following sources of financing:

- GEF (managed by UNDP): USD 3.00 million
- Managed by partners (co-financing): USD 12.318 million
  - VAST: USD 118,000
  - Ministry of Construction; USD 90,000
  - Testing laboratories (such as Quatest-1): USD 600,000
  - Vietnamese television: USD 600,000

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5 Prof. Nguyen Khoa Son

6 Prof. Phan Hong Khoi, Dr. Nguyen Thi Bac Kinh and Dr. Shahab Qureshi, respectively

7 Coordinator Policy and Finnace: Ms. Bui Thu Hien, Coordinator Dissemination and Demonstration: Mr. Tran van Be, Coordinator Lighting Technology: Mr. Nguyen Tri Dung, administrative assistant and interpreter: Ms. Nguyen Thi Minh Tien, administrative officer: Ms. Tran Thi Hanh Ha, accountant: Ms. Vu Thi Anh Thu

8 The Project Document mentions *central government agencies*, such a Ministry of Construction (MoC), Institute of Materials Science (IMS) and Institue of Environment Technology (IET) of VAST, Hanoi University of Technology, QUATEST1 and Vietnam television (VTV-2), *local government,* HCM City and Quy Nhon City as well as *private sector* (Hapulico, Schreder, Viettronics, Dieng Quang and Vinakip.

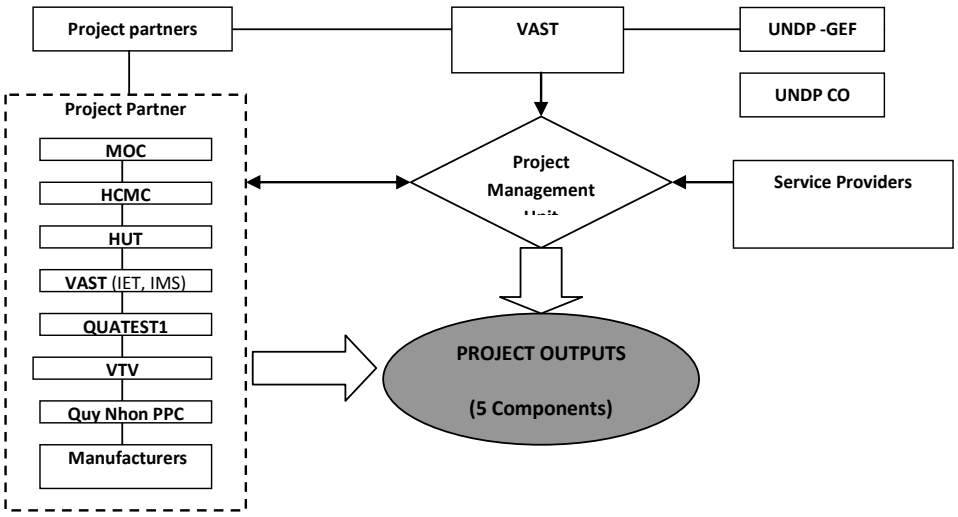
Other important partners are the Ministries of Industry and Trade (MoIT) and Science and Technology (MoST), Electricity of Viet Nam (EVN), National Center for Standards Development, Hanoi City, public lighting companies as well as multilateral donors (such as Asian Development Bank and World bank

9 Prof. Dang Vu Minh, who continued as NPD after leaving VAST and currently is the Chairman of the Science, Technology and Environment Committee of the National Assembly

10 Currently, Mr. Le Van Hung

- Lighting equipment manufacturers and providers USD 8,120,000

Figure 2 VEEPL implementation arrangements



Source: Project Document (2005)

2. FINDINGS

2.1 Implementation: status of project outcomes and outputs

Item 2.2.a of the Terms of Reference (see Annex A)

For each of the three outcomes, as mentioned in paragraph 1.2, this section assesses the progress in the implementation of the project's outcomes and outputs, following the format and information provided as given in the UNDP Project Document and as reported by the |Project Management Unit (PMU) in the annual Project Implementation Review report (PIR), the Annual Project Progress Reports (APPRs) and in a presentation presented to the Evaluation Team[11]. The exact formulation of outputs and corresponding indicators in the APPRs and -PIRs may differ sometimes with the original Project Document, but the Evaluators have tried to capture the essence of the wording. This section tries to provide a quantitative overview, while Section 2.3 will provide a more qualitative in-depth assessment of the achievements of the outputs.

2.1.1 Component 1 Public lighting policy development

Outcome: Existing PL system policies & accompanied regulations are enhanced and new ones are developed (progress indicators for this outcome are given in Table 9)

Table 1 Outputs and performance indicators of Component 1

Outputs (Project Document **Indicator** (APR-PIR)	**Value of indicators**	
1.1 An national lighting advisory committee (NLAC) that was established and operational	*Baseline:* • No Committee *Target:* • NLAC established and operational	*Achieved by June 2008:* • NLAC established • Organization of national workshops in July 2006 and August 2007
1.2 Comprehensive national policy study on public lighting • Number of studies on EEPL policy framework and submitted to MoC, MoF • Number of recommendations of the studies used in policy making	*Baseline:* • Limited guidelines and EE standards on lighting *Target:* • 1 comprehensive study of policy framework on EEPL completed and submitted to MoC, MoF by end of 2007; • 2 recommendations of the report are used in public lighting policy making	*Achieved by June 2008:* • 1 study to review national policies on EEPL completed and 2 recommendations on National policy framework on EEPL and on the outline of the Government Decree on EEPL completed and consulted and used as input in Government Decree (subcontract A3) • One assessment of the current legal document system on public lighting and survey on urban lighting status up to 2008 and a draft outline of Decree and Strategy (Standard letter A3) • Overseas study tour (Thailand) to learn from EEPL experiences

[11] *Project Implementation Report for Mid-Term Implementation Review,* presented by Mr. Nguyen Khoa Son

1.3 Evaluation of opportunities for EE improvements in public lighting • Number of designs of new and expanded EEPL systems • Number of EE projects financed and implemented	*Baseline:* • Limited guidelines and EE standards on lighting *Target:* • 20 designs of new and expanded EEPL (2010) • 9 EEPL projects financed	*Achieved by June 2008:* • 3 cases studies of urban PL systems and proposed model (management, operation, maintenance) for three cities (Hanoi, HCM, Quy Nhon; (subcontract A.3)
1.4 Development of economic and technical tools to support public lighting investments • One EEPL resource book published • Number of staff trained • Number of cities using the resource book	*Baseline:* • No tools *Target:* • 1 resource book published by 2008 • 10 cities/towns use the resource book	*Achieved by June 2008:* • 1 handbook has been completed, published and distributed (Standard letter A5) and one training course on use of handbook conducted in June 2008
1.5 Development and assistance in the enforcement of public lighting regulations • Number of PL implementation rules and regulations (IRR) • Number of consultation workshops • Number of IRRs approved	*Baseline:* • No IRRs *Target:* • 1 PL rule and regulation (circular) formulated • 2 consultative workshop during 2008-2009 • 1 Circular issued by MoC on PL management IRR (2009)	*Achieved by June 2008:* • Review of existing IRRs (subcontract A6); • A proposal on sustainable development solutions for public lighting system and the first draft of circular on public lighting management developed (Standard letter A6)
1.6 Integration of EEPL in local development plans • Ministerial guidance on how to integrate EEPL in cities' development plans • Number of cities integrating EEPL in their construction planning	*Baseline:* • No or limited integration of EEPL in urban plans *Target:* • 1 ministerial guidance (2007) • 15 cities/towns integrating EEPL in development plans (2009)	*Achieved by June 2008:* • 1 review and proposal on existing PL planning status and proposal on content for integrating public lighting plans in urban development plans completed (Standard letter A7) • Decision on integration promulgated by MoC in March 2008
1.7 Development of local public lighting policy • Number of proposals developed • Number of consultation meetings • Number of evaluations of proposed policies • Number of policy proposals submitted to local authorities	*Baseline:* • No policy proposals *Target:* • 10 draft proposals of new local PL (2007) • 6 consultation meetings during 2007-2008 • 1 evaluation of proposed policies (2007, annual) • 10 finalized policy proposals (2008)	*Achieved by June 2008:* • Development of 10 outlines for proposals and 5 new proposals on local EEPL policy developed (subcontract A8) • 3 consultation workshops conducted • 1 evaluation conducted

A detailed list of project deliverables is given in Annex C.

Summary of main achievements

Main achievements	Goals for 2010
1. Conducted background research and advocated MoC to develop a 'Strategy on Urban Lighting Development up-to 2020' that will emphasize energy efficiency extent and conducted the review of exiting regulation on lighting and advocated MoC to improve regulations on urban lighting by means of a government decree and MoC's circular on urban lighting management: preliminary outlines of decree and circular drafted and submitted to MoC. 2. A decision on integration of Urban lighting plans in the city construction planning issued by MoC 3. Handbook on economic and technical published and distributed. 4. Providing input into the formulation of local policies that have been proposed for implementation to the following cities: • Ho Chi Minh city: regulation on technical specifications of EEPL equipments enforced in city (on submitting to People's Committee); • Qui Nhon city: regulation on installation/replacement by EEPL equipments; regulation on management, operation of public lighting system towards EE; regulation on short-term planning of public lighting system; • Tien Giang province: regulation on enforcement of installation/replacement by EEPL equipment for public lighting system and office buildings.	1. Strategy on Urban Lighting Development up-to 2020 issued by MoC by the beginning of 2009 2. A decree on Urban Lighting Management issued by Vietnam Government by the end of 2009; 3. A circular on implementation of the decree issued by MoC by the end of 2009; 4. 20 EEPL designs completed, 09 of them financed; 5. 30 cities/towns using Handbook on tools by 2010

2.1.2 Component 2 EEPL technical support

Outcome: Potential & requirements for the improvement of EEPL systems, as well as the support provisions for such initiatives established (outcome indicators are given in Table 9)

Table 2 Outputs and performance indicators of Component 2

Outputs (Project Document) **Indicator** (APR-PIR)	**Value of indicators**	
2.1 Technical capacity building for lighting energy standards and labeling • Number of upgraded lighting standards for street and public premises • Upgraded energy performance standards for PL	*Baseline:* • Outdated and inadequate EEL standards for streets, schools and hospitals *Target:* • 3 energy efficiency standards for streets, schools and hospitals • 6 MEPS for EEL products (CFL, T8, HPS electromagnetic ballast for HPS and electronic ballasts for T8, and road lighting luminaries) and issued by MoST by 2008-2009	*Achieved by June 2008:* • Proposals on MEPS and HEPS for CFLs, T8, HPS and electromagnetic ballast for HPS drafted by project (2007). • Proposals on MEPS and HEPS electronic ballasts for T8 and road lighting luminaries drafted by project (2008). • 02 VN MEPS for CFL and electronic ballasts for T8 has been being developed by MOST (2008). • Proposals on EEL standards for streets, schools and hospitals drafted by project (2007). • National EEL standards for streets, schools and hospitals have been being integrated in the lighting standards systems by MOC (2008). • Study tour to Thailand • Technical Working Group on EE Standards (TWG-1)
2.2 Provision of TA to Vietnamese lighting manufacturers • Number of designs and production lines upgraded • Number of EEPL products manufactured and sold • Number of products with EE labels	*Baseline:* • Manufacturers produce less efficient lighting devices; Limited demand for EEPL products *Target:* • At least 10 product designs upgraded annually during 2006-07 • At least 1 million of upgraded EE lighting products sold (starting ’08) • At least 2 lighting products labeled (starting ’07)	*Achieved by June 2008:* • Provision of TA to 5 local manufacturers (Rang Dong, Dien Quang, Hapulico, Schreder and Vinakip) in improving designs and production technologies on CFLs, ballasts for T8, luminaires and ballasts for HPS lamps
2.3 Consultation assistance on EEL technology transfer • TT working group established • Software for lighting and design of products compiled • % and number of companies using software	*Baseline:* • Limited capacity in designing EEL products and EEL systems *Target:* • 1 working group established (2007) • Compilation of lighting design software (2007) • 50% of local companies utilizing the software	*Achieved by June 2008:* • Technology Working Group on technology Transfer (TWG-3) • Compilation, publishing and distribution of a user guideline of lighting design software in Vietnamese (Calculux, Dialux, Ulysses). • Compilation of a user guideline of luminaire design software in Vietnamese (Photopia, Solid Works). • Completion of design software for HPS ballasts.

2.4 Percentage of EEPL manufacturers participating in International forum on EEPL	*Baseline:* • Limited opportunities of international and national information exchanges on EEL for the local lighting industry *Target:* • 50% of local EEPL manufacturers have participated in International Forum (2008)	*Achieved by June 2008:* • Promotion of Forum to local manufacturers; 1 online forum linking local and international lighting industry
2.5 Upgrading of national testing capabilities • No. of testing laboratories upgraded • No. of testing reports submitted • No. of CFLs certified	*Baseline:* • Inadequate testing capabilities; no M&E of products compliance to standards *Target:* • 3 laboratories upgraded for lighting product testing (2007) • 3 testing reports submitted (end of 2008) • CFL and electronic ballasts certified	*Achieved by June 2008:* • Assessment of testing capacity of 3 laboratories (Quatest 1; Institute of Materials Science; Institute of Engineering-Physics, Hanoi University) • Development of testing procedures for EE lamps and ballasts • Testing equipment upgraded and, pending, evaluation report on implementation results;
2.6 Assessment of capacities of the local lighting system service providers: • No. of EEPL service providers assessed • No. of recommendations on capacity building for providers of technical and maintenance services	*Baseline:* • Limited capacity in supplying and maintaining EEPL products *Target:* • 20 largest Pl service providers have been assessed by mid-2007 • 2 recommendations for capacity building submitted to MoC (2008)	*Achieved by June 2008:* • 10 biggest providers have been assessed and recommendations on improvements completed
2.7 Technical capacity on the design, operation and maintenance of EEPL • No. of training courses • % of trainees implementing EE design and O&M of lighting systems	*Baseline:* • Limited capacity in design, installation, O&M *Target:* • Training program for institutions and staff relevant to EEPL systems	*Achieved by June 2008:* • Training program was prepared and 02 training courses were completed • Development of certification and labeling program

A detailed list of project deliverables is given in Annex C.

Summary of main achievements

Main achievements	Goals for 2010
1. Study and development of Min Energy Performance Standards (MEPS) for EE lighting products (CFLs, T8, HPS, ballasts for CFL, HPS and road luminaires) completed; 2. Study and development of MEPS for streets, schools and hospitals completed; 3. Quality of 05 types of EEL products (CFLs, T8, ballasts for HPS and road luminaires) improved; 4. Testing capacity 03 labs (QUATEST, HUT, IMS) enhanced; 5. Handbook of the guideline on use of design software: published and distributed; 6. Lighting Forum established and posted on the VEEPL Website	1. VN MEPS for 05 EE lighting products (CFLs, HPS, ballasts for CFL, HPS and road luminaire) issued by MoST by 2010 2. Three EEL standards for streets, schools and hospitals integrated in the VN standards and issued by MoC by 2010 3. Quality of 4 other EEL products (Electronic ballasts for T8, T5 lamp, Bi-power level ballasts for HPS lamp and ADSL control systems) improved by the end 2010 4. 75% trainees applying advanced EEL technology & management 5. 9 testing reports completed by the end of 2010 6. A proposal on the establishment of National Lighting Testing and Certification Lab completed 7. The Lighting Forum regularly and effectively operated 8. National sustainable technical development program developed and implemented by the end 2010

2.1.3 Component 3 EEPL financing program

Outcome: Government, financial/banking & private sectors are providing financial assistance to the development and implementation of EEPL projects (outcome indicators are given in table 9)

Table 3 Outputs and performance indicators of Component 3

Outputs (Project Document) **Indicator** (APR-PIR)	**Value of indicators**	
3.1 Promotion of EEPL to the public sector • No. of promotion workshops on EEPL to the financial sector • No. of brochures printed and distributed • % of targeted financial staff interested	*Baseline:* • Limited financing for EEPL projects; non-sustainable financial support from Government *Target:* • 2 promotional workshops on EEPL by mid 2007 and mid-2008 • 1 VEEPL brochure printed and distributed • 50% of targeted financial sector staff expresses interest	*Achieved by June 2008:* • Prepared and published 1 brochure • 1 promotional workshop

3.2 Capacity building for financial sector • No. of training courses • % of targeted financial institutions committed	*Baseline:* • Limited financing for EEPL projects; non-sustainable financial support from Government *Target* • A training program on financial mechanism and policies, financial arrangement and financial tools for EEPL in Vietnam • Organization of 1-2 training course;	*Achieved by June 2008:* • Training program prepared • First training course conducted (September 2007)
3.3 Study on public lighting schemes 3.4 Development of a proposal on applicable financing schemes • No. of studies completed regarding financing for EEPL; • No. of proposed financing schemes	*Baseline:* • No comprehensive financing schemes for EEPL and EE in general *Target* • 1 study regarding financing completed by 2008 • 1 mechanism for innovative funding proposed	*Achieved by June 2008*[12]*:* • A study on international and national financial schemes completed with the findings and recommendations put forth. • A study on potential community or beneficiary cost sharing for public lighting projects completed. • Proposal on appropriate financing schemes and accompanied mechanisms for public lighting improvement projects towards EE drafted • Consultation workshop conducted

A detailed list of project deliverables is given in Annex C.

Summary of main achievements

Main achievements	**Goals for 2010**
1. A report on applicable appropriate EEL financing schemes completed; 2. Two workshops on financial mechanisms and EEPL conducted with participants from financial institutions and public lighting companies	1. Awareness Raising of the financial sector concerning the EEPL; 2. Knowledge on EE&EC and EEL of the financial sector enhanced; 3. The financing scheme designed and integrated into the Decree on Urban Lighting Management; 4. The financing scheme Integrated into the Decree on Urban Lighting Management

2.1.4 Component 4 EEPL demonstration program

Outcome: Continuous promotion & support for the development and implementation of EEPL systems (outcome indicators are given in table 9)

[12] The reader is referred to Section 2.3 for the Evaluator's quality assessment of these outputs

Table 4 Outputs and performance indicators of Component 4

Outputs (Project Document **Indicator** (APR-PIR)	**Value of indicators**	
4.1 Review of technical and economic feasibility of demonstration schemes • Findings of Review of technical and economic feasibility of demonstration schemes	*Baseline:* • No such technical and economic reviews *Target:* • 6 feasibility reviews completed in 2006-2007	*Achieved by June 2008:* • Technical and economic assessments (including engineering and construction designs and cost estimates) for the demo projects (32 constructions in Ho Chi Minh city, 15 constructions in Quy Nhon; 5 high schools, 6 secondary schools and 6 primary schools in Hanoi)[13]
4.2 Baseline data information on the demo sites • Number of surveys on baseline data and information of PL systems and socio-economic conditions in the three demo cities conducted; • Number of energy audits conducted	*Baseline:* • Unknown baselines in socio-economic in demonstration sites *Target:* • 5-12 surveys in the three demo cities conducted during 2006-2009 • 9-16 energy audits completed during 2006-2009	*Achieved by June 2008:* • 8 surveys completed (for 3 demonstration schemes) in three cities • 16 energy audits conducted
4.3 Specific barrier removal activities • Number of written agreements of recommended stakeholder obtained • Number of demonstration projects verified, confirmed and financed	*Baseline:* • None of stakeholders had a formal agreement to carry out EEPL demonstration; No funding secured *Target:* • 6-9 written agreements of recommended stakeholder obtained during 2006-2009 • 6-9 demo projects verified, confirmed and financed during 2006-2009	*Achieved by June 2008:* • 6 written agreements of recommended stakeholder obtained in 3 cities; • 8 demo projects are verified, confirmed and financed
4.4 Implementation of demonstration schemes: • Number of detailed engineering designs completed and approved by local authorities. • Number of demo projects operated	*Baseline:* • Conventional design applicable to PL systems; Technical design of PL using conventional methods and benchmark *Target:* • 6-9 written agreements of recommended stakeholder obtained during 2006-2009 • 6-9 demo projects verified, confirmed and financed during 2006-2009	*Achieved by June 2008:* • Technical assistance in the design and implementation of demo projects • Demo projects are implemented in 3 selected cities (see below)

[13] The reader is referred to Section 2.3 for the reader's quality assessment of these outputs

4.6 Action plan for dissemination of demo results • Number of case studies showcasing project costs, benefits and lessons learned; • Number of EE benchmarks for comparison with the future EE projects; • Number of cities to be replicated in the proposed Action Plan	*Baseline:* • EEPL activities might be implemented, but no info dissemination on EEPL in Vietnam and no scaling up program in place *Target:* • 3 case studies completed by the end of 2007; • 02 EE benchmarks for comparison with the future EE projects; • 10 cities replicating EEPL success during 2008-2010	*Achieved by June 2008:* • 3 case studies showing project costs, benefits and lessons learned. • Two EE benchmarks for comparison with the future EE projects. • Action plan for replication of EEL demo results. • 49 cities/towns replicating EEPL demo results in street lighting (Source: PLIC report Quarter II/2008). • 3,415 classrooms in 187 schools replicating EEL systems (Source: Report of RALACO)

A detailed list of project deliverables is given in Annex C.

Summary of main achievements

Main achievements	**Goals for 2010**
1. Feasibility analyses on demo schemes; 2. 8 EEL models demonstrated in Ho Chi Minh, Quy Nhon and Hanoi cities; 3. An action plan for dissemination of demo results (case studies, benchmarks, identified potential cities/towns for replication) drafted;	1. 3 EEL demonstration schemes (for new residential quarter, control center, hospital lighting); 2. 1 proposal on enlarging control center; 3. The action plan for replication of demo results implemented in 10 cities/towns;

2.1.5 Component 5 Information dissemination and awareness raising

Outcome: Adequate, affordable, accessible & up-to-date information services, continuing education and awareness improvement on the application of EEPL systems (outcome indicators are given in table 9)

Table 5 Outputs and performance indicators of Component 5

Outputs (Project Document) **Indicator** (APR-PIR)	**Value of indicators**	
5.1 Establishment of a public lighting database facility • Number of cities providing main information on PL	*Baseline:* • Information in PL scattered; no means to collect info *Target:* • 64 cities and towns all over Vietnam provide the main information on public lighting by 2010.	*Achieved by June 2008:* • 1 public lighting database facility established. • 1 Public Lighting Energy Consumption Reporting and Monitoring Program (PLECRM) developed and partly implemented. • 17 cities provided the main

		information on public lighting
5.2 VEEPL branding and identity • Number of visits to the VEEPL Website; • Number of VEEPL newsletters printed and distributed; Number of press and publications on VEEPL	*Baseline:* • VEEPL unknown to stakeholders *Target:* • At least 3,000 visits to the VEEPL Website each year from 2008; • 2 VEEPL newsletters printed and distributed each year from 2007; 10 publications on VEEPL each year from 2007	*Achieved by June 2008:* • 19,500 visits to the VEEPL Website completed; • 3 newsletters (4,500 copies) on VEEPL printed and distributed; • 24 publications on VEEPL completed and published in local newspapers.
5.3 Efficient public lighting promotion campaign 5.4 Public lighting performance rating and recognition 5.5 Provision of info to Vietnamese lighting industry • No. of EEL awareness raising and promotion of programs developed and implemented; • % of the stakeholders/target groups that understands the VEEPL project • Rating program prepared and no. of awards conducted • No. of training courses on lighting engineering and consulting	*Baseline:* • VEEPL unknown to stakeholder; no award scheme in place *Target:* • At least 3,000 visits to the VEEPL Website each year from 2008 and 9,000 in 2010 • 2 VEEPL newsletters printed and distributed each year from 2007 and 8 by 2010; • 10 publications on VEEPL each year from 2007 and 40 by 20101 • program of awareness raising and promotion of EE lighting is in place by the mid 2007 and carried out every year thereafter; 80% of the stakeholders/target groups understand the VEEPL project by mid 2007 • 1 guideline for rating program prepared by middle 2008 and 2 annual ratings and awards conducted starting 2009 • 1 training course conducted in 2008 and 3 local lighting/consulting companies registered as PL service providers during 2008-2010	*Achieved by June 2008:* • An EEPL Promotional Campaign Package completed, consulted and having been implemented; 500 participants attended project workshops; 6 TV programs including colloquies, 3 TV films on EEL and on VEEPL; • 1 guideline for rating program prepared by middle 2008; • N/A • N/A
5.6 Establishment of a public lighting information center (PLIC) 5.7 VEEPL project outputs distribution • PLIC with its	*Baseline:* *Target:* • PLIC set up by 2007 • 120 requests for information by other organizations and	*Achieved by June 2008:* • PLIC caters to the information needs of the government and citizenry regarding public lighting EC&EE.

mechanism for info exchange set up; • No. requests for information by other organizations (local and abroad) are served	personnel (local and abroad) are served by PLIC during 2007-2010	• 91 organizations/institutions and 64 people provided with PL information by PLIC.

Summary of main achievements

Main achievements	**Goals for 2010**
1. PL database facility established and running 2. PL database of 49 cities/towns and 05 lighting manufacturers collected and analyzed, although currently only containing full data of 19 cities 3. Newsletters: No1, No2 and No3 (1500 E./No); 1 VEEPL Brochure (2000 issues; 1 Leaflet (1500 issues); 6 video clips produced and shown on VTV; 24 papers published in journals/magazines); 4 Interview on VTV and Radio Vietnam Voice; VEEPL Website updated (more than 19,500 visits) ; 4. PLIC set up and in place; PLIC brochure (1000 issues)	1. PL database of cities/towns collected; 2. EEL awareness raising and promotional program successfully implemented; 3. PL performance rating program implemented 4. PLIC regularly and effectively operated; 5. VEEPL outputs well documented and widely distributed

2.2 Project relevance and design

Item 2.1.e in the Terms of Reference (Annex A)

2.2.1 Project relevance

In terms of overall electricity consumption in Vietnam, the share of public lighting is small. However, as the country quickly develops, also public lighting is expected to grow quickly. Furthermore, public lighting is highly correlated with peak demand.

At the same time, city councils are pressured by the central Government to reduce costs, among others by reducing the budget for public (street) lighting. This has been done by cutting back lighting at night, but this action compromises lighting quality and safety and security[14]. Therefore, cities are becoming interested in other options, such as putting in automatic control centers (enabling to match luminance with lighting needs at certain hours), higher-efficiency lamps (e.g. high-pressure sodium lamps, HPS instead of mercury lamps) and more efficient luminaires. In public buildings, such as schools, lighting is not always optimal. Better lighting design and EE lamps (e.g., by using T8 instead of T10 tubular fluorescent lamps) improve lighting efficiency and quality as well as energy efficiency.

[14] EVN has estimated that cutting down on public lighting between 19.00-4.30 with 50%in the whole country would save 340 GWh with peak power demand savings of 50 MW.

The Evaluators do ask themselves why in project conceptualization it was chosen to narrowly focus on public lighting only as a subset within the broader area of public, commercial and residential lighting and this subsector itself within the subsector of electric energy efficiency and conservation. The Project Document maybe gives one clue on its page 4; "Product counterfeiting is a serious concern, but is a relatively small threat to VEEPL due to the focus on public lighting as opposed to mass- market consumer lighting products (such as compact fluorescent lamps). Cities and town and other customers will purchase public lighting in bulk from distributors and have access to current lists of qualifying manufacturers and products maintained by VEEPL". This sounds as a rather ambiguous way to avoid problems. Instead of tackling barriers to efficient lighting in general, the focus is on public lighting (instead on industrial or residential lighting), because technologically this appears to be more easily implementable. From the Project Document, it is not clear how 'public lighting' fits in the strategies and plans of other ministries and agencies, such as MoIT (energy efficiency), MoST (responsible for standards and labeling) as well as the overall energy conservation efforts (described in section 1.1 and in the text box 1, below)[15].

On the other hand, the focus on public lighting can be appreciated, knowing that Electricity of Viet Nam's DSM program has focused on promoting EE in the residential sector (CFLs and EE tubular fluorescent lamps) as well as office buildings. With respect to EVN, we wonder how the lessons learnt have been taken into account. For example, EVN's DSM program (2003-2007) also had a small component on school lighting, equipping 400 classrooms with tubular lamps and EE ballasts[16].

2.2.2 Conceptualization

The Project Document provides a well-designed project document a detailed list of activities in its policy development, technical support, finances, system demonstration and information and awareness components. The budgetary inputs, contracts and consultancies (with Terms of Reference attached) needed to carry out these activities are clearly indicated and provided in surprising level of detail.

The project's logical framework (also sometimes referred to as strategic planning framework) is rather vague. Fortunately, the annual PIRs provide (a number of) indicators with initial and target values in great detail. However, most indicators are defined to measure quantitatively outputs (e.g., number of reports) rather than quality (e.g., how does the content and recommendations lead to impact and how are the outputs related to one another). In fact, the indicators are output indicators, but no indicators for the outcome themselves are given. This output-oriented design in the logical framework (rather than focusing on higher-level impacts) may be partly responsible for some of the problems in achieving real progress in certain components of the project, as will be discussed in the next section 2.3[17].

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15 It should be noted that, by the time of VEEP Project Document development and approval, the National Energy Efficiency Programme (NEEP) had not been established, thus VEEPL project could not integrate contents of this programme into the Project Document. The PMU stressed to the Evaluators that close cooperation between VEEPL and NEEP has been regularly performed especially in energy efficient labeling and certification program in energy efficient lighting communication and promotion.

16 Thanks to the implementation of EE lighting demonstration schemes in schools technically supported by VEEPL project (from 8/2006), RALACO won their bidding of World Bank/EVN funded project to do the installation of energy efficient lighting system for 405 classrooms of 135 schools located in 27 provinces and cities (completed in October 2007).

17 It should be noted that was conceptualized and designed during GEF-2 when the project planning framework was more output-oriented. During GEF-3, the focus shifted more towards outcomes and impacts. This is also the reason why the initial set of annual targets had been prepared for the purposes of rating the project during the 1st PIR

2.3 Effectiveness of project implementation

2.3.1 Progress towards results; management, monitoring and evaluation

Items 2.1.a-d, 2.2.a and 2.2c of the Terms of Reference (Annex A)

The progress reports produced by the PMU, APPRs, as well as the PIRs, claim significant progress both in terms of outputs being produced and sticking to the time schedule as laid down in the Project Document. Starting in the beginning of 2006, the project has now gone through about 2½ years of implementation (of the planned 5 years). To the Evaluators' opinion, progress is most visible in the more 'technically oriented' components 2 (Support to lighting industries) and 4 (Demonstration) and least visible in Component 3 (Financing) with Components 1 and 5 (policy development and info dissemination) in-between in terms of achievements.

Progress in terms of quantity of outputs

At first look, the large number of reports produced in the various components (as detailed in the previous section 2.1) might be taken as an indicator for the level of effort involved and the good progress being made. Usually the task, e.g. a survey, an assessment or a policy or technical analysis, is awarded to an entity by means of subcontract or to a project partner by means of a 'standard letter' procedure. The quality control approach system requires that the contracted party provides in accordance with the Terms of Reference:

- Inception report, describing objectives, approach and methods to be used, outputs and schedule/timeframe, and intermediary reports;
- At the end of implementation, the deliverable in the form of a final reports appraised by an independent reviewer, the NSTA[18] (and/or sometimes the Coordinator of the particular cluster of activities) and finally the Project Manager (PM) approves.

Progress towards achievements of goals in terms of quality of outputs

However, observations made in the PIR 2007 and later in the 'Review of Quality Management', prepared by the UNDP program officer responsible for VEEPL, Mr. Le Van Hung (December 2007), indicate that the quantity of outputs produced is OK, but that quality of the reports needs to have a second look at. Mr. Le made a check of 15 reports (out of the 30+ produced so far), but found weaknesses in 11 reports, which are summarized below[19]:

[18] National Senior Technical Advisor

[19] *Review of the Quality Management in the VEEPL Project* (December 2007, Le van Hung). The PMU claims that it has never received this report and therefore could not react to its recommendations.

Box 1 National Energy Efficiency Program

The National Energy Efficiency Program aims at reducing 3-5% of total national energy consumption in the period 2006-2010 and 5-8% in the period 2011-2015. MoI hosts the program office (Energy Efficiency Office), which is managed by a Steering Committee consisting of the various Ministries involved and the Vietnam Union of Science and Technology Associations.

It consists of the following components:

1. Complete legislative framework for EE&C in industry, construction, domestic activities and energy-consuming equipment.
   This includes (a) the issuance on guiding documents for enforced laws and decrees related to EE&C, (b) adapting energy pricing to EE&C objectives, (c) promulgation of energy performance standards for 10 types, establishing the basis for the (voluntary) labeling of such equipment as well as building codes, (c) elaborating a network of EE&C to provinces and cities;
2. Strengthening education and public awareness enhancement on EE&C
   This includes (a) development of programs on TV and radio, (b) training courses for enterprise managers and engineers, (c) organize creative competitions on EE technological innovations, (d) produce leaflets, posters on successful EE&C models in industry, enterprises and buildings, (e) integrating EE&C into the national education system (by including EE&C aspects in relevant subjects in primary and secondary school as well as developing curriculums for vocational and technical schools and universities) and (f) develop pilot models for 'EE&C in households' (including carrying out an energy assessment and providing energy-saving equipment in 6 urban or rural areas in 100 households in each area, taking part on a voluntary basis);
3. Phasing out low-energy efficiency equipment
   This includes (a) developing and promulgating minimum energy performance standards (MEPS) for fluorescent lamps and ballasts, electric fan, electric motor, air-conditioner and refrigerator for 2006-2010 and another set for 2011-2013 (based on equipment and energy consumption surveys and supported by energy efficiency testing program; MEPS should become mandatory eventually) and (b) providing technical assistance to domestic producers (organization of workshops for domestic producers on EE equipment and training courses on cost-benefit analysis, technology transfer and renovation of product lines;
4. EE&C in industries
   This includes (a) the development of EE&C management models (aiming at 6 models in 6 enterprises), including capacity assessment and survey of energy consultants and training courses on energy management and (b) supporting industrial enterprises by means of energy audits and identification of EE opportunities (EE boilers, electric motors, air conditioners and ventilation and co-generation)
5. EE&C in buildings
   This includes (a) Organization of training courses for the construction community and provincial and municipal construction staff; (b) development of 5 pilots in 5 selected buildings, (c) establish campaign for 'green buildings', (d) organize competition and awards and certificates for offices and public enterprises, (e) improve capacity for selected energy service organizations to provide energy consultancy and auditing
6. EE&C in transportation
   Optimize transportation, minimize fuel use and reduce discharge of exhaust gases, by means of (a) planning for the optimal use of road, railway and waterways and development of high-capacity facilities and (b) application of EE technology and better management

- Information is poorly presented and conclusions and recommendations are very general or do not match the objective of the report[20];

[20] The review mentions especially the subcontracts A3 and A4 and the Evaluators have checked this for A3 (see Box 1) as "in the policy research very little information was presented (indicating that the method proposed in the inception report was not used). In particular, there is no information and concrete data of the mentioned policies, programme, both international and domestic. No original documents or sources of information were annexed to the main reports";

Box 3 Review of selected reports of VEEPL

This box describes a number of report as checked by the Evaluation Team, focusing on the Components 1 (Policy), 3 (Finance) and 5 (Info and dissemination).

Subcontract A3 – Comprehensive national policy study on public lighting.
Subcontractor: VULA. Expenditures '06-'07: USD 9,991. Planned 2008: 27,000

- No.2. Overview of International and Regional Policies (2006)
- No.3 Real Situation of National and Local Policies on Public Lighting and Identification of Shortcomings (2006)
- No.4 Comprehensive Study on National Public Lighting Policy

Observations

- In general, the reports do not distinguish very well between the concepts of policy (e.g., Decree), policy instruments (e.g., standards, building codes, and tax exemptions) and strategy (e.g. investments plan 200-2015). Report no 3 is reasonable, but focuses on norms and standards only without referring to the overall energy efficiency policy context. The reports 2 and 4 are quite substandard; report 2 mixes general efficiency, commercial lighting and public lighting and seem to be based on quick Internet search rather than thorough research. Report no.4 just limits itself to outlining the table of contents of a public lighting policy. It mentions as elements, e.g., 'establish finance policies for EEPL, by invested capital for EEPL'. Nice, but what finance, where from, promoted by which instrument? Although even made under the same subcontract by the same institution, VULA, the reports do not refer or build on each other.

Subcontract C2 – Comprehensive Study on Public Lighting Financing Schemes
Subcontractor: IFS. Expenditures '06-'07: USD 7,000. Planned 2008: 13,000

- No.2 Evaluation Report on Experiences and Lessons on Financial Mechanism for Public Service (2007)
- No.4 Financial Mechanism and Scheme for Upgrading Public Lighting Projects (2007)

Observations

- Report no.2 should be merged with report no.2 of subcontract A3. It gives a short overview of DSM and commercial lighting in general terms, scarcely referring to public lighting. Its recommendations limit to listing some policy instruments (which should have been in report 2 of A3), but no financing scheme. Not surprisingly, the recommended 'mechanism' is just a shortlist of policy instruments (such as VAT exemption, corporate revenue tax). So far, subcontract C2 has not given insight in which 'financial mechanism' could be applied.

Standards Letter D3C – Implementation of Demonstration Schemes
Rang Dong Co.

- No.3c (Supplement). Lighting System and Power Supply Installation of Secondary Schools in Inner Area and Suburban Area of Hanoi City

Observations

- This is an example of one of the better reports, as can be found in the technical components 2 (support) and 4 (demo schemes). Clearly, Rang Dong Co. knows what it is writing about; presenting the current status regarding lighting in secondary schools, some insights in the design of lighting systems and what finally has been installed in some secondary schools. An annex with an economic analysis in the same report would have been helpful, although we admit that the Terms of Reference had a technological focus and analysis of the economics is part of subcontract D2.

Box 2 Review of selected reports and outputs of VEEPL (cont'd)

Subcontract D2 – Review of technical and economic feasibility of demonstration schemes
Subcontractor: VAST-IMS. Expenditures '06-'07: USD 17,995. Planned 2008: USD 5,000

- No.4 Assessing the Technical-Economic Effectiveness of Project of the Efficient Public Lighting (a) of Streets in Ho Chi Minh City (HCMC), and (c) System of High schools in Hanoi (2006)
- No.7c Findings and recommendations for the Project of Efficient Public Lighting in HCM City

Observations

- Report 4c does build and refer to other VEEPL reports, namely 1C to 4C of the Rang Dong Co. of subcontract D3C. However, it seems to repeat the technical details during 25 pages out of the report's total of 34 pages, while the economic analysis of the three cases presented (current design, 300 Lux standard and Rang Dong design) covers only 6 pages. The only financial indicator presented is 'capital repayment', while other indicators, such as net present value or internal rate of return, are not mentioned. That the systems will have different lifetimes is a factor totally ignored here. One would expect not only financial analysis (from the beneficiary's perspective), but also an economic analysis (from perspective of the nation as a whole, e.g. by removing subsidies from the financial equation). Economic analysis would also look at impacts other than electricity consumption reduction, such as reduction of peak power demand and would try to assign a value to it based on long-run marginal cost of the national grid system.
- On the analysis of street lighting in HCMC, we noticed that Report 7c (so-called 'full report, findings and recommendations') is practically the same as the earlier report 4c and we wonder what the need for producing two identical reports is. Furthermore, the economic feasibility analysis is very flimsy. We tried to recreate the analysis in an Excel sheet, but failed to do so as the assumptions (e.g. which EE lamps with which wattage replaces what conventional lamp) are not clearly indicated. Furthermore, again, lifetime considerations are not taken into account. The study discusses lamps only. Other aspects of a street lighting system, such as luminaires are not discussed, while luminaire replacement is one of the demo activities in HCMC.

Subcontract A5 – Development of Technical and Economic Tools for EE Public Lighting Investment
Subcontractor: ICE-MoC. Expenditures '06-'07: USD 18,422. Planned 2008: 10,578
Handbook Guide to using the Economic Tools in the Process of Investment, Construction and Maintenance for the High Efficiency Public Lighting

Observations
This is another example of 'technical reports being better than the non-technical ones'. The 118-page Handbook provides quite some detail. Nonetheless, it seems more like a course for electrical engineers at academies, rather than something which will be practically used by city planners. The Handbook shows lots of formulae but does not give real cost calculation examples, based on real data. The case studies of street lighting in HCMC, Quy Nhon and school lighting could have been incorporated as case study material. Second, the output could have been accompanied by a user-friendly spreadsheet model.

Subcontract A8 – Development of Local Public Lighting Policy
Subcontractor: Hapuelco

Observations:
Proposals on policy must go beyond recommending common actions, but outline the scope, objectives and its expected outcomes as well as include guidelines to develop and implement the policy. Distinction should be made between various actors and their roles and responsibilities (e.g., local People's Committee, public lighting companies, district administration and electricity companies).

- Reports do not always meet the objectives as laid down in the Terms of Reference[21],
- Although work methodologies are mentioned in the inception report, it is not clear how these methods were followed in the main report;
- Reports submitted by one contractor do not refer to other reports, sometimes not even within the same contract[22].
- In one case, a report submitted reportedly was very identical to a report submitted under the UNDP/GEF PECSME project[23];
- Although a quality management system is in place (as discussed on the previous page), even substandard projects have been signed off as 'good' in quality.

The Evaluators themselves looked at some of these reports in more detail of the Components 1, 3 and 5. Our comments are presented in Box 2 and appear to confirm Mr. Le's observations regarding reports in certain components[24]. While signaling problems in the output quality is one matter, the question the Evaluators should ask themselves is 'what is causing the problem (which will be discussed next) and how it can be remedied (which will be discussed in the next chapter)'

Method of subcontracting and hiring consultancy

Partners participate in project activities and receive GEF support by means of the so-called 'standard letter' construction. The PMU's argumentation is that in this way all partners are constantly working and involved in the project. There is definitely some merit in this; as mentioned before, in terms of networking the project can indeed been deemed successful.

The Evaluators have noticed that subcontractors are hired theoretically through competitive process by short-listing them, but in many cases it turns out that the selected and contracted party are always from the same list of organizations of the VEEPL network or even, project partner/co-financier[25], the latter pushing the limit of the legally acceptable.

Nonetheless, the *de facto* practice of 'closed shop' in awarding assignments to project partners by 'standard letter' and other allies in the 'network' by subcontracts has three negative impacts:

- It potentially constitutes a conflict of interest, whereas an independent consultant can be castigated (e.g., by the fee being withheld) for delivering bad result, partners will find that more difficult in order not to lose a good working relation. This may explain why, despite the project's internal quality control mechanism, mentioned above, even the feeble reports (as e.g. mentioned in box 2), are usually signed off as 'good';
- In cases where the co-financier (or a subsidiary) has to contribute, but at the same time becomes a recipient party of GEF funding, by means of subcontracts, it becomes unclear

21 The review mentions, for example, the report 'General Assessment of Existing Policy and Regulations (related to electricity, price, norm and unit price of lighting products)', report 2 of subcontract A5 as being soundly written, but not corresponding the objective set for this activity in the Project Document

22 Examples mentioned in the review are, KCT the subcontractor for communication (E6) reports on 'international and local information on EEPL' which overlaps with those produced in the reports A3, A4 and A8;

23 Reportedly, the Communication Campaign report (contract E6, no.6) by KCT has good quality, but headings and much of content seem to coincide with a report produced for the UNDP/GEF PECSME (Promoting Energy Conservation in Small and Medium Enterprises). Regarding the 'headings', the PMU commented that subcontractor E6 took the PECSME programme as a reference to develop the VEEPL communication programme, thus it has the same format of the PECSME report.

24

25 Apart from the 'standard letter' construction, also subcontracts have been awarded to co-financing partners indirectly through subsidiaries (e.g. to IMS of VAST, CMI of HUT, ICE of MoC)

what co-financing means (which is important, because the presence of such financing is conditional for receiving GEF support for the VEEPL project);

- The output under the more technical components 2 and 4 seem to be generally good. These show more visible 'on-the-ground' results and stakeholders interviewed generally expressed satisfaction. One reason may be that the work done here partners or subcontractors, e.g. work done by the lighting product companies or support to laboratories and formulating technical norms and standards, by Rang Dong company or the QUATEST laboratory, is according to their technical expertise and core business. In general, as subcontracts go to *de facto* pre-selected partners, it is not guaranteed that this partner has the best capacity. This especially seems to be the case in the Components 1, 3 and 5 (which are more outside the field of science and technology) as will be illustrated by some examples below.
  - Component 1 (policy), where VULA is engaged in subcontract A3 as consultant without having experience in providing policy advice and consultancy;
  - Component 4 (demos), in the case of the 'technical economic analysis of the demo schemes' report (subcontract D2), the IMS of VAST was subcontracted thus not only blurring co-financing with GEF financing, but making quality control impossible (as it will be difficult to criticize oneself), while the expertise required may be put into question, as IMS a technology institute, not a business school.
  - Component 5 (information), where again VULA was contracted although it does not appear to have sufficient competency to execute the assignment with quality

Information dissemination

Access to information seems to be restrictive. Despite the huge amount of public money spent on producing reports (both GEF and national funds), these are not available in the public domain. The Evaluators believe that deliverables produced with public money, should also be publicly available. As consultants or subcontractors may not have had easy access to these reports, it is not surprising that some of the duplications or gaps in the project technical reports of the various subcontracts have occurred.

Contracting and type of reporting

Subcontractors are awarded monthly payments. In order to ensure that work is done according to schedule, the project design seems to excessively focus on breaking down activities in unnecessarily small components to ensure milestones for payment is met; many subcontracts have an inception report, progress report, intermediate report and final versions. This absorbs lots of energy in producing paper, which otherwise could have gone into doing proper research. Box 2 mentions one example in which one report of one subcontract is almost a copy of an earlier version of the report (report 7c and 4c of subcontract D.2). The Evaluators recommend on clear output 'one report with a clear policy recommendation' and payment of 20-30% on signing the contract and final payment after successful delivery of the output.

Project management

VAST is a leading national institution for scientific and technological research and has shown capability in managing projects successfully. The Evaluation Team does not question the academic credentials of the day-to-day management. In fact, both the PM and NSTA are renowned scientists in their field. However, we observe that the project is being managed as if it were a *technical* academic project, while the project is about the higher goals of

removing *non-technical* barrier to a nascent market of EE technology. In fact, VAST may not have had much experience in managing a capacity building project[26].

This may explain the extreme orientation to producing reports as if they were a series of research papers, instead of focusing on the broader aim of integrating the results of the reports into understandable documents of information that are so convincing by their attractiveness in layout and message alike that they can convince decision-makers into action, both at national Government People's Committee as well in similar structures and local level.

The Evaluation Team lamentably observed certain level of hostility within the PMU between PM-NSTA and ISTA[27] and between PMU and UNDP CO. This might be attributed to PMU

Table 6 Overview of planned expenditures and actual disbursement on subcontracts

Project activity no.	Contractors (period 2006-2007)	Subcontract or Standard letter	Budget ProDoc	Expenditures (USD) 2006	2007	Planned 2008	Total 2006-08
1.2	VULA	A3	20,000	9991		27,000	36,991
1.3	Hapulico	A4	23,000	9,996		7,000	16,996
1.4	ICE	A5 (SL)	32,000	8,422	10,000	10,578	29,000
1.5	MoC-DoUI	A6 (SL)	23,000		7,000	12,000	19,000
1.6	MoC-DoUI	A7 (SL)	31,000		7,000	12,000	19,000
1.7	Hapuelco	A8	35,000	2,359	10,000	9,000	21,359
2.1	VULA, ULC	B7	42,000	11,993		24,000	35,993
2.1	NILP	B8	20,000	5,995		8,000	13,995
2.2	Hapulico, Schreder, Vinakip, Ralaco, Dienquang	B9 (SL)	145,000			55,555	55,555
2.3	Hapulico, Schreder, Vinakip	B10 (SL)	36,000	6,498		20,000	26,498
2.5	VAST-IMS, HUT-IEP, Quatest	B11 (SL)	85,000	19,165		28,450	47,615
2.5		B12	44,000			8,000	8,000
2.6	ThangLong Neon	B13	14,000			6,500	6,500
2.7	HUT-CFMI	B14	12,000	7,993		6,500	14,493
2.7	MoST	B15	10,000		2,000	4,000	6,000
2.8		B16					
3.3	IFS	C2	20,000		7,000	13,000	20,000
	IoE	D1 (CO_2 emissions)				8,000	8,000
4.1	VAST-IMS	D2	16,000	7,995	10,000	5,000	22,995
4.4	PC of HCMC and Quy Nhon and Ralaco	D3 (SL)	300,000			92,000	92,000
4.6	ECC	D4	20,000			14,000	14,000
4.6		Replication				16,000	16,000
5.1	ULC	E5	23,000	6,995	4,000	9,000	19,995
5.3	TSTC	E6	29,000	4,993	15,198	7,000	27,191
5.4	MoST	E7	23,000			8,500	8,500
5.6	VULA	E8	27,000	7,000	5,000	6,000	18,000
5.7		E9	30,000				-
	Total		1,060,000	109,395	77,198	417,083	603,676

Source: compiled from APRs 2006 and 2007

[26] In fact, the designation of VAST as the EA for the project was questioned during the design of the project as being limited to technical capacities. In the end, VAST was selected as appropriate by the project proponents because of its central position of high regard in the Government would make it a good home for VEEPL and would maximize the chance of obtaining active support from other Ministries. It was expected that VAST would develop and implement specific institutional strategies for each type of institutional stakeholder with the objective of specifically addressing specific barriers.

[27] In this respect it is interesting to note that, although mentioned in the Project Document as part of the PMU, the ISTA is in the progress reports (APRs) not listed as 'project personnel', but just as one of the international experts

management which considers even mild critique as attacking their academic credentials, thus creating an 'us-against-them' atmosphere. We believe it should not be taken as such. Now the project evolves from the necessary founding activities (technical assistance of to the lighting manufacturers, giving support to the demo project and disseminating this related info by means of seminars and workshops), there is an urge to focus on the more non-technical aspects of lowering barriers in the area of policy making and strategy formulation, replication of demo results, formulation of policy instruments and financial mechanism that will promote efficient public lighting with ultimate goal of achieving market transformation. This will require the support of the ISTA as well as specialized consultancy expertise (Vietnamese and/or international) in the areas of policy making, institutional strengthening and innovative finance and marketing.

2.3.2 Partnership strategy and cooperation with stakeholders

Item 2.2.d of the Terms of Reference (Annex A)

Stakeholder mobilization and a close network has been created with stakeholders from lighting companies, cities, lighting manufacturers, schools and government officials from city councils as well as national ministries (MoI, MoST, MoF, MoC). When interviewed some of the stakeholders, they expressed satisfaction, however, this should not be a surprise since in the majority they were contracted parties and beneficiaries of the technical and financial assistance provided by the VEEPL project.

2.3.3 Financial planning and delivery of co-financing

Item 2.2.e of the Terms of Reference (Annex A)

The tables 6 and 7 provide an overview of the GEF and co-financing budget as originally planned, actual disbursements during 2006 and 2007 and planned expenditures for 2008. The

Table 7 Overview of co-financing and disbursements in 2006 and 2007

	Planned co-financing						Actual disbursement	
	VAST Cash	MoC-ICE	Lighting manufacturers	Testing labs	Cities, Demo schemes	VTV	2006	2007
1 PL Policy development								
- Consultants and travel		90,000					30,600	47,000
2 PL Technical support								
- Equipment			2,790,000	600,000			3,392,930	1,862,750
4 PL Demonstration								
- Equipment					8,120,000		1,641,040	3,067,400
5 PL Info dissemination								
- Workshops and other costs						600,000	30,000	154,000
6 Project management, M&E								
- PMU	108,000						31,900	21,800
- Inception phase	10,000							
Total	**118,000**	**90,000**	**2,790,000**	**600,000**	**8,120,000**	**600,000**	**5,126,470**	**5,152,950**
Grand total	**12,318,000**							

Source: Project Document; APR 2006, 2007; Annual work plan 2008
Notes: Viettronics withdrew its USD 600,000 co-financing due to capacity limitations, but Ralaco committed co-finance support of USD 600,000 for the technical support and USD 40,000 for the demo component. VTV-2 also withdrew support, but was replaced by the Television Science and Technology Club (KCT). It should be noted that some co-financing investments (e.g., by Ralaco and Hapalico companies) were already made in 2005

level of disbursements more-or-less in 2006 and 2007 follows the rate of implementation as detailed in section 2.1 of this report. Table 8 provides an overview of the expenditures under the various 'standard letter' and subcontracted activities

In addition to the subcontracts listed in table 8, the following international experts have been hired during 2006-2007:

- Mr. Li Tienan (China) as expert on EE lighting product standards,
- Mr. Sommai Phon-Amnuisuk (Thailand) as consultant (contract B4, activity 2.7);
- National consultants (hired for the appraisal of reports produced by VEEPL):

Table 8 Overview of original GEF resources, actual expenditures 2006-2008 and planned expenditures 2008-2010

		Expenditures			Planned	
Amounts in USD	**Original budget**	**2006**	**2007**	**1-2008**	**2,3,4-2008**	**2009/10**
1 PL Policy development	**319,000**	**45,759**	**84,059**	**29,873**	**95,145**	**64,164**
- Consultants and travel	106,500	1,000	16,842	1,558	4,442	
- Subcontracts and services	164,000	38,398	50,000	21,829	55,749	
- Workshops and other costs	28,700	4,002	10,615	6,486	28,514	
- M&E	19,800	2,359	6,602		6,440	
2 PL Technical support	**727,520**	**120,768**	**296,246**	**53,981**	**208,404**	**48,121**
- Consultants and travel	140,000	24,429	183,897	2,265	25,035	
- Equipment	60,000		59,350		0	
- Subcontracts and services	428,000	91,328	20,000	51,399	103,806	
- Study tours	11,000				0	
- Workshops and other costs	35,720		20,059	317	66,683	
- M&E	52,800	5,011	12,940		12,880	
3 PL Financing	**141,300**	**15,699**	**25,890**	**6,052**	**58,388**	**35,271**
- Consultants and travel	33,000	1,416	5,636	1,558	7,442	
- Subcontracts and services	20,000		7,000		13,000	
- Study tours	35,000				0	
- Workshops and other costs	33,500	11,924	7,589	4,494	31,506	
- M&E	19,800	2,359	5,665		6,440	
4 PL Demonstration	**434,250**	**40,948**	**88,429**	**7,468**	**140,252**	**157,153**
- Consultants and travel	61,000		73,129	1,236	764	
- Subcontracts and services	336,000	40,948	10,000	6,000	129,000	
- Study tour	7,000				0	
- Workshops and other costs				232	3,768	
- M&E	30,250		5,300		6,720	
5 PL Info dissemination	**299,250**	**54,014**	**40,059**	**7,159**	**86,787**	**111,231**
- Consultants and travel	98,000	22,000	1,731	1,274	7,726	
- Subcontracts and services	132,000	18,988	30,198	5,015	31,485	
- Study tour	9,000	10,207			0	
- Workshops and other costs	30,000			2,144	40,856	
- M&E	30,250	2,819	8,130		6,720	
6 Project management, M&E	**1,078,680**	**122,519**	**128,148**	**16,103**	**205,497**	**606,413**
- PMU	425,158	104,451	80,936	9,225	83,675	
- ISTA	468,000		39,000		103,700	
- M&E, general	166,022	3,877	8,212	6,878	18,122	
- Inception phase	19,500	14,191			0	
TOTAL	**3,000,000**	**399,707**	**662,831**	**120,636**	**794,473**	**1,022,353**
Percentage		13%	22%	4%	26%	34%
Cumulative		13%	35%	39%	66%	100%

- Mr. Tran Tri Dung (policy and finance)
- Mr. Vu Xuan Qang (lighting technology)
- Vu Minh Mao[28] (demonstration; information dissemination)
- Mr. Pham Thanh (demonstration; info dissemination)

2.4 Implementation: assessment of the project's impacts

Item 2.2.a of the Terms of Reference (Annex A)

Table 9 in this section provides an overview of the envisaged or potential environmental and socio-economic impacts of the project.

The two ministries, MoC and MoST, have accepted to develop a Strategy on Urban Lighting and a Decree on Urban Lighting Management. Once the Strategy on Urban Lighting Development (till 2025) is approved by the government, the orientation of lighting development in urban areas will be defined and from which, the short-term, middle term and long term lighting planning will be developed and investment for lighting plan implementation will be allocated accordingly.

Table 9 Indicators of project impacts

Impact of the Project (based on the APR-PIR)	**Indicators** (relation with project objective and outcome indicator as mentioned in Project Document)	**Verification** (estimates by Evaluators, based on CO_2 emission data provided by ISTA and analysis of reports)
1. Annual energy savings 2. Annual and cumulative CO_2 reduction	*Outcome 4 and Project objective: Direct emissions:* • % of EE PL newly installed and/or replacing in urban areas, schools and other (hospitals/offices) • No. of qualified EEPL products sold in 2008-2010 • Corresponding annual and cumulative energy savings and CO_2 emissions *Outcome 4 and Project objective: Indirect emissions:* • % of EE PL newly installed and/or replacing in urban areas, schools • Corresponding annual and cumulative energy savings and CO_2 emissions	• *PIR* The PIR 2007 mentions 0.43 GWh per year saved by the demo projects and 7.65 GWh/yr by the EEPL products upgrading projects with corresponding annual savings of 0.19 $ktCO_2$ and 3.29 $ktCO_2$ respectively[29]. • Recent *calculations by the ISTA for the year 2007* give the following estimates: (a) product upgrading, 6.64 GWh/yr and 2.86 $ktCO_2$, (b) demo in schools: 0.13 GWh/yr and 0.06 $ktCO_2$, street lighting demo: 0.68 GWh/yr and 0.28 $ktCO_2$. *Replication* to 3,415 classrooms and street lighting in 19 cities in town would give 5.6 GWh/yr and 2.42 tCO_2 and 17.01 GWh/yr and 7.32 $ktCO_2$ respectively (see Annex D). Total reduction: 12.93 $ktCO_2$; • The Eva*luators have confirmed these estimates base*d on the ISTA's

[28] Again, an example of the 'closed shop' way of contracting (signaled in Box 1), Mr. Vu Minh Mao is also Chairman of VULA and therefore can hardly be considered an independent reviewer

[29] The impact estimate method was later identified by UNDP CO as not appropriate as it could provide considerable error (over estimate). At present new method is developed and used to estimate the impact for 2007. However, the figure of CO2 reduction for 2006/2007 has not been corrected yet. It is expect that the PIR 2008 will provide full explanation for this and corrected figure will be presented.

		calculations (13.57 tCO_2 annually see Table 10)[30]. • The Institute of Energy was recently hired to work out a more advanced methodology for energy savings and CO_2 emission reduction (subcontract D1)
3. Development of sectoral policies, laws and regulations	*Outcome/component 1* • Government policy and accompanying implementing rules and regulations on the utilization of EE public lighting systems is established by the end of the project	• Proposals/outlines on Decree and Strategy on Urban Lighting have been proposed and a Decision on integration of urban lighting in urban planning has been issued by MoC. • VEEPL has developed EE standards for HPS and luminaries. These serve as inputs for the standard and labeling program of MoI (see box 1)
4. Improvement of awareness and understanding of technologies among producers and users	*Outcome/component 5* • A sustainable and continuously evolving program of providing EE technology information services, continuing education and awareness enhancement on EE lighting (established by MoC and cities) established by 2009	• There are doubts about sustainability of public lighting database and VULA's Public Lighting Information Center (PLIC), established with VEEPL support. The database currently has data on urban street lighting in 19 cities, but not on rural street lighting and schools or hospitals. It is not clear how PLIC will function in terms of human and financial resources after VEELP ends in 2010 • Some awareness has been created through workshops as well as articles in newspapers. However, different audiences may need to be approached using different media
5. Expansion of business and supporting services for EE:	*Outcome/components 2 and 4* • Assessment of needs and potentials for EEPL systems are completed • Local lighting product manufacturers commit 5% of their gross revenue each year to support EE public lighting starting 2009	• Improvement of quality of locally produced lighting products (CFL, T8, HPS ballasts, luminaries). Expected: improved electronic ballasts for T8 and and T5 lamps, bi-power ballasts for HPS and ADSL control systems) • Enhanced testing capacity in existing (QUATEST, HUT, IMS) laboratories. Expected: proposal for establishment of National Testing and Certification Lab
6. Increase of financing availability and financing mechanisms	*Outcome/component 3* • Financing assistance programmes for EEPL projects are established and availed of project developers and the financing and banking	• Ideally, financing instruments should be integrated in Decree on Urban Lighting as well as local urban lighting plans. So far, VEEPL has not come up with an EEPL technology delivery model. It is

[30] Regarding the figures given on amounts of lamps sold by the various companies (see first row, column three in table 10, these figures should be revisited. The Evaluators wonder if figure include both improved as well as the non-improved lamps. Also, we wonder how much of sales figures should be attributed to VEEPL and not to previous efforts. For example, EVN DSM program managed to sell 1 million CFLs to rural households during 2005-2006. The PMU responded that these CFLs were not included in the VEEPL estimates and that it should be noted that the 1 million CFLs were imported (by Osram) and not made by local manufacturers. Furthermore, the impact estimates only consider marginal energy savings as a direct result of improvement in quality of the products that were improved with technical assistance under VEEPLP. Hence these savings are irrespective of sales values, and the chance of double counting was estimated to be around 1% .(This was confirmed by ISTA.)

	sectors are providing financing by year 2009	also not clear what the economic and financial viability of EEPL as compared with conventional PL products

Moreover, the targets and concrete indicators for implementation of the public lighting plan implementation up to 2025 (in terms of the percentage of streets and alleys to be well-lighted for each kind of city in the whole country, percentage of energy efficient lighting equipment used in new installation and replacement and applying modern lighting control systems) are to be clearly defined in the developed strategy.

Besides, the measures for implementation to achieve the targets and indicators will also be strongly confirmed in the Strategy. The main measures include: (i)- Implementation arrangement (issuance of legal framework and writings, institution development, capacity buildings, etc.) ; (ii)- Investment for development (issuance of appropriate investment policy and mechanisms to encourage the participation of private sector in the providing the budget for PL implementation; mobilization of the financial sources from other economic sectors, international donors, etc.; financial support to the R&D of EEL projects); (iii)- Science-technology development; (iv)- Development of human resource.
In the Strategy, the role of relevant ministries, agencies and local governments will be clearly defined. The Decree on Urban Lighting Management will be one of the State highest legal writings. It includes articles, terms of enforcing regulations on lighting implementation towards EE&EC.

The Decree comprises of 7 parts:
- Part 1: General Provisions
- Part 2: Urban lighting planning and constructing
- Part 3: Investment for Urban Lighting Development[31]
- Part 4: Management and operation of Urban lighting system[32]
- Part 5: Urban Lighting Fee
- Part 6: Urban lighting State management
- Part 7: Execution provisions

The expected impacts of the Decree will be:
- VN MEPS, HEPS and EE labels have to be applied for eliminating the energy inefficient products in the local markets, and encouraging the local manufacturers in producing EEL products;
- National EEL standards for streets, schools, hospitals have to be applied for enforcing right design and implementation of EEPL systems upon the public lighting/consulting companies;
- Integration of lighting plans in urban construction planning will help the local governments in allocating the budget for EEPL;
- Financial mechanisms for public lighting have to be applied to encourage all economic sectors including private sectors to invest in EEPL projects;

The expectation is that Strategy and Decree enforcement will significantly contribute to removing barriers described in the Project Document and transformation of the EEL market in Vietnam.

[31] Including financing mechanisms,, financial sources and regulations on financing for public lighting towards EE

[32] Including enforcements of EE standards for lighting and lighting products, ISO procedures for lighting manufacturing, installations, operation, maintenance, etc

Table 10 Estimates of annual CO_2 emission reduction, direct and indirect (through replication)

TA Product Improvement	Action	Net power savings (W)	Annual lamp sales	Hours / year	Utilization factor	Energy savings (Gwh/yr)	CO2 (ton/year)
Dien Quang	Better product quality 15 W CFL	0.00	5,000,000	2190	0.05	0.000	0.000
Dien Quang	Improved luminous efficacy of 36 W T8	5.40	6,000,000	2190	0.05	3.548	1.526
Ralaco	20W CFL: improved eficacy and life	1.11	3,400,000	2190	0.05	0.414	0.178
Ralaco	50W CFL: improved efficacy and life	9.09	150,000	2190	0.1	0.299	0.128
Ralaco	Improved 3.5W electronic ballast	2.00	2,000,000	2190	0.90	7.884	3.390
Hapulico	Improved IP index, 250 W Master luminaire	41.67	13,500	3650	0.3	0.616	0.265
Hapulico	Improved IP index ,300 W Rainbow luminaire	50.00	13,500	3650	0.3	0.739	0.318
Hapulico	Improved IP index , 100 W Marcotte luminaire	2.08	13,500	3650	0.5	0.051	0.022
Hapulico	Improved IP index, 100 W Indu luminaire	8.33	15,000	3650	0.3	0.137	0.059
Schreder	Improved IP index, 70 W Z1 luminaire	0.00	2,000	3650	0.5	0.000	0.000
Schreder	Improved IP index, 70 OnyxS-1 luminaire	0.00	6,000	3650	0.5	0.000	0.000
Scheeder	Improved IP index, 70 W OnyxS-2 luminaire	0.00	1,000	3650	0.5	0.000	0.000
Subtotal						**13.687**	**5.886**
Demo project - schools	**Action**		**No. of classrooms**	**Savings per classroom (kWh/day)**	**Days of operation**	**Energy savings (GWh/yr)**	**Reduction CO2 (ton/year)**
High schools	Replacing T10 with T8 and more EE EM ballast		15	9.89	240	0.036	0.015
Primary schools	Replacing T10 with T8 and more EE EM ballast		100	10.51	240	0.252	0.108
Secondary schools	Replacing T10 with T8 and more EE EM ballast		39	9.74	240	0.091	0.039
Subtotal						**0.379**	**0.163**
Demo projects -street lights	**Action**		**Number**	**Power reduction (W)**	**Hours per year**	**Energy savings (GWh/yr)**	**Reduction CO2 (ton/year)**
Ho Chi Minh City							
HPS-100 W	Replacing HPM-150		1288	50	3600	0.232	0.100
HPS-150 W	Replacing HPM-250		718	100	3600	0.258	0.111
HPS-250 W	Replacing HPM-400		140	150	3600	0.076	0.033
Quy Nhon							
HPS-70 W	Replacing HPM-125		102	55	3600	0.020	0.009
HPS-100 W	Replacing HPM-150		88	50	3600	0.016	0.007
HPS-150 W	Replacing HPM-250		108	100	3600	0.039	0.017
HPS-250 W	Replacing HPM-400		73	150	3600	0.039	0.017
Metalhalide 70 W	Replacing HPM-125		66	55	3600	0.013	0.006
Metalhalide 400 W	Replacing HPM-1000		2	600	3600	0.004	0.002
Metalhalide 1000 W	Replacing HPM-2000		4	1000	3600	0.014	0.006
Subtotal						**0.712**	**0.306**
Replication of demo projects						**Energy savings (GWh/yr)**	**Reduction CO2 (ton/year)**
Schools							
High	Replacing T10 with T8 and more EE EM ballast		167	9.89	240	0.396	0.170
Primary	Replacing T10 with T8 and more EE EM ballast		1340	10.51	240	3.380	1.453
Secondary	Replacing T10 with T8 and more EE EM ballast		708	9.74	240	1.655	0.712
Subtotal						*5.431*	*2.335*
Street lighting (19 cities)							
HPS-70W	HPM-125		4339	55	3600	0.859	0.369
HPS-100W	HPM-150		4216	50	3600	0.759	0.326
HPS-150W	HPM-250		6681	100	3600	2.405	1.034
HPS-250W	HPM-400		10462	150	3600	5.649	2.429
HPS-400W	HPM-1000		376	600	3600	0.812	0.349
HPS-1000W	HPM-2000		14	1000	3600	0.050	0.022
Metalhalide 70W	HPM-125		14	55	3600	0.003	0.001
Metalhalide 150W	HPM-250		160	1000	3600	0.576	0.248
Metalhalide 250W	HPM-400		333	150	3600	0.180	0.077
Metalhalide 400W	HPM-700		32	300	3600	0.035	0.015
Metalhalide 1000W	HPM-2000		6	1000	3600	0.022	0.009
Subtotal						*11.350*	*4.880*
Subtotal						**16.78**	**7.22**
GRAND TOTAL						**31.56**	**13.57**

Note: **Annual data** calculated by the Evaluators, based on the spreadsheet for emission reduction 2007 provided by the ISTA. Data presented here differ slightly. First, in ISTA's spreadsheet the date of sale is taking as cut-off point for emission reduction estimate, i.e. the CO_2 reduction impact of a CFL sold on 1 July will be half that of sold on 1 January. The Evaluators are more interested in the annual reduction potential, not specifically for 2007. Other data may differ slightly because of different assumed hours/days of operation. **Cumulative emissions** can be calculated if the lifetime of each technology is known.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

Item 7 in the Terms of Reference (Annex A)

The following summarizes the main findings of the evaluation. Each of the points discussed below has been dealt with in more detail in the previous chapter 2.

3.1.1 Project design and project implementation

Project design

To lower existing technical, financial, policy, and informational barriers to a more widespread application of energy efficient public lighting (EEPL), the Vietnam Energy Efficient Public Lighting Project (VEEPL) implements activities under the following components:

- **Public lighting policy development** – activities that strengthen and improve the local and national policy and regulatory framework and encourage feasible energy efficient public lighting projects in Viet Nam.
- **Public lighting technical support program** – activities that strengthen the capacity of relevant GOV agencies on energy efficient public lighting product testing, market monitoring and enforcement of standards with consumers.
- **Public lighting financing program** – activities to encourage the government, financial/banking and private sectors, to provide financial assistance for the development and implementation of energy efficient public lighting system projects.
- **Public lighting system demonstration program** – activities to provide Vietnamese stakeholders with direct experience with the design, development, financing and implementation of cost -effective, energy-efficient public lighting system projects.
- **Information dissemination** – establishment of a network of technical expertise in energy efficient public lighting in Viet Nam and the production of high quality, affordable, accessible and up-to- date information services, continuing education, and awareness improvement on the application of energy efficient public lighting systems.

The Project Document provides a well-designed project document with provides a detailed list of activities under policy development, technical support, finances, system demonstration and information and awareness component.

Unfortunately, the Project Document does not make clear the special need for focusing on public lighting within the area of public, commercial, industrial and residential and the focus on lighting within the area of electricity conservation in general[33]. This may not be as trivial as it may sound. Regarding public lighting, VEEPL focuses on street lighting and lighting in

[33] It should be noted that the Government-commissioned study report "Potential for Energy Efficiency Improvement in Lighting in Vietnam (1997)" identified a potential to save 100 MW (100,000 tons of CO2/yr) from more efficient use of lighting in Vietnam. The report suggested programs to reduce lighting energy consumption in the transportation, industrial, commercial and the domestic sectors. However, only one of these recommendations received further support (related to Public Lighting) following the private sector funding of a demonstration project in Hai Duong city (1998-2001) proving the feasibility of the overall public lighting project.

schools and hospitals. So far, hospitals have not apparently shown much interest. Is that because they are not interested in efficient lighting *per se*, or because, contrary to a public lighting company (whose main cost will be the power bill), lighting in hospitals may only a fraction of their energy bill and management thus wants to focus on other efficiency improvements first in both electrical (e.g. air-conditioning) and thermal (e.g. water boiling) areas other rather than lighting?

While the annual Project Implementation Reviews (PIRs) provide a detailed list of project performance indicators, there exists a strong tendency in these indicator to focus on outputs under each outcome, while to the outcomes themselves no indicators are attached. Also, the indicators tend to measure quantitatively (e.g., no. of reports produced under an activity) rather than quality (e.g. no. and type of action taken based on the recommendations of the report). There is a great need to revise the indicators in the annual targets of the PIRs to make them real impact indicators.

Performance of project implementation

The project is progressing towards the objectives set; most project outputs have been completed in due time or with little delay. Theoretically this means that the project is performing well and on schedule.

However, a closer look at the quality of the outputs reveals a difference between components (outcomes), maybe not in terms of number of outputs produced, but in terms the output potentially contributing to the expected impact of each component and to the overall objective of the project. Here, the Evaluators asked themselves the question *'how will the project have contributed in 2010 to the main results of lowering the various technical, financial, policy, and informational barriers in such a way that this result can be sustained and the identified technology delivery model can be replicated to other cities?'*

To the Evaluators' opinion:

- Most success in terms of impacts has been obtained in the more technological components 2 (standards and support to industry) and 3 (demonstration schemes); here we can give a rating of *satisfactory*
- Less impact is noticeable in the policy development (component 1) and awareness raising component 6 *(*between *marginally satisfactory* and *marginally unsatisfactory)*
- The Evaluators give a rating of *unsatisfactory* for component 1 (finance mechanism).

The above ratings may not be a surprise, since the nature of the executing agency, VAST, is that of a technology institute, so one can naturally expect that more results have been in the two technology-oriented components 2 and 4. The issue now is how to integrate the results of the various components in such a way that a sustainable and deliverable technology delivery model can be developed backed up under the framework of a coherent public lighting (or the overall energy efficiency policy) with appropriate policy instruments (standards, finance, etc.).

The Evaluators notice a strong difference in opinion between the UNDP Program Officer and ISTA and PMU on the achievements in the policy component. The PMU acknowledges that some reports are substandard and need to be improved, but sees the component in general as *well-implemented* during 2006-2008, based on the working meetings and promotional and other workshops that have made Government policy makers understood the necessity of the EE lighting development and they strongly supported the implementation of the VEEPL

project. Based on the project's recommendations, MoC and MoST accepted to develop the Strategy on Urban Lighting Development and the Decree on Urban Lighting Management. This success cannot be denied, but it cannot be solely credited to the efforts of the VEEPL project, because the drafting committee consists of various members of the various Ministries involved[34]. In the end, the proof of the pudding will be in the eating; i.e. in the way the texts (Strategy and Decree) will be approved by the Government, if approved (expected by the end of 2008 and 2009).

Regarding *local policy development*, PMU stresses that 10 proposals on local policies/regulations were highly appreciated by the stakeholders through consultation workshops and working meetings with relevant ministries, local governments during 2006 - 2008. The proposals were sent to all local governments for getting the comments and for reference in making local policy of the provinces and cities. To date, some cities such as Tien Giang Province, Ho Chi Minh City, Hanoi City, Quy Nhon City have reportedly used project proposals to develop their local policies/regulations

3.1.2 Sustainability and replicability

In terms of *replicability*, the demonstration schemes have been technically shown to work in Ho Chi Minh and Quy Nhon cities (street lighting) and Hanoi (schools). From the policy side some progress has been made on integrating public lighting into urban spatial planning. However, the financial side has been largely left untouched, and one cannot speak of 'technology delivery' model being developed yet, integrating technology, economic and financial aspects, in a way that it can be showcased and replicated. Currently and in the future, local governments cover all the expenditures for public lighting (installation, operation, maintenance and electricity bills) through the state budget allocation. Therefore, this aspect should be factored into the financial-economic model, while other investment resources for public lighting should be mobilized (especially for school and hospital lighting).

Regarding *sustainability* of VEEPL's activities, it is not clear which institution will have the mandate and the capacity to continue the promotion of EEPL in Vietnam after the project will end in 2010. VULA[35], being an association of lighting manufacturers, government representatives, would ideally be placed to play such a role, but may not have sufficient capacity (staff, financial resources) to do so. A second concern is about the availability of all the information and knowledge generated, since currently it is difficult for outsiders and even VEEPL consultants to have access to the more than 30 reports produced by VEEPL. Other organization and institutions will play an important role as well:.

- MoC: Monitors and evaluates the execution of various policies and codes on EE lighting system management and operation; assist to maintain and update the EE lighting database and PLIC.
- MoST: Monitors and evaluates the application of EE lighting technologies; the enforcement of MEPS and the development of national lighting testing laboratory;

[34] For example, the Drafting Team of the Decree consists of 14 members, including members from MoC, MoIT, MPI, MoF, Ministry of Justice as well as VULA (Mr. Vu Minh Mao) and VEEPL (Mr. Phan Hong Khoi). The Editing Team is composed of 15 members from MoC, MPI, MoF, MOIT, Ministry of Juctice as well as VULA (Mr. Tran Dinh Bac) and VEEPL (Ms. Nguyen Thi Bac Kinh)

[35] VULA is a professional organization under the Vietnamese Construction Association and supported by MoC According to PMU, the major task of VULA is providing advices on various issues relating to EE lighting system management, policy, science and technology to MoC as well as collecting and providing information on nationwide lighting system.

- MoIT: Monitors and evaluates the EE certification and labeling for lighting products; promotion and communication on EE lighting; assists manufacturers to improve their product quality and production line.
- Local Governments (City/Provincial People's Committees, relevant Departments and Agencies): Develop urban lighting plans for their localities in each phase and develop their local EE lighting systems in conformity with the Orientation of Government Strategy and Provisions of Decrees.

3.2 Recommendations

Item 8 in the Terms of Reference (Annex A)

3.2.1 General recommendations for the project

Project management

The PMU should adopt a culture of being more 1) outward looking, 2) less rigid and 3) delegating authority.

- Regarding the first, policy formulation and setting up innovative finance may require specific expertise that may be outside the one expects to find in a technology institute or in the VEEPL network as a whole. Now we go to the second phase of integrating results into a policy and sound strategy and financial instruments, the PMU should not shy away from inviting such expertise by broadening its network to actors whose specialty, for example, is policy making and banking, and by contracting outside consultants and subcontractors;
- Regarding the second, the coordinators of the various components should work as a team, i.e. the coordinator for policy development should work with coordinator on finance to derive a sound financial scheme and with the coordinator in info dissemination to target policy makers on the need and effectiveness of such a finance scheme as a policy instrument.;
- Regarding point three, coordinators should be made more responsible (but also accountable) for their activities. Also, the ISTA should not be regarded as an 'outsider', but should form with NSTA and PM the 'core management team' of the PMU. The Evaluators have noticed that right from the beginning PMU did not feel the need for an ISTA, but prefer more targeted international consultancy in the various components. We think the services of an ISTA are needed now that the project evolves from having laid a technological base into more policy-making, informational and economic-financial issues. Budgetary concerns should not be an issue, as current system of subcontracts should be revised anyhow and money can thus be made available to be able to afford both an ISTA as well as the necessary short-term national and international consultancy, as will be discussed below.

Removing barriers in an integrated way to achieve market transformation in PL towards EE products and practices

Significant efforts and energy have been invested by VEEPL in exploratory research, technical assistance to manufacturers, capacity building and with the demo projects in HCMC, Quy Nhon and Hanoi. The information associated has been captured into a large number of reports, although they differ in quality and, in terms of achievements, most success has been obtained in the components 2 and 3, but less impact is noticeable in policy development (component 1) and little impact in component 1 (finance mechanism). This may not be a surprise, since the nature of the executing agency, VAST, is that of a technology

institute, so one can naturally expect that more results have been in the two technology-oriented components 2 and 4.

- An assessment should be made of the final reports and the quality of the analysis and recommendations therein by PMU management (PM, NSTA, ISTA) with aid of an outside consultant (national or international). The central idea is that, almost half-way, some stock-taking should take place as to where the info generated in the reports has led to. The analysis and recommendations in these reports should be reviewed in a holistic approach, i.e. in an integrated way (meaning outputs produced under one component can have meaningful input in other components) and with the idea in mind how recommendations will lead to higher-level goal of lowering of barriers to achieve market transformation. Where gaps exist, these should be identified. As a consequence, the objective and methodology of the remaining activities and subcontracts should be reviewed and where needed revised, while new activities should be introduced if needed and some activities/subcontracts may need to be redone. This will imply deviating from the original list of activities as laid down in the project document (adaptive management) and updating the list. We recommend that not only a work plan 2009 is made, but a work plan is drafted too by PMU for the whole remaining 2008-2010 period.

- In future, the practice of hiring consultants and subcontractors should be opened up by announcing vacancies by mass e-mail distribution and/or by announcing in national newspapers and on the VEEPL and UNDP website. The current practice of short-listing partners and picking members from the VEEPL network is not sufficient to attract expertise in a competitive way.

- Although a quality control mechanism is in place, it is not functioning well (as was discussed in section 2.3.1). Thus, a number of opportunities exist for further improvement of output quality insurance:
  - The reports should be subject to certain rigor in providing name of authors, presenting results, including table of contents, data sources used, methodology used, recommendations and action plan for follow-up;
  - Terms of Reference (ToRs) should be revised by PMU, where necessary, and should be clear, reflect earlier work done in other outputs/activities and should make clear how it feeds into the desired outcome and overall objectives of the project;
  - Core management should sign off reports, including PM, NSTA and ISTA;
  - To insure that reports are actually used, it would be useful to include the main beneficiaries in the process of drafting/revising ToRs, selection of contracted party and evaluation of the final report or output. For example, if drafting a report on as standard for appliance X, someone from MoST should review. In case of a report on financing schemes, representatives from MoF , a commercial and state-owned financial lending institution could be on board;

- The logical framework should be revised in accordance with the new work plan 2008 - 2010. In addition, indicators should be revised in such a way that they measure more qualitatively output achievement and more indicator should be included that measure impacts (outcome) instead of lower-level outputs. This could be the task of ISTA and/or external consultant.

- Regarding impact evaluation, a national consultant has been hired, resulting in a report on 'methodology and tools for the calculations of energy savings and CO_2 emission reduction'. The report describes the methodology in a detailed way. However, the Evaluation Team has two observations. First, referring to a 'tool' means that besides a report an Excel spreadsheet should be made available for others to check and replicate

CO_2 emission reduction calculations. Second, impact analysis is much wider than just measuring energy and CO_2 reduction, but should encompass social and economic indicators as summarized in table 9 (impact indicators) as well. One or two consultants should be hired about 1 year before the project to assess energy and other impacts indicators.

Sustainability

The Evaluation Team has the following recommendations:

- All final reports of the various subcontracts or 'standard letter' assignments should be made publicly available as downloads on the VEEPL webpage; in case this in not technically feasible or confidentiality is an issue, at least a good executive summary should be made available; 'Easy-to-read' leaflets and two/four-pagers should be made that summarize the essence of a report or group or reports, using tables, graphs in a colorfully attractive layout.

- An outside consultant should be hired to assess the stakeholders' capacity and interest of the main players in VEEPL (in particular of VAST, MoC and VULA) to continue EEPL promotional activities after 2010. VULA would be the obvious candidate since it is already managing the database and PL Information Center (PLIC). In the end the VEEPL website should be hosted by VULA However, the commitment of VULA should be confirmed and its capacity to promote EEPL should be strengthened, in terms of having core staff and budget available, rather than VULA associates making themselves available on a part-time basis. This capacity assessment should results in clear recommendations for a post-2010 exit strategy that should be designed by PMU.

Replicability

- Currently, the Newsletter is distributed at a limited scale. The Newsletter should be expanded to a wider public to become a more effective tool for information dissemination for such a specialized community as in the case of public lighting. The Newsletter can play a critical role in reaching out to policy and decision-makers and provide opportunities for networking, promotion of EE products and services and sharing of experiences.

- Promotion and awareness creation should differ according to the various categories of target audiences, e.g. (1) policy/planning decision-makers at national, provincial and local level, (2) designers/architects/lamp manufacturers/lighting consultants, (3) staff responsible for procurement, maintenance and operation of PL systems, (4) general public. Since the number of people involved in PL system presents only a small fraction of the Vietnamese population, probably face-to-face meetings and well-targeted workshops are the most effective communication tool rather using mass media. However, when targeting staff in public office by means of newspapers and magazine ads may be fruitful. Anyway, using mass media should be coordinated with the efforts of MoI's National Energy Efficiency Program; maybe the VEEPL project can piggyback on EE awareness campaigning already being undertaken. Second, printed materials, such as the above-mentioned report summaries, stickers, brochures, leaflets, can create significant level of awareness, especially when distributed in targeted group meetings.

- A 'technology delivery model' goes further than just demonstrating technology (say, e.g. 1000 efficient street lighting in street A in city B in Vietnam) but linking it with an appropriate financing scheme and feeding the results into local and national policy

making. Here, a thorough assessment should be done on current financing flows for public lighting (street lighting), the potential role of banks (such as Vietin bank or Vietnam Development Bank) in setting up EEPL schemes as commercially viable projects) as well as the role of the actors involved (schools, public lighting companies, power companies, people's committees) and of the institutional limitations these actors may face in getting involved in such schemes. If the finance barrier can be tackled (in general, initial investment in EEPL will be more expensive than normal PL schemes although more cost-effective over the technology's lifetime) than the model showcased in HCMC, Quy Nhon and the Hanoi schools can convince local decision-makers to be replicated in other cities.

- Such EEPL technology delivery model should be supported with appropriate policy instruments that promote EE with a 'carrot and stick' approach. The project has in policy so far concentrated on the 'stick' (decree, standards) that force people to do something, and the Evaluators do not deny that VEEPL has contributed to progress here. But an appropriate policy should also have a 'carrot' component (e.g., financial incentives and providing independent information) and here the link between components 1 and 3 becomes crucial. Similarly, components 2 and 1 should be linked. For example, it is nice to have formulated MEPSs (apart from the EPS for the labeling schemes), but if in future no government decision will be made to actually have mandatory MEPSs the output (the MEP) has been achieved but impact will have been zero (no introduction or enforcement). This may, e.g. require extending activities in Component 1 in lobbying government officials and even parliamentarians, Ministers, etc., with the aim of having mandatory MEPSs by the year 2010.

- Thus, urban lighting should be clearly embedded in the overall energy efficiency efforts of national and local governments, in particular the National Energy Efficiency Program as well as with EVN on demand-side management activities. For this, VEEPL should closer coordinate with the Ministries involved, such as MoI (Energy Efficiency Office), MoST, MoF and EVN. One way to achieve this is by putting representatives of these organizations (if not there already) on the Steering Committee of VEEPL.

Recommendation on specific activities are presented in Annex E

3.3 Lessons learnt

Some lessons learnt are:

- The building of strong working PMU is important that brings together a multi-disciplinary core team as well as short-term consultants and subcontractors. The latter should be contracted by open and transparent procedures;

- Creating a strong partnership and effective coordination with project partners and stakeholders from national and local governments, local and international industry, financial sector, NGOs/research institutes and beneficiaries (public lighting companies, schools, public offices) is important to promote EE PL;

- In capacity building and institutional strengthening projects, the main aim is not only improving the development and support base for the particular technology the project focuses on, but ultimately removing technology, policy, informational and financial-economic barrier in a integrated way, using a results-based holistic approach in implementing the individual project activities.

ANNEX A. TERMS OF REFERENCE (TOR)

The original text of the ToR has been amended in the sense that numbering referred to in the main text has been added, but otherwise the original text has been left in place.

Project title: PIMS 2031 CC FSP: Vietnam Energy Efficient Public Lighting (VEEPL)
Project ID: 00046820
Implementing Partner: Vietnamese Academy of Science and Technology (VAST)
Duration of the assignment: 20 working days, (expected starting date: 10 May 2008)
Duty location: Hanoi (Viet Nam) with in-country travel to project sites in HCM and Quy Nhon cities

1. Objectives of the Mid-Term Evaluation

The Mid Term Evaluation will be coordinated by the UNDP Viet Nam, the Project Management Unit. The midterm evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on effectiveness, efficiency, and timeliness of project implementation. It will highlight issues requiring decisions and actions and present initial lesson about project design, project implementation and management. The Mid Term Evaluation serves to document lessons learnt and plays a critical role in supporting accountability.

The **objectives** of this Mid-Term Evaluation (MTE) are in line with the following overarching objectives of the monitoring and evaluation of GEF projects:

1. To monitor and, particularly, evaluate results and impacts.
2. To promote accountability for resource use
3. To document, provide feedback on and disseminate lessons learned.
4. To provide a basis for decision making on necessary amendments and improvements.

As defined in the GEF Monitoring and Evaluation (M&E) Policy, an evaluation is a systematic and impartial assessment of an activity, project, program, strategy, policy, sector, focal area or other topics. It aims at determining the five major criteria of **relevance, impact, effectiveness, efficiency and sustainability** of the interventions and contributions of the involved partners. Further elaboration of these principal criteria is stated in the existing **The GEF Monitoring and Evaluation Policy** adopted in 2006. The evaluation should provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons into the decision-making processes.

2. Scope of the Mid Term Evaluation

The scope of the MTE covers the entire UNDP/GEF-funded VEEPL project and its components as well as the co-financed components of the project. The MTE will evaluate the project implementation taking into account the status of the project activities and outputs and the resource disbursements made up to date. The evaluation will involve analysis at two levels: component level and project level.

2.1. Component level

The evaluation at this level will determine the **relevance, effectiveness, efficiency and impact** of the aspects of activities and component design, implementation, management and monitoring of evaluation. Any issue or factor that has impeded or accelerated the implementation of the project or any of its components, including actions taken and resolutions made should be analyzed and highlighted. On the component level, the key aspects shall be evaluated:

a. **To what level are the performance measurement indicators and targets used in the project monitoring system specific, measurable, achievable, reasonable and time-bound to achieve desired project outcomes?**
   - Are outcome indicators and targets are specific, measurable, achievable, reasonable and time- bound?

- To what extent are the performance measurement indicators useful in helping managing the quality of the outputs and outcomes?
- To what extent shall the performance measurement indicators be improved for more effective monitoring and evaluation?

b. How effective is the project monitoring and evaluation to ensure the relevance and effectiveness of the activities and expected results in relation to TOR, work plans, and the required quality criteria.

- Describe tools that are used for monitoring and assessing the progress of activities and assess
  the project outputs and outcomes (i.e. technical quality, timeliness, and user's expectation)
- To what extent these performance indicators and targets are used to prepare activity TOR
  quality criteria, activity schedule, work plan, progress reports, and appraisal reports?
- To what extent are these performance indicators used by project responsible staff to monitor and assess the progress of activities and activities' outputs and outcomes over the planned periods?

c. To what level has the use of consultants/subcontractors/service providers been effective and efficient in achieving component outputs of reasonable quality and later the overall project impacts?

- Is the process of procurement of consultants/subcontractors transparent and competitive?
- Are the consultants/subcontractors/service providers engaged in project implementation suitably qualified, experienced and skilled to perform assigned responsibilities?
- Did the project management applied basic/standard rules/criteria to select currently engaged consultants/subcontractors?
- How does quality of the completed output meet the expectation of the project (quality criteria, scope of work)

d. How relevant and effective is relationship and communication between/among components activities so that data, information, lessons learned, best practices and outputs is shared efficiently and that the outputs of the components collectively create the direct and indirect impacts.

- To what extent are design of activities and production of outputs and outcomes under different
  components are linked and synchronized for maximizing the effectiveness and efficiency?
- Has there been any overlapping or synergy among activities how were these dealt with to make the implementation more efficient?

e. Whether and to what extent are designed activities and adjustments relevant to the project overall approach?

- Are there any changes in project activity design, expected outputs during the implementation and how do they affect the achievement of the project outcomes and targets?

2.2. Project level

On the project level, the evaluation will determine five major criteria in project performance evaluation including in the aspects of (a) Progress towards objectives, achievement of results, targets set for the evaluation will determine five major criteria in project performance evaluation entire project (b) Factors affecting successful implementation and achievement of results, (c) Project Management framework, arrangement and performance, and (d) Strategic partnerships.

a. Progress towards achievement of results (internal and within project's control)

- Is the Project making satisfactory progress in achieving project outputs vis-à-vis the overall and immediate targets and related delivery of inputs and activities?
- Given the level of achievement of outputs and related inputs and activities to date, is the Project likely to achieve its Immediate Purpose and Development Objectives?

- Are there critical issues relating to the achievement of project results that have been pending and need immediate attention in the next period of implementation?

- Are the project partners and project consultants/subcontractors able to provide quality inputs to achieve results?

b. Factors affecting successful implementation and achievement of results (beyond the Project's immediate control or project-design factors that influence outcomes and results)

- Are there any outstanding issues, obstacles, bottlenecks, etc. on the consumer, government or private sector that are affecting the successful implementation and achievement of project results?
- To what extent does the broader policy environment conducive to achieving expected project results, including existing and planned legislations, rules, regulations, policy guidelines and government priorities?
- Is the project logical framework and design still relevant in the light of the project experience to date? All aspects of the logframe shall be revisited and updated and, if necessary, provide suggestion for changes
- Do the Project's purpose and objectives remain valid and relevant, or are there items or components in the project design that need to be reviewed and updated?
- Are the Project's institutional and implementation arrangements still relevant and helpful in the achievement of the Project's objectives, or are there any institutional concerns that are restrictive to Project's implementation and progress?
- On the project financing, analyze specifically how the project has materialized/leveraged co- financing for various components (this is preferably presented in a matrix form).
- On the project financing, report on the actual project costs (totals, per activity and per source) and actual co-financing used.

c. Project management (adaptive management framework)

- Is the project management arrangement adequate and appropriate to the extent of management functions?
- How effectively is the project management system? (e.g. project directing, work planning, administrative process/procedures, quality management, risks and issues management, and M&E and reporting)
- To what extent does the M&E and reporting functions of the project provide sufficient basis for evaluating performance and decision making at the activity and outcome levels? How have the APR/PIR process helped in monitoring and evaluating the project implementation and achievement of results?
- How effectively is the project risk management? (e.g. how risk is identified, assessed, managed, and updated)
- Validation of whether the risks originally identified in the project document and, currently in the APR/PIRs, are updated and the most critical and the assessments and risk ratings placed are reasonable; and provide, if necessary, suggestions on risk management strategies to be adopted.
- Assess the use of the project logical framework and work plans as management tools and in meeting with UNDP-GEF requirements in planning and reporting.
- Assess the use of electronic information and communication technologies in the implementation and management of the project.
- On the financial management side, assess the cost effectiveness of the interventions and note any irregularities.

d. Strategic partnerships (project positioning and leveraging)

- Assess how effectively project partners, stakeholders and co-financing institutions are involved in the Project's adaptive management framework (to the extents of directing, implementing, planning, managing risk and issue etc.,)
- Are the project partners and their other engagements in the VEEPL project, strategically and optimally positioned and effectively leveraged to achieve maximum effect of the energy conservation objectives for the country? (i.e. to the extent that co financing is used for the baseline activities)
- Has the current project management approach exploited all opportunities for stronger collaboration and substantive partnerships to maximize project's achievement of results and outcomes"?
- Are the project information and progress of activities disseminated to project partners and stakeholders? Are there areas to improve in the collaboration and partnership mechanisms?

e. Project budget management

- Assess how activity implementations were done against financial plan looking into how budgets were allocated, timeliness of disbursements, procurement, coordination among project team members and committees, and the UNDP country office support.
- Highlight any financial issues or factors that have impeded or accelerated the implementation of the project or any of its components, including actions taken and resolutions made.

Components/Activities		Budget		
Planned Activities	**Actual Accomplishment**	**As per Project document**	**Actual Expenditures**	**% of Actual vs. Project Budget**

3. Evaluation methodology and process

3.1. General

The MTE Team is expected to become familiar to the project objectives, historical developments, institutional and management mechanisms, activities and updated status of accomplishments. In order to make an evaluation of the project toward the aspects specified in the Section 4 and meet the requirement specified in Sub-section 6.3, the MTE is expected collect and analyze relevant information through:

- Review project documents and other documents relevant to the EE&EC work in Viet Nam
- group and individual interviews with project stakeholders, and at the least representatives of the project partners and beneficiaries, and
- Project demonstration sites visits.

The analysis of the information should enable the MTE Team to make evidence-based assessment of the all aspects defined in the Scope. The MTE Team must also provide the rating using the following rating. The rating must be supported by concrete evidence, e.g. narrative justification, data and statistics. Definition of rating the project performance:

- **Highly Satisfactory (HS):** there were no shortcomings
- **Satisfactory (S):** there were minor shortcomings
- **Moderately Satisfactory (MS):** there are moderate shortcomings
- **Moderately Unsatisfactory (MU):** there were significant shortcomings
- **Unsatisfactory (U):** there were major shortcomings
- **Highly Unsatisfactory (HU):** there were severe shortcomings

3.2. Evaluation process

1. Prior to the field mission: Prior to engagement and visiting the PMO, the MTE Team shall receive all the relevant documents, either electronically or hard copies for study. These will include at least:

- VEEPL Project Document and original GEF Project Brief, Inception Report
- Annual Work and Financial Plans for 2006 and 2007, Quarterly work plan for the first two quarters of 2008.
- Annual Project Progress Report/Annual Project Report/Project Implementation Review (API/PIR) for 2006 and 2007
- Procurement plans for 2006 and 2007 and 2008
- Lists of final technical outputs per components (both electronically and all final technical reports)

The MTE team will prepare detailed evaluation methods and work schedules.

2. Opening meeting: the MTE Team will conduct an opening meeting with the UNDP Country Office (UNDP CO). Later, the team will be introduced to the National Project Director (NPD), Project Management Unit (PMU). The purpose of the meetings is to reach a consensus on the

overall objectives, scopes, methods, and general schedules of the MTE and allow relevant parties to raise issues and solutions.

3. Conduct the document review, interview and site visit Once the scope, methods, and schedule are finalized, the MTE team should immediately undertake the evaluation. The MTE team shall work closely with PMU to ensure that work schedule of the evaluation is updated and incorporate changes as appropriate. The MTE team is also required to have regular meetings and discussions with members of the PMU and UNDP CO to verify the information and request for clarification and additional information if needed.

To provide more details, as may be needed, the following will be made available for access by the MTE Team during the MTE mission:

- All quarterly progress reports
- Internal monitoring results (monthly meeting minutes, selected correspondences)
- PMU organizational structure and approved TORs for all PMU staff
- TORs for past consultants' assignments and summary of the results
- Assessment/highlight reports of all subcontracts/agreements
- Past audit reports and follow up reports

The MTE Team should at least interview the following personnel:

- All Project personnel including the National Project Director (NPD)
- Selected PSC Members
- All major project partners
- UNDP senior managers and officer in charge

4. Finalization of the MTE report: The finalization of the MTE report consists of three steps:
   - Firstly, a meeting between UNDP CO will be organized, at least one day before the last day of field evaluation work, for MTE to present a brief report on initial findings and receive feedbacks/clarifications. It is required that prior to the meeting, this report should be discussed with the PMU to validate the major evaluation results.
   - Secondly, a draft of full MTE report was then submitted to the UNDP CO and PMU for comments. UNDP CO will consolidate all comments on the draft report and sent to the MTE team within 05 working days.
   - Finally, within one week upon receiving consolidated comments (of UNDP and PMU), the final MTE Report (in three hard copies and one soft copy) will be made and submitted to the UNDP CO with a copy furnished to the VEEPL PMU.

4. Mid Term Evaluation Schedule and Deliverables

4.1. Schedule

The MTE will commence in late April or early May 2008 and complete within maximum a month of working. It is preferred that the MTE is broken down in three phases:

1. Background information study and finalization of schedule and methods (Up to 03 days)
2. Work at field work including required in-country travel (up to 14 days)
3. Finalization of the deliverable (up to 03 work days)

4.2. Deliverables

There will be two main deliverables:

1. **A brief report** consisting of (i) the major findings, ii) the rating per priority topics of evaluation, iii) major recommendations, and iv) conclusion. Depending upon the complexity of the evaluation findings, UNDP CO may consider organizing a half-day stakeholders meeting at which to make a presentation to the partners and stakeholders.

2. **Mid-Term Evaluation report:** The report structure shall follow the agreed outlines. The substantive content shall fulfill the requirements set out in this Terms of Reference (TOR). The final report is to be cleared and accepted by UNDP CO before final payment is released. The final report (including executive summary, but excluding annexes) should not exceed 50 A4 pages.

ANNEX B. ITINERARY OF THE EVALUATION TEAM AND LIST OF DOCUMENTS

B.1 Mission schedule and list of people met

Sun 15-06-2008	Arrival of the International Consultant, Mr. J. van den Akker, in Hanoi
Mon 16-06	• Meeting with Le Van Hung (Program Officer), UNDP and National Consultant, Mr. Nguyen Van Phuc • Meeting of Evaluation Team with VEEPL Team at PMU Office
Tue 17-06	• Meeting with VULA (Mr. Vu Minh Mao, President, and Mr. Nguyen Doan Thang, Vice-President) • Meeting with Energy Efficiency Office (EEO) of Ministry of Industry (MoI) , Mr. Phuong Hoang Kim (Expert), Mr. Dang Hai Dzung (Officer)
Wed 18-06	• Meeting with Hapulico (Mr. Pham Duc Tien, General Director, and Mr. Tran hau Phuong, Director) • Meeting with Rang Dong (Ralaco), Mr. Nguyen Doan Thang (Director General) • Meeting with Ministry of Construction – Administration of Technical Infrastructure, Mr. Ngo Hong Quang (Head), Mr. Nguyen Hong Tien (Vice Director)
Thu 19-06	• Meeting at VEEPL office with Mr. Shahab Qureshi, ISTA • Meeting with National Center for Standards Development, Mr. Luong Van Pham (Vice-Director)
Fri 20-06	• Meeting with Department of Education and Training (DOET), Hanoi City (Mr. Le Hong Quang, Vice-Director) • Departure for HCM City
Sat 21-06	• Meeting with HCM City Department of Public Works and HCMC Lighting Company (Sapulico), Mr. Tran Trong Hue (General Director, Sapulico), Mr. Tran Minh Hung (Vice-Director, Sapulico) and Mr. Tran Quang Phuong (Director of Transport and Urban Public Works Dept, HCMC) • Meeting with Energy Conservation Center (ECC) of HCMC, Mr. Huynh Kim Tuoc (Director)
Sun 22-06	• Departure for Quy Nhon
Mon 23-06	• Meeting with Quy Nhon People's Committee (Mr. Thai Ngoc Binh, Chairman) and Quy Nhon Lighting Company (Mr. Phuong)
Tue 24-06	• Departure for Hanoi through HCMC
Wed 25-06	• Meeting at UNDP with Ms. Nguyen Loc Ly and Mr. Le Van Hung • Drafting main findings and recommendations
Thu 26-06	• Meeting at VEEPL Office with PMU team, Mr. Le Van Hung (UNDP) and Mr. Manuel Soriano and Mr. Takaaki Miyaguchi (UNDP GEF Regional Technical Advisors)
Fri 27-06	• Meeting with Prof. Dang Vu Minh (Chairman of Science, Technology and Environment Committee and Chairman, PSC) • Departure for Bangkok and Netherlands, by Mr. Van den Akker

B.2 List of documents reviewed by Evaluation Team

General project documents

Project Document – Vietnam Energy Efficient Public Lighting (VEEPL)
UNDP (2004)

Annual Project Progress Reports
UNDP VEEPL Project (2006, 2007)

Project Implementation Review
VEEPL and UNDP (2007)

Project Implementation Review for Mid-Term Review
VEEPL Project (2008)

Quarterly Progress Report, January – March 2008
VEEPL Project (2008)

Review of the Quality Management in the VEEPL Project
Le Van Hung (UNDP, 2007)

Inception Report; Strategic Approach to Project Planning; Knowledge Gap and Information Management; Submission to MTR Team
Selected papers, Mr. Shahab Qureshi (2007, 2008)

Selected VEEPL technical reports

Subcontract A3, reports No.2 (Overview of International and Regional Policies), No. 3 (Real Situation of National and Local Policies on Public Lighting, Identification of Shortcomings, No. 4 (Proposal Draft National Policies on Public Lighting in Vietnam)
Vietnam Urban Lighting Association (VULA, 2006, 2007)

Subcontract C2, reports No. 2 (Evaluation Report on Experiences and Lessons on Financial Mechanism for Public Service), No. 4 (Financial Mechanism and Scheme for Upgrading Public Lighting Projects)
Institute of Financial Science (2007)

Subcontract D1, report No. 3 (Methodology and Tools for Calculation of Energy Savings and the CO_2 Emissions as a Result of Installing and Upgrading Energy Efficiency Lighting Products and Technical Assistance of VEEPL to Local Manufacturers)
Institute of Energy (2008)

Subcontract D2, reports 4 on Technical – Economic Effectiveness of the Project of Efficient Public Lighting in (a) Ho Chi Minh City, (b) Quy Nhon and (c) High Schools in Hanoi and No. 7a (Findings and Recommendations for the Project of Efficient Public Lighting of Streets in Ho Chi Minh City
Institute of Materials Science – VAST (2006, 2007)

Subcontract D3, report 3C (supplement) – Lighting System and Power Supply Installation of Secondary Schools in Inner Area and Suburban Area of Hanoi City
Rand Dong Light Source and Vacuum Flask Joint Stock Company (2008)

Subcontract A5 – Guide to Using the Economic Tools in the Process of Investment, Construction and Maintenance for the High Efficiency Public Lighting
Institute of Construction Economics (ICE), Ministry of Construction (2008)

ANNEX C. LIST OF DELIVERABLES REPORTED BY PMU

This Annex presents a full list of deliverables (reports) of the VEEPL project as given in the APPRs 2007 and 2006 and according to information provided by the PMU.

Component 1 Public lighting policy development

Activity 1.2 – Subcontract A3 (VULA) –finished (August 2006-'07)
- Inception report (2006).
- Overview of international and regional policies on public lighting & practical lessons (2006)
- Real situation of national and local policies on public lighting, identification of the shortcoming (2006).
- Proposal draft national policies on public lighting of Vietnam (2007).
- Report on consultant workshop on proposal draft national policies on EE public lighting of Vietnam (2007).
- Final proposal framework of the national policies and draft of government decree on public lighting (2007).

Activity 1.2 – Standard letter A3, part II – Decree (DoUTI) – ongoing (Jan.2008- 2009)
- Inception report (2008)
- Report on evaluation of the current legal document system on public lighting relevant to the content of Governnment Decree draft and a preliminary outline of Government Decree on urban lighting (2008).
- A detail outline of Government Decree on urban lighting (2008).

Activity 1.2 – Standard letter A3, part II – Strategy (DoUTI) – ongoing (Jan - Dec.2008)
- Inception report (2008).
- Report on survey and evaluation of current urban lighting status in the whole country upon the updated data up to 2008 (2008).
- The first draft of development strategy with the forecast on need of urban lighting development up to 2025 (2008).

Activity 1.3 – Subcontract A4 (Lighting Project Construction Enterprise) – finished (Sept. 2006-'08)
- Inception report (2006).
- Assessment report of management, operation, of energy conservation and Energy efficiency (EC&EE) of other countries' (2006).
- Report on collection of data and information and assessment of current status of management, operation, maintenance and EE&EC of public lighting systems in 3 big cities (Hanoi, Ho Chi Minh City and Qui Nhon). Findings, recommendations and comprehensive model for opportunities for improving EE (2007).

Activity 1.4 – Standard Letter A5 (ICE) – ongoing (Aug. 2006 – 2008)
- Inception report (2006).
- Evaluation report on existing national and international policies and regulations relevant to electricity (2006).
- Report on development of methodology for calculating EEPL system construction investment rate and assessing of socio-economic effectiveness of EEPL construction investment projects (2006).
- Report on development of methodology for defining the price of EEPL products (2007).
- Report on determination of investment rate of EEPL project construction and estimate standards for constructing and installing EEPL project (2007).
- Report on rate of cost estimation for maintaining the EEPL system (2007).
- Hand book "guideline on technical-economic tools for EEPL management" (2007).

- A training program with an assessment of training needs for use of handbook "guideline on technical economic tools for EEPL management" (2008).
- Report on training course conducted in June 2008.

Activity 1.5 – Standard Letter A6 (DoUTI) – ongoing (April 2007 – Jun. '09)
- Inception report (2007).
- General remark and estimate the situation of public lighting management in Vietnam (2007).
- Proposal on solutions for sustainable development of a public lighting system (2007).
- A first draft of Circular on public lighting management (2008).

Activity 1.6 – Standard Letter A7 (DoUTI) – ongoing (April 2007 – March '09)
- Inception report (2007).
- Report on general evaluation on existing public lighting system planning (2007).
- Proposal on content of integration of public lighting plans into the urban construction planning (2007).
- A Decision promulgated by MoC with regulation on integration of public lighting plans into urban construction planning (Decision no 03/2008/QD-BXD issued in March 31, 2008).

Activity 1.7 – Subcontract A8 (Hapuelco) – finished (Aug. 2006 – June. '08)
- Inception report (2006).
- Evaluation report on local public lighting policies in Vietnam and in other countries with findings and recommendations (2006).
- Report on study and proposal for developing the local public lighting policies (2006).
- 10 proposals on the local public lighting policies: (i) proposal on regulation on investment and management for public lighting alley; (ii) proposal on enhancing public lighting management capacity for the city's public lighting management enterprises; (iii) proposal on regulation on norms of electricity consumption and losses due to application of the public lighting control systems of local urban areas; (iv) proposal on regulation on operation, management and maintenance of public lighting (unit price for operation, management of public lighting systems); (v) proposal on replacement of low efficient lighting devices by high ones; (vi) proposal on regulation on short term and long term planning for city's public lighting; (vii) proposal on regulation on renovation of management mechanism of the city's public lighting; (viii) proposal on regulation on investment for outdoor lighting of the constructions towards energy efficiency; (ix) proposal on instruction on enforcement of Circular No 02/2007 issued by MOC on regulations on the project appraisal; (x) regulation on lighting fee collection. (2007)
- Report on consultation meeting for 10 proposal on local public lighting policies.

Component 2 EEPL technical support

Activity 2.1
- 2006-2008 (ongoing): Proposals on EE product performance standards for T8 and CFLs (subcontract B7A, VULA), ballasts for T8 and CFL (subcontract B7A – part II, VSQC) and HPS lamps and ballasts (subcontract B7B, ULC); consultation workshops
- 2006-2007: Proposal on lighting standards for streets, schools and hospitals (subcontract B8, NILP) - finished

Activity 2.2 – Standard Letter B9 (A to E) – ongoing (July 2007 – Oct '08)
- Four Evaluation reports on current production status of Hapulico, Vinakip, Schreder and Ralaco including: (a) production technology; (b) quality of products; testing and measuring capability; (c) market; and (d) findings and recommendations on solutions for technology upgrading, product quality improving and market expanding
- Reports on technological and technical consultancy results on upgrading/improving products designs and production lines of luminaries: Maccot, Master, Rainbow, Indu, Z1, Onyx-S, Onyx-S Bi Power (Hapulico, Schreder), electro-magnetic ballast for HPS 75W, 150W, 250W lamps (Vinakip), 50 W CFLs, electronic ballasts for T8 (Ralaco) and CFLs < 20 W, T8 (Dien Quang)
- Reports on monitoring and evaluation results on improving project designs and production lines

Activity 2.3 – Subcontracts B.10 (A to C) – Schreder, Vinakap, Urban Lighting Design and Consultancy company – ongoing (Oct' 2006 – Dec. 2008)

- Selection of software and design of software for HPS ballasts; guidelines documents in the form of hardcopy and CD-ROM; reports on implementation projects

Activity 2.5 – Standard Letter B.11 (A, B, C with IMS, HUT and QUATEST 1, respectively) – ongoing (August 2006 – Aug. '08)

- Inception reports (2006)
- Reports on current status and capacity, including: (a)-Infrastructure; (b)-Testing equipment; (c) - Personnel; (d) – Capacity in developing the Quality Testing Process; and (e) - Findings and recommendations on solutions for upgrading capacities in measuring and testing electrical parameters of the EE lighting products (2006)
- Reports by IMS (2006-2007) on measuring lighting characteristics of HPSs, T8s and CFLs (e.g., luminescence, spectrum, frequency, color rendering), by IEP-HUT on development and implementation of quality testing for electromagnetic ballasts
- Report on consultancy results (training process, instruction to staff in implementing quality testing as well as monitoring and evaluation (M&E) reports for the above (IMS, HUT, QUATEST1, 2007-2008).

Activity 2.6 – Subcontract B13 (ThangLong Neon) – ongoing (May 2007 – Aug. '08)

- Inception report
- Evaluation report on situation and capabilities of 10 selected biggest local lighting system service providers with findings and recommendations (2007)
- A proposal on solutions for improving the capabilities of 10 selected providers (2007)

Activity 2.7:

- Subcontract B14 (CFMI) – Report on consultation workshop and draft training curricula; Report on Training Course on Design, Operation, Management, and Maintenance of EEPL Systems (2007, finished)
- Subcontract B15 (EEO-MOIT) - Report on the review of overseas experiences on a Certification and Labeling Program for EE Lighting Products; Draft report on the formulation of the Certification and Labeling Program for EE Lighting Products

Component 3 EEPL financing program

Activity 3.1

- Workshop on promotion of EE public lighting to the financial sector (Sept. 2006).
- A VEEPL brochure (2007).

Activity 3.2

- A report on training course on financial mechanism and policy for energy efficient public lighting (including training program and assessments) (Sep.2007).

Activity 3.3

- Subcontract C2, (IFS) - Report on public lighting financial mechanisms (international, national) with findings and recommendations; Report on potential community and beneficiary cost-sharing – ongoing (May 2007 – June '08)

Component 4 EEPL demonstration program

Activity 4.1 – Subcontract D2 (IMS-VAST) -

- Inception report (2006)
- Review of technical and economic feasibility of demonstration scheme (including engineering and construction designs and cost estimates) for the demo projects (32 constructions in Ho Chi Minh city, 15 constructions in Quy Nhon; 5 high schools, 6 secondary schools, and 6 primary schools in Hanoi) (2006-mid 2008)

Activities 4.2, 4.3 and 4.4 – ongoing (2006-mid-2010)
Implementation of demonstration schemes (Subcontracts/Standard Letters D3 A to C, with People's Committees of Ho Chi Minh city, Quy Nhon and Hanoi with Ralaco)

- Inception reports (2006)
- Reports on the results of technical assistance to People's Committee/Sapulico (Ho Chi Minh City) and City People's Committee in Quy Nhon and People's Committee/Ralaco Hanoi;
- *Ho Chi Minh City:* EEPL system demonstration at selected 32 constructions;
- *Quy Nhon City:* EEPL system demonstration at 15 selected constructions;
- *Hanoi:* EEPL system demonstration at 5 high, 6 primary and 6 secondary schools

Activity 4.6 – Action plan – subcontract D4 (ECC) – finished (July 2007 – June '08)

- Inception report (2007)
- Report on 3 case studies of the demo schemes in the three cities showcasing project costs, benefits and lessons learned (2007)
- 02 EE benchmarks for comparison with the future EE projects (2008).
- Report on action plan for replication of EEL demonstration results (2008).

Component 5 Information dissemination and awareness raising

Activity 5.1 - Subcontract E5 (ULC) – ongoing (Sept. 2006 – Dec. '10)

- Inception report (2006)
- Development of public lighting data facility (2006).
- Design of the PLECRM Program (2006)
- Quarterly reports on the collected and processed information/data on public lighting equipment installation, on public lighting energy consumption (2007-mid 2008).

Activities 5.3-5.4

- Standard Letter E6 (TSTC) – ongoing (Sept '06 – Dec. '10)
  Design and implementation of promotional program
  - Inception report (2006)
  -Evaluation report on the local needs of EE lighting information dissemination and awareness raising including findings and recommendations (2006).
  - Report on overseas study tour (2006)
  - Report on the collected and processed international and local information on issues related to EE public lighting including EE public lighting policies and regulations, available EE lighting products and technologies, EE public lighting financing, and promotion activities on EE&EC in public lighting (2006).
  - Report on the developed promotion and dissemination program package (2007).
  - Quarterly reports on implementation of the developed promotion and dissemination program;
- Subcontract E7 (MOST) – ongoing (May 2007 – Dec. '09)
  Design and implementation of EEPL performance rating
  - Inception report (2007)
  - Report on results of the collected data/information on the existing EE performance rating schemes in public lighting in Vietnam and in other countries (2007).
  - Evaluation report on the existing EE performance rating schemes in public lighting in Vietnam and in other countries.
  - Report on findings and recommendations on public lighting EE performance rating scheme (2007).
  - Design of an EEPL performance rating scheme (including guidelines, rules and regulations of implementation) (2008).

Activity 5.6

- Subcontract E8 (VULA) – ongoing (Sept. 2006 – Dec. '10): Establishment of PLIC
  - Inception report (2006).
  - Reports on establishment of PLIC (2006).
  - A brochure on the PLIC (2007).
  - Quarterly reports on developed database on public lighting for PLIC.

ANNEX D. CO_2 REDUCTION ESTIMATES REPORTED BY ISTA

Reporting Period:	Year 2007

Impact Source	Product/Action	Energy Savings (GWh)	CO2 Reduction (KTOe)	% Share
1. TECHNICAL ASSITANCE				
Dien Quang	15W CFL	0.0000	0.0000	0.00%
Dien Quang	T8 reduced power	0.0000	0.0000	0.00%
Dien Quang	T8 improved lumen eff	1.5217	0.6543	5.06%
Ralaco	20W CFL	0.2076	0.0893	0.69%
Ralaco	50W CFL	0.1499	0.0644	0.50%
Ralaco	3.5W ElB	3.9564	1.7013	13.15%
Hapulico	Master	0.3434	0.1477	1.14%
Hapulico	Rainbow	0.3709	0.1595	1.23%
Hapulico	Marcotte	0.0258	0.0111	0.09%
Hapulico	Indu	0.0687	0.0295	0.23%
Schereder	Z1	0.0000	0.0000	0.00%
Schereder	OnyxS-1	0.0000	0.0000	0.00%
Schereder	OnyxS-2	0.0000	0.0000	0.00%
TOTAL		**6.6443**	**2.8571**	**22.08%**
2. DEMO PROJECTS				
Schools	Retrofit	0.1325	0.0570	0.44%
Street Lighting	Retrofit	0.6787	0.2805	2.26%
TOTAL		**0.8112**	**0.3374**	**2.70%**
3. REPLICATION PROJECTS				
Schools (3415 classroms	Retrofit	5.6156	2.4147	18.66%
Street Lighting in 19 C&T	New & Retrofit	11.3499	4.8805	37.71%
Street Lighting in remaini	New & Retrofit	5.6750	2.4402	18.86%
TOTAL		**22.6405**	**9.7354**	**75.23%**
GRAND TOTAL		**30.0961**	**12.9299**	100.00%

ANNEX E. RECOMMENDATIONS FOR SPECIFIC PROJECT ACTIVITIES

During the mission the **Pl**an of activities for 2008-2010 was discussed with the Evaluators. It should be noted that this plan of activities is a first draft proposed by PMU, which currently is under discussion with the UNDP CO and the GEF Regional technical Advisor (Mr. Manuel Soriano). The following recommendations are meant as input for the Plan.

Component 1

Main activity	Status and plans	Recommendations Evaluation Team
1.1 Establish NLAC	Finalized	Where possible, define the roles & responsibilities of the NLAC in promoting EEPL after the VEEPL project, including a proposed plan of action or program that will sustain their mandate. VEEPL to carry out actions to enable the NLAC to be the "watch dog" for the implementation and enforcement of EEPL policies and laws.
1.2 Comprehensive national policy study on PL	Subcontracts A3 and A4 finalized. Support to Strategy and Decree development ongoing	Quality of final reports A3 and A4 should be re-assessed as well as the new report on Urban Lighting Strategy and see how they feed into the ongoing Decree development; it should be made sure that the work to be carried out includes actions to ensure or at least facilitate the implementation of the national policy on public lighting.
1.3 Evaluate EEPL opportunities	Proposed by PMU to be extended with USD 5,000	The February report on 'comprehensive model' should be assessed once translated into English and then this activity should be merged with activity 3.3 and 4.1 with the idea to develop a real comprehensive ' technology delivery model' that includes an assessment of the investment requirements for the identified feasible EEPL opportunities
1.4 Economic & tools for EEPL investment	Subcontract A5 (ICE-MoC) finalized; Proposed by PMU to be extended with USD 12,000	Extend only if the money is used to make a user-friendly Excel spreadsheet model as a 'tool'. This can be then be used in training workshops as well as provided to the target group (local government units, schools, hospitals and offices)
1.5 Enforcement of PL regulations	Contract A6 (AoUI)	Draft report on Circular (once available in English) should be assessed and recommendations linked with 1.2. The report should clearly list the actions needed to ensure or at least facilitate the implementation of the public lighting regulations.
1.6 PL in local development plans	Contract A7 (AoUI)	Output (reports) should be re-assessed and, if add-ons are needed, merged with activities 1.5 and 1.7
1.7 Development of local lighting policies	Subcontract A8 with Hapuelco ongoing; 7 proposals on local lighting	Activities 1.5, 1.6 and 1.7 are strongly interlinked, suggesting potential overlaps and gaps at the same time, while reports

	policies	should feed into one another. The reports should be re-assessed by an independent consultant/reviewer to make clear the link with central Government Circular and local-level PL policies as well as with local-level PL policies and local-level urban spatial planning and PL regulations[36].

Component 2

Main activity	Status and plans	Recommendations Evaluation Team
2.1 TA cap. building on S&L	Mostly completed	Integrate with policy-oriented activities of component 1. For example, project should assist MoI and MoST in study on market shift indications of the current S&L schemes and ho w to go from a voluntary to a future mandatory scheme with MEPSs. In general, the impacts of the training should be reviewed and action plans developed to ensure the enforcement of policies and regulations on S&L.
2.2 TA to local lighting manufacturers	Ongoing and proposed by PMU to be extended with USD 49,000	Consider further missions of int'l experts Guan Fumin (as e.g. requested by Ralaco), if they are missions are in line with the originally approved technical assistance (TA) or if additional, should be "incremental" (if not, these cannot be funded by the GEF). For this reason, a justification should be submitted for the additional activities (to be endorsed by the PSC).
2.3 Support to EEL transfer	Mostly completed	
2.4 Networking with int'l industry	Ongoing	
2.5 Upgrading testing facilities	Testing labs upgraded; pending: EEL product testing and development of a proposal in testing & certification facility; proposed by PMU to be extended with USD 24,000	Again, the reason for extension should be justified. Proposed additional activities are in line with the originally approved TA or if additional, should be "incremental".

[36] At the very least, each policy recommendation, i.e., a recommended policy should be presented as follows:

Recommended Policy

1. Background and Context
2. Related Existing Policies/Laws/Decrees/Decisions - either supportive or in conflict
3. Rationale for the Proposed Policy - describe in detail the advantages and disadvantages
4. Policy Description - describe also the policy instruments (i.e., other existing or maybe new policies) that will support the implementation of the recommended policy
5. Policy Impact Analysis - including risk analysis
6. Legal Requirements - describe the legal requirements to implement the policy
7. Policy Implementation - describe how the proposed policy will be implemented (responsibilities of all players/actors involved)
8. Implementing Rules and Regulations - describe proposed rules and regulations for the implementation of the policy (or the law/decree/decision to enforce the recommended policy)

2.6 Assessment lighting service providers	Report to be finalized;	
2.7 TA cap. building on design, O&M of EEPL	Proposed by PMU to be extended with USD 36,000	*Note:* work plan 2008-2010 should be made with budget analysis. If sufficient budget, extensions 2.2, 2.5 and 2.7 should be possible, if in line with the originally approved TA or if "incremental".

Component 3

Main activity	Status and plans	Recommendations Evaluation Team
3.1 Promotion EEPL to financial sector; 3.2 Capacity building	Noted as completed	Workshops should be organized that bring interdisciplinary expertise, e.g. bringing together from Government, financial sector and manufacturers / service providers at various levels: (a) decision-makers, (b) local managers. Before doing so, the impacts of the promotional and capacity building activities that were carried out should be reviewed and action plans be developed that ensure the application of the principles and fundamentals learned by the relevant stakeholders, primarily those in the banking and financial sector.
3.3 Study on PL financing schemes	Study has been done but with unsatisfactory results	Study should be completely re-done and linked closely with the studies of activity 4.1, which need to be re-done as well and with activity 1.3 to develop viable ' technology delivery models. The study could then feed into national (act. 1.2) and local policy and planning (act. 1.6 and 1.7)[37]
3.4 TA to energy conservation fund	Planned	The availability of local sources of financing should be explored, such as environmental funds and Vietnamese development banks[38]

Component 4

Main activity	Status and plans	Recommendations Evaluation Team
4.1 Review of technical and economic	Studies performed but with unsatisfactory results	Study should be re-done by expert in financial and economic feasibility analysis and feed into the financing mechanism study

[37] This should include: (i) A review of the latest international literature and experience on financial mechanisms for public services; (ii) An assessment of potential community or beneficiary cost sharing in public lighting projects, and, (iii) The provision of technical assistance in the design of appropriate financing schemes for public lighting improvement projects. In addition, if the barrier to financing schemes is the lack of policy on financing EE initiatives, the work under this activity should (in relation to Component 1) should endeavour to identify and define policies that will support the implementation of financing schemes for EE initiatives, in general, and for EEPL, in particular. The activities of ongoing activities such as PECSME should be consulted.

[38] The intention is not for VEEPL to establish an energy conservation fund, but rather, the provision of technical assistance in meeting requirements of various organizations in Vietnam that provides multilateral and bilateral development assistance. VEEPL financing experts will provide guidance, information and support on how to access such development assistance for use in EC&EE projects, such as those on EE public lighting systems.

feasibility		of activity 3.1. That the systems will have different lifetimes should be included in the analysis. The idea is to develop technology delivery models that are viable and feasible for financing. One would expect not only a financial analysis (from the beneficiary's perspective), but also an economic analysis (from perspective of the nation as a whole, e.g. by removing subsidies from the financial equation). Economic analysis would also look at impacts other than electricity consumption reduction, such as reduction of peak power demand and would try to assign a value to it based on long-run marginal cost of the national grid system. If we can show that reducing peak demand by EEPL is cheaper than building new power plants, maybe we can the politicians' attention.
4.2 Demo schemes 4.3 4.4	Demo schemes are under implementation ; Proposed by PMU to be extended with USD 40,000	A good justification for this extension should be submitted. Progress report and energy audit results should feed into report of 4.1; PMU proposes to focus on offices instead of hospital. According to the recommendation of the GEF regional coordinator, the objectives of the project should be kept as before. Therefore, PMU has agreed to keep the implementation of EE schemes in the hospitals. If sufficient budget is available, the Evaluators think it is a good idea to include offices if it can be combined with an adequate promotion campaign (see component 5). It is estimated that electricity use for lighting is about 35% in offices (the other big power consumer is air-con) and accounts for 10-50% of total potential savings
4.5 Impact assessment	Proposed by PMU to be extended with USD 16,000	Again, a good justification should be submitted. Subcontract D1 should not only produce a manual, but also a 'tool' in terms of a user-friendly Excel spreadsheet; CO_2 reduction and energy savings are one impact, but a true impact analysis should also include socio-economic impacts as mentioned in table 9. If this is covered, budget extension is justified
4.6 Action plan for dissemination of demo results[39]	Proposed by PMU to be extended with USD 120,000	The proposed budget extension appears to be high. Details of the proposed extension should be prepared given with a justification

[39] This should also cover activities necessary to provide follow through on all these activities to encourage uptake of successful demonstration component activities by other cities and towns, as well as in other lighting product companies (manufacturers and suppliers). Such replication plan will include specific arrangements for the provision of technical assistance in the conceptualization, design, engineering, financing, and implementation of replication projects that will be carried out in cities/towns, and lighting product companies (manufacturers and suppliers). Such plan will also delineate who will be responsible for the M&E, documentation and dissemination of the results of the replication projects.

		for the proposed 'incremental' activity. The Evaluators note that replication is OK, but it is important that not only the technological aspects are demonstrated but also the economic viability, institutional setup and financing options are explained and promoted.

Component 5

Main activity	Status and plans	Recommendations Evaluation Team
5.1 Establishment database facility	Under implementation; proposed by PMU to be extended with USD 24,000	ISTA recommends an Access-type of interface accessible through internet for cities to put data in rather than Excel sheet. However, it should be assessed whether this is practical for small towns, schools and hospitals. That aside, a more important question is whether VULA will be able maintain the database after the project's end and who (e.g., MoC, MoST, lighting manufacturers) will use the results for what purposes. These questions should be firmly answered first before committing additional funds
5.2 VEEPL branding and identity	Ongoing	The website should be improved with more downloadable VEEPL information, such as leaflet and summaries of reports as themselves, for example, 2- 4 pager describing each EEPL demo in layman's language (technology, benefits, economics, setup); 2-4 pages on the work of standards and labeling; 2-4 pager on local product improvement. VEEPL reports should be available on the website as far as possible
5.3 Pl campaign 5.4 Performance rating 5.5 Provision of info	Promotional campaign plan has been completed	The Plan should be assessed by PR expert to see whether proposed actions (meetings, workshops, radio/TV, newspapers, workshop papers, etc.) are appropriate for each target group (decision-makers in policy, local decision-makers and technical staff for installing and O&M of PL, schools, offices). The Plan should be linked with outputs of other components. For example, if a sound techno-economic analysis of the demo sites has been done, the results could be disseminated as part of promotion campaign
5.6 PLIC 5.7 Component outputs distribution		VEEPL reports should be PLIC library (or at least be transferred at the project's end). Sustainability aspects of PLIC should be assessed (see section 3.1.2)