FINAL EVALUATION

VIE/401

Energy Efficient Lighting Nationally Appropriate Mitigation Action Pilot in Hue City

PROJECT SUMMARY DATA

Country	Vietnam
Long project title	Energy efficient lighting Nationally Appropriate Mitigation Action Pilot in Hue City
Short project title	LED NAMA
LuxDev Code	VIE/401
Version of the Report	December 2022

RATING OF THE PROJECT BY THE EVALUATION MISSION

Global rating (Effectiveness)	**1.7** On a scale of 1 (excellent results, significantly better than expected) to 6 (the project was unsuccessful, or the situation has deteriorated on balance)
Rating using other evaluation criteria	Relevance: **1.3** Coherence: **1.3** Efficiency: **1.7** Sustainability: **2.5**

EXECUTIVE SUMMARY

The final evaluation of VIE/401 Energy Efficient Lighting Nationally Appropriate Mitigation Action Pilot in Hue City was undertaken by Mekong Economics Ltd. during September – December 2022. The evaluation aimed to provide a summative and formative appraisal of the project's achieved results within its framework and lessons learnt for the project's subsequent phase and/or existing studies or initiatives. Specifically, the evaluation assessed the project's achieved results and specific objectives, implementation modalities, capacity building, management and monitoring as well as other accomplishments using the evaluation criteria (relevance, coherence, effectiveness, efficiency, and sustainability) and considering cross-cutting aspects (governance for development and gender equality). This evaluation also included responses to specific questions on a variety of topics, lessons learnt and suggestions.

The VIE/401 project was designed to achieve energy efficiency and Greenhouse Gas emission reductions by replacing high-energy low-quality conventional lamps with low-energy high-quality Light-Emitting Diodes lighting in selected public urban areas in Hue City due to the performance, durability, and energy efficiency of Light-Emitting Diodes lighting. It was piloted to define and test a suitable Nationally Appropriate Mitigation Action framework for achieving national mitigation targets. The Nationally Appropriate Mitigation Action pilot selected for Light-Emitting Diodes installation a number of city roads and streets (managed by Hue Urban Environment and Public Works Joint Stock Company) and schools (managed by Investment Construction Management Board). Direct beneficiaries included public institutions and entities, schools, the private sector, and the general public for street Light-Emitting Diodes. VIE/401 was one of Luxembourg's first two international climate finance projects as opposed to Official Development Assistance. VIE/401 and VIE/433 succeeded the Official Development Assistance -funded VIE/033 project (July 2013-June 2018) that focused on climate change adaptation. In contrast to the adaptation projects (VIE/033 and VIE/433), VIE/401 was not implemented in three districts but in Hue city with new implementing partners.

VIE/401 started from 1 July 2018, with a budget of 2,200,000 EUR. The contribution from Luxembourg was 2,000,000 EUR with the remainder (200,000 EUR) coming from the national contribution of Vietnam. The project was scheduled to conclude on 30 June 2021. However, due to delays in implementation caused by the COVID-19 outbreak, Light-Emitting Diodes hardware procurement, and the requirement to strictly comply with guidelines on Measurement, Reporting and Verification of Greenhouse Gas impact results, the project was given a 18-month budget-neutral extension until 31 December 2022.

VIE/401 accomplished its objectives as outlined in the logframe and made significant progress thanks to the excellent coordination and ongoing efforts of all involved parties throughout the project's duration. By the end of 2022, 10/10 project indicators with an End of Project target, met or surpassed that target, and two indicators with annual/End of Project targets and actual measured data not comparable, showed a very good result as well. Overall, the project recorded impressive reductions in terms of Greenhouse Gas emissions (1,401.6 t Carbon Dioxide), energy (1,568.7 MWh), and electricity cost (54.3%, equivalent to approximately 2.9 billion VND or 120,000 EUR). A total of 20,256 Light-Emitting Diodes were installed on streets and in schools. The project result of Greenhouse Gas emission reduction (Carbon Dioxide) was formally registered as the first such registration for the country. Compared to baseline, Knowledge, Attitudes and Practices of secondary students, teachers and staff in target schools on climate change and energy efficiency increased by 40.5%, awareness about climate change-energy efficiency among the general public increased by 29.1%, and knowledge and skills of trainees (government staff, technicians, etc.) to deal with key issues related to climate change, energy efficiency, international climate finance, and Light-Emitting Diodes lighting increased by 32%. The Measurement, Reporting and Verification system for mitigation action was developed and operational, while nine documents on the process and impact of Light-Emitting Diode interventions in Thua Thien Hue were developed. A larger follow-up intervention was in the pipeline, albeit not mitigation but adaptation.

Similar to VIE/433, VIE/401 built on the effective management and implementation mechanism of VIE/033 (Climate Adapted Local Development and Innovation Project). The Project Steering Committee put in place effective mechanisms to steer the project operation, track progress, and make strategic decisions. The Luxembourg Projects Management Board and Technical Assistance Office worked in close collaboration, on the same premises, and were jointly responsible for overall project management. The Project Task Force was set up to support the project planning, especially in the first 12 months. Furthermore, the project established a working link with the Ministry of Industry and Trade responsible in Vietnam for Energy, and with the Department of Climate Change at the Ministry of Natural Resources and Environment. Overall, the project structure enabled a holistic set of support from different levels, which in turn supported the achievement of the project objectives.

VIE/401 was aligned with the national systems and procedures, including hardware procurement procedures, and the (draft) national guidelines on climate change adaptation monitoring and mitigation Measurement, Reporting and Verification prepared by Ministry of Natural Resources and Environment. VIE/401 worked alongside the relevant departments to develop the systems in-line with the Government of Vietnam's requirements and regulations, as well as train the officials. During the inception phase, the project worked closely with different partners to update the project design, including the identification of the most suitable locations for hardware investments, investment plan based on justification of costs and benefits, budget allocation between components, revision of result indicators to accommodate progress and outcomes, and a disposal scheme for removed conventional lighting. The project implemented its activities in regular consultation with related parties and agencies; for example, the Department of Climate Change at the Ministry of Natural Resources and Environment, to get its technical advice on Measurement, Reporting and Verification, or provide feedback on the developments in Measurement, Reporting and Verification piloting in Thua Thien Hue.

Several project interventions were about training and awareness raising (mostly under Task 2, and part of Task 3-4), or typically included training and technical support as an integral part of the implementation. The capacity building targeted school teachers and staff, and students, public population, local government staff of line agencies, and technicians and staff of the private sector. The project guided various partners on operational and financial procedures, given that VIE/401 was a new type of project and implemented by new partners, which as a result, the local capacity was enhanced over time.

The VIE/401 Monitoring and Evaluation system was built on VIE/033's and was similar to VIE/433's Monitoring and Evaluation system with adjustments. The project performance was tracked in two dimensions: results-based monitoring, and context monitoring. The project monitoring was separated from the monitoring (Measurement, Reporting and Verification) of the project's mitigation intervention. Similar to VIE/433, the project had an outstanding Monitoring and Evaluation system that provided a useful guide to track progress towards achieving the project's objectives.

The project collaborated with different stakeholders over the course of implementation. The project collaborated closely with national agencies (Vietnam Energy Partnership Group based at Ministry of Industry and Trade, Department of Climate Change at the Ministry of Natural Resources and Environment). It was proactive at meeting and discussing with other active agencies implementing similar climate change adaptation-climate change mitigation and Nationally Appropriate Mitigation Action development projects (e.g., Asian Development Bank-funded project titled "Smart and Efficient Lighting Project") to exchange information and avoid overlaps.

The project received high scores as per Organization for Economic Cooperation and Development-Development Assistance Committee evaluation criteria (on a scale 1 to 6 whereby 1 = Excellent result, 2 = Above average results and 6 = Unsuccessful). The project was aligned with the national and provincial environmental protection plans and strategies, and the global Sustainable Development Goals, as well as relevant to the local needs (*Relevance 1.3*). The project was aligned with the provincial policy frameworks and mandates of functioning departments (e.g., the provincial Department of Industry and Trade and Department of Natural Resources and Environment). It also fits in and stands out in the context of similar lighting projects funded by United Nations Development Programme and Asian Development Bank. The project demonstrated a compelling business case for this pivot towards more energy efficient lighting (*Coherence 1.3*). The project achieved its targets of Greenhouse Gas emission reductions and energy savings through the installation of Light-Emitting Diodes on streets and in schools, and the delivery of an extensive Information, Education, Communication program which reached almost all schools in Hue city (*Effectiveness 1.7*). The project's public bidding reduced the costs of the Light-Emitting Diodes, and good Light-Emitting Diodes were purchased at a reasonable cost (*Efficiency 1.7*). Many results showed a likelihood of sustainability such as enhanced knowledge and awareness related to climate change-energy efficiency, installed Light-Emitting Diodes, established Measurement, Reporting and Verification system, while this would be affected by the availability of funding and/or time for the implementation and maintenance (*Sustainability 2.5*).

The project put a strong emphasis on raising climate change-energy efficiency, climate change mitigation, and climate change adaptation awareness and capacity of a number of government agencies and community individuals. Being an international climate finance project, gender was not seen as a principal objective, and there was no specific activity that particularly targeted women or men. The project, however, promoted equal access to the project benefits, and male and female participants were ensured for training and Information, Education, Communication activities.

What are the one-two most important results/successes for VIE/401, and one-two most important challenges for future projects?

Result #1: A total of 20,256 low-energy high-quality Light-Emitting Diode lights were procured and installed on streets and in schools. The Light-Emitting Diodes installation yielded significant co-benefits such as much higher quality of lighting, and cost savings, besides Greenhouse Gas emission reductions.

Result #2: Full Measurement, Reporting and Verification process completed with Greenhouse Gas emission results formally registered as a Nationally Determined Contribution. Proving the business case for new bulbs/tubes, and doing so using rigorous measurement methods, particularly the Measurement, Reporting and Verification measurement of environmental savings. This "proof" is the rational foundation for an argument for widespread change.

Future challenge #1: Using the business case for change and a concerted, multifaceted campaign (policy advocacy) to convince provincial and national authorities to act. In addition to highlighting the net savings, the effort should include explaining options and providing implementation assistance (e.g. changing guidelines, drafting Official Letters and Circulars, sharing innovative implementation approaches from other countries).

Assess VIE/401 achievements in identifying, documenting and sharing good practice or innovative approaches.

Like VIE/433, the Monitoring and Evaluation system of VIE/401 continues from the previous project VIE/033 to be of the highest standard. Integral to a high-quality system is sharing and explaining what the data actually shows and means. This has also been done well, and flexibly.

The project worked closely with the Department of Climate Change at the Ministry of Natural Resources and Environment for technical guidance on national Measurement, Reporting and Verification guidelines, and with the provincial Department of Industry and Trade and Department of Natural Resources and Environment on Measurement, Reporting and Verification system development and institutional capacity building. And LuxDev being a member of the Working Group on energy efficiency under the Vietnam Energy Partnership Group at Ministry of Industry and Trade, connected with relevant partners on this project Measurement, Reporting and Verification work and achievements in Thua Thien Hue. Asian Development Bank and PricewaterhouseCoopers consultants are frequently consulting with LuxDev's Technical Assistance Office on the project's Measurement, Reporting and Verification work.

The key documents shared with partners and the donor community included:

- technical process and procedures of baseline measurements of school lightings;
- baseline measurements of street lightings;
- Measurement, Reporting and Verification work; and
- Monitoring and Evaluation activities, as well as those consolidating the project results such as:
  - technical manual for Measurement, Reporting and Verification implementation, and
  - measurement report for the purpose of Verification by an independent authorized agency.

The project also worked with the local Vietnam Television to communicate the implementation, results and impact of VIE/401 (and VIE/433). Meanwhile, the Measurement, Reporting and Verification systems have been handed over to the relevant government partners, as they will be responsible for regular measurements of power and Greenhouse Gas savings in post-project years. For sharing good practices, in Quarter I/2023, the project will focus on documentation (e.g., LuxDev capitalization notes) of a number of interventions and impact, including on Measurement, Reporting and Verification processes and registration.

There were also numerous examples of informal dialogue and mutual assistance between project staff and provincial Department of Planning and Investment. Close and friendly working relations facilitate the exchange of ideas and tacit knowledge.

What lessons learned have potential for scale up? Are there any paradigm shifting/innovative elements that would invite having a closer look at (good practices? lessons learned)? How could the sustainability dimension be enhanced? Any sustainable financial mechanisms that could enhance the (financial) sustainability of project components? What links could be built to the private sector and what role could it play?

Evidence presented in this report demonstrates conclusively that replacing conventional streetlights with Light-Emitting Diode lights is a more suitable option for rapid upscaling across Vietnam than, for instance, lighting public buildings. Light-Emitting Diode streetlighting has a better cost-to-emissions reduction ratio, making it a more attractive option for cities and municipalities seeking to reduce their carbon footprint and save money on energy costs. Additionally, it yields less complexity in terms of both project implementation and measurement in comparison to the public building component of this project.

Private firms that sell the new tubes and bulbs should be incorporated into future campaigns to promote the switch from old to new. Such firms would be promoting their own products, but at the same time explaining technical aspects and benefits to stakeholders. A future project could even consider assisting these firms with their own marketing strategies, primarily in design (expert advice), but also small pilot testing of marketing ideas (e.g., how to sell to households).

The project worked on energy audits through Department of Industry and Trade (e.g., how/what to do to save e.g., 50% of energy) first with few large private companies, then with a number of government buildings. With current prices low, e.g., an investment in solar on government building roofs would pay back in some five-six years. Get a (cheap) loan (e.g., from Agribank with whom the project has an Memorandum of Understanding), and get it done. However, it seems the government agencies cannot take bank loans, says Department of Industry and Trade. It would be win-win (e.g., Greenhouse Gas/globe, bank, government outfit cost savings in a long term).