



Case Studies on Low Emission Development

Thailand’s Low Carbon City Initiative

February 2013

Recognizing the upward trend in global greenhouse gas (GHG) emissions, the Royal Thai Government is prompting a paradigm shift within society and behavior change among its citizens towards low carbon practices. This includes transforming thinking about development at the national and local levels—such as among policymakers and other stakeholders—towards a low carbon future. The “Low Carbon City” initiative aims to help achieve reductions in GHG emissions and catalyze this shift to a low carbon society.

A Supportive National Policy Environment

Thailand’s low emission development and green growth efforts are well supported by national policies and plans that prioritize climate change mitigation. The *11th National Economic and Social Development Plan (2012-2016)*, under the National Economic and Social Development Board, calls for a paradigm shift to a green and low carbon society. This includes development of a GHG registry and carbon market, a carbon fund, and strong measurement, reporting, and verification (MRV) systems. The Ministry of Natural Resources and Environment’s *National Master Plan on Climate Change (2011-2050)* seeks to enhance capacity for resilience socio-economic development, reorient economic development towards a low carbon society, and promote sustainable development in a Thai context. In addition, national sectoral plans, such as those of the Ministry of Energy, offer clear roadmaps and targets by sector.

The Low Carbon City Process

“Low Carbon City” refers to a province, city, municipality, or community that pursues a systematic process to achieve GHG emission reductions. The Thailand Greenhouse Gas Management Organization (TGO), with support from the Joint Graduate School of Energy and Environment at King Mongkut's University of Technology Thonburi, developed a nine-step process to help localities work towards becoming a low carbon city:

1. Survey key activities (economic and social) in the target city
2. Prepare a GHG inventory for each key emitting sector
3. Identify emission reduction measures and technologies in each key emitting sector
4. Analyze and select measures and technologies
5. For each key emitting sector, project: (1) emissions under a ‘business as usual’ (BAU) scenario, and (2) emissions if GHG mitigation measures and/or technologies are adopted

Success Factors

- Supportive national policies can catalyze the shift towards low a carbon society. National entities can help build readiness and capacity of entities in charge at the local level.
- Local governments play an important role, and local leaders must have understanding and political will to engage stakeholders in behavior change.
- Involving diverse local stakeholders throughout the process is essential—from the initial survey to selecting mitigation measures to monitoring progress and results.
- Communicating good practices and demonstrating co-benefits from GHG mitigation measures within and across localities compels stakeholders to act to help achieve goals.

The Nine Step Low Carbon City Process



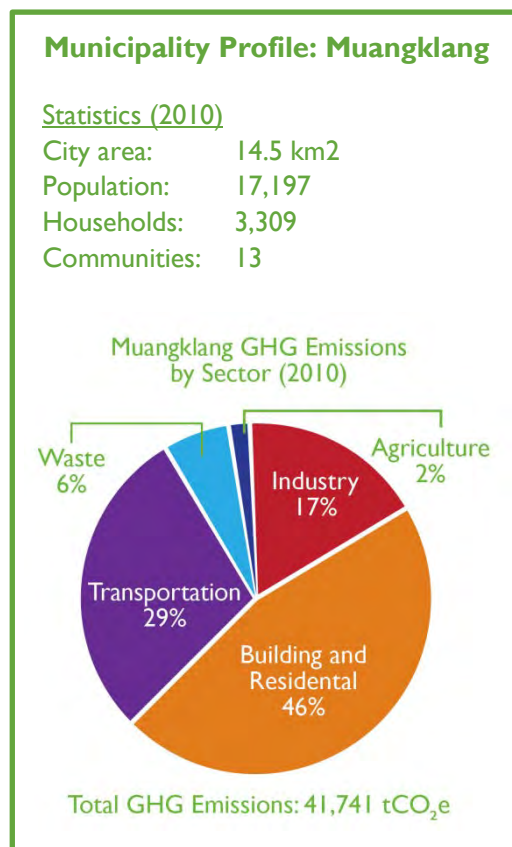
6. Set GHG reduction targets at the city level
7. Create an action plan
8. Implement the action plan, monitor progress and results
9. Review targets, direction, measures, and the action plan

Muangklang Municipality: A Pioneer Low Carbon City

Muangklang is a small-sized municipality located in the Thai province of Rayong. Under leadership of a forward-looking local government committed to principles of sustainability, Muangklang partnered with TGO to pilot the Low Carbon City approach, with the aim of enhancing the city’s good practices and offering lessons learned and a model for customization and replication in other small cities across Thailand.

Surveying Key Activities, Preparing a GHG Inventory, and Identifying Mitigation Opportunities

Following the nine-step process, Muangklang first *surveyed its key economic and social activities*, engaging stakeholders from multiple sectors across all 13 communities in the municipality. The municipality gathered activity data to prepare a *detailed GHG emission inventory* for each key emitting sector for 2010, with commercial and residential buildings, transportation, industry, waste, and agriculture and forestry comprising total emissions. This inventory served as a baseline from which to *identify potential emission reduction opportunities* within the top emitting sectors.



Selecting Mitigation Measures

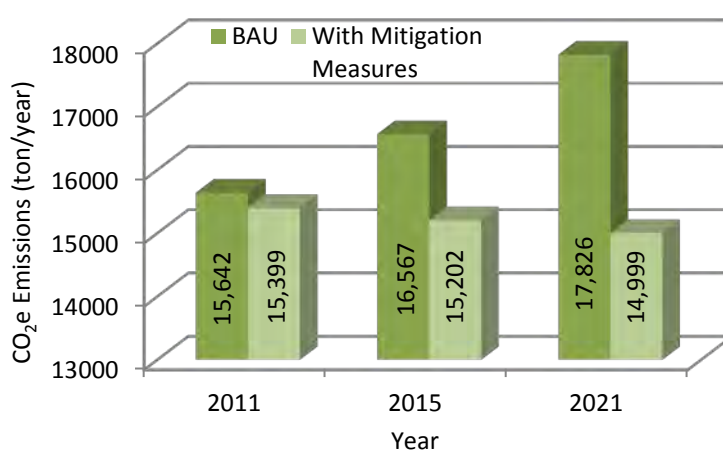
Mitigation *measures and technologies were then selected* as a result of analysis and stakeholder discussion, prioritizing high-impact and well-supported options. Selected mitigation strategies are summarized below.

- **Buildings.** Encourage commercial building and homeowners to select energy efficient products receiving the “Energy Label No.5”; raise awareness on energy saving behaviors; and adopt clean energy in public buildings.
- **Transport.** Add public buses and improve routes to minimize personal vehicle use; convert public fleets to run on natural gas and biofuels; and encourage city residents to use bicycles.
- **Waste.** Install a municipal waste separation belt to sort organic waste and recyclables from general waste prior to landfill disposal—to reduce landfill methane; and install a biogas digester.
- **Agriculture.** Convert unused land areas to rice fields; and construct a municipal rice mill for local processing and consumption, to reduce emissions from transporting rice from elsewhere.
- **Urban Spaces.** Increase the area dedicated to public parks; and green and improve pedestrian routes to promote exercise and reduce motorcycle use.

Projecting GHG Emissions and Setting Targets

For each of the above sectors, the municipality *projected GHG emissions* under a BAU scenario and under a scenario in which mitigation measures and technologies are adopted. Based on the BAU scenario and projections, local officials and

Muangklang Buildings Sector: GHG Emission Trends



stakeholders in Muangklang set a *voluntary GHG reduction target* to reduce per capita emissions by 100 kgCO₂e annually (5 percent) within five years, and by 200 kgCO₂e annually (10 percent) within 10 years.

Creating an Action Plan, Implementing Plans, and Reviewing Progress to Further Tailor Plans

Through brainstorming meetings between local government and stakeholders—which included representatives from communities, schools, private sector, and other groups—the municipality created *action and implementation plans*. Plans detailed the measures selected, specific actions to take, and entities responsible for implementation, monitoring of progress and results, and *reviewing and adjusting targets and plans* as needed. For example, in the transportation sector, stakeholders identified actions and responsible entities to help manage vehicle usage and traffic congestion. Similar exercises were conducted in other activity areas.

Plan to manage vehicle usage and traffic congestion

| Measures | Actions | Entities |
|------------------|---|--|
| Financial | <ul style="list-style-type: none"> Enhance budgets for sustainable public transportation systems | Financial institute, transport authority, private sector |
| Policy | <ul style="list-style-type: none"> Improve flow of public transport (e.g., bus stops only for public transport, no large vehicles in public transport lanes) | Municipality |
| Local ordinance | <ul style="list-style-type: none"> Adopt regulations restricting personal cars from parking on public transport routes | Municipality |
| Management | <ul style="list-style-type: none"> Offer free service for all routes, with clear street signage | Municipality, communities |
| Public relations | <ul style="list-style-type: none"> Announce timetables and routes through local radio Incentivize use of public transport (e.g., advertise that it is free) | Municipality, schools, communities, private sector |
| Public awareness | <ul style="list-style-type: none"> Raise awareness of benefits (e.g., cost savings, emission reductions) of using public transport versus personal vehicles | Schools, communities, community leaders |

Co-Benefits of GHG Mitigation

One key lesson from the Low Carbon City pilot in Muangklang is the importance of demonstrating co-benefits from GHG mitigation measures. Identifying tangible ways that mitigation measures can contribute to environmental, economic, and social benefits, and clearly communicating these co-benefits can compel stakeholders—whether organizations or individuals, and from within the public or private sector—to act to help achieve city-wide low emission development goals.

Examples of Co-Benefits in Muangklang

| Mitigation Measure | GHG Emission Reduction | Expected Co-Benefits |
|---|--|---|
| Installed municipal waste separation belt to sort organic waste and recyclables from general waste prior to landfill disposal | 448.4 tCO ₂ e avoided over 10 years from landfill methane | <ul style="list-style-type: none"> Lowered solid waste disposal costs for municipal authorities by 312,500 baht over lifetime of equipment (10 years) New revenues generated from sale of recyclables Extended the life of the municipal landfill |
| Constructed municipal rice mill for local processing and consumption | At least 61.6 tCO ₂ e avoided from transport of rice from outside of Muangklang | <ul style="list-style-type: none"> New income generated from rice sales, benefiting smaller scale farming households Reduced dependence on prices in the rice market and purchases from outside the municipality Increased food security for local communities |

Implications

With strong local government leadership and willingness of local stakeholders to work together towards a low-carbon development pathway, Muangklang fully adopted the TGO Low Carbon City approach and applied the nine-step process within the municipality's context. In doing so, Muangklang has achieved GHG emission reductions and other economic and social benefits, and has gained recognition as a learning center for small-city and environmental management in Thailand. Muangklang is actively networking with other cities within Thailand to share and build on experiences, helping other localities to adopt the Low Carbon City approach and customize mitigation measures in accord with local contexts.



Thai cities that are following the Low Carbon City nine-step process and undertaking voluntary GHG mitigation measures will also be well positioned to participate in the national GHG registry and carbon market, for which development is underway based on the *11th National Economic and Social Development Plan*. Low carbon cities are and will continue to lead the way in the transition to a low carbon society in Thailand.

For more information on the Thai Low Carbon City initiative, visit: <http://www.tgo.or.th/english/>

This document is based on content presented at the 2013 Delhi Sustainable Development Summit, in a session entitled *Learning from Green Growth Initiatives in Asia*. This session was organized by the Asia Low Emission Development Strategies (LEDS) Partnership with support from the Climate & Development Knowledge Network (CDKN) and the US Agency for International Development (USAID).

About the Asia LEDS Partnership

The Asia LEDS Partnership is a voluntary network of government and nongovernmental partners working to advance LEDS and green growth in Asia. It builds on, and cooperates with, existing regional Asian networks and initiatives, and links efforts in Asia with related work in other regions. Representatives from over a dozen Asian countries are actively engaged in the Asia LEDS Partnership, as well as numerous international partners. Membership is free and is open to individuals or organizations. For more details, visit: http://en.openei.org/wiki/Asia_LEDS_Partnership



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