CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Requesting country:	Thailand

Request title:	Fostering Green Buildings in Thailand Towards Low Carbon Society

Contact information:

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	National Designated Entity	**Request Applicant**
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Technology Needs Assessment (TNA):

☒ *The requesting country has conducted a TNA in 2012*
☐ *The requesting country is currently conducting a TNA*
☐ *The requesting country has never conducted a TNA*

The National Science Technology and Innovation Policy Office (STI), Ministry of Science and Technology, conducted the **"Technology Needs Assessments for Climate Change Mitigation/Adaptation in Thailand"** and was one of the first fifteen countries from Africa, Asia, Latin America, Caribbean, and Europe to conduct the projects funded by the Global Environmental Facility (GEF) in collaboration with the United Nations Environment Programme (UNEP). The focus of the mitigation was 'energy' sector and for adaptation, the study primarily dealt with agriculture, water resource management and climate modeling expertise.

Thailand 2012 TNA study has estimated that the potential GHG emission reduction resulting from the adoption of energy efficiency and conservation measures in the building sector (including large, medium & small-scale commercial buildings and residential buildings) to be 240 ktons of CO2E, for the

period 2011 to 2030. This is about 20.5% of the total GHG emissions from the energy sector during the same period.

CTCN Request Incubator Programme:

☐ *Yes*
☒ *No*

Geographical focus:

☐ *Community-based*
☐ *Sub-national*
☒ *National*
☐ *Multi-country*

Theme:

☐ *Adaptation to climate change*
☐ *Mitigation to climate change*
☒ *Combination of adaptation and mitigation to climate change*

Sectors:

Energy and Resource management in new and existing Buildings

Problem statement *(up to one page):*

Energy use per capita in Thailand is 79,659 ktoe in 2013, which is equivalent to 2,192.2 Million Baht and 3.53 metric tons CO2 emissions per capita. The latest Energy Efficiency Plan (2015 - 2036) or EEDP 2015 with a new ambitious target to reduce Energy Intensity by 30% in 2036 (instead of the earlier target of 25% reduction), compared to that in 2010. The EEDP 2015 also intends to achieve the GHG emission reduction target according to the pledge submitted to UNFCCC in COP20, which aims to reduce 7% from transport and energy sector in 2020, compared with 2005. A substantial part of this energy intensity reduction and emission reduction will come from the building sector as a whole (including end-use appliances). Industry forecasts that the building sector would be worth THB 614 billion in 2017- a Compound Annual Growth Rate (CAGR) of 6.7 per cent with sustained requirement for commercial buildings (primarily offices) and housing[1]. Energy demand in residential and large commercial buildings sector is likely to be at least 75% higher than the regional (Southeast Asian) average by 2030[2]. The combined electricity consumption of residential and commercial sector stood at 43% (same as industrial sector) in 2015. Given the growth in this sector and potential of avoided energy consumption by this fast growing sector, EEP 2015 has consciously tried to look at this sector also.

In order to achieve the aforesaid targets, EEP 2015 lays the following key strategies pertaining to the building sector :

[1] http://www.architectsjournal.co.uk/thailand-expects-construction-boom/8649055.article
[2] GBPN,2014. Asia-Pacific Regional Policy Analyses, www.gbpn.org

- Enforcement of energy conservation standards in designated factories and buildings
- Building Energy Code (BEC) on the new buildings
- Energy labeling on equipment/appliances (HEPS & MEPS)

Compliance of progressive building codes is often a big challenge as seen in many parts of the world. BEC and it's revision in 2007 by Department of Alternative Energy Development and Efficiency (DEDE) inspite of its mandatory compliance requirements for energy performance improvement specially in large buildings in commercial sector is struggling to get the desired compliance levels due to various reasons such as limited building evaluation performance techniques to calculate optimum cost, technical capacities, lack of understanding of suitable technologies, perception of high capital costs, financial barriers, etc . Further, the Code aspires to shift the targets every 3 years BEC, BEC+, HEPS, HEPS+, LEB, LEB+ and Net zero energy buildings .

DEDE and relevant agencies remain committed to implement strategies to achieve the revised EEP targets. It is however, strongly felt to carry out a detailed technology assessment along with costs study, market assessment to better equip DEDE and relevant agencies and find avenues to help various stakeholders to overcome the cost/technology barriers for implementation of the BEC.

Based on the immediate success story of BEC, the next steps eventually towards Net Zero buildings may be taken to fulfill the overall ambitious targets of emission reduction. The scaling up of the standard also needs to be in line with technology availability and economic cost and therefore, technology assessment –present trends and likely future is urgently required.

Apart from code implementation, the country has a number of voluntary measures and some regulatory and financial incentives such as labeling of home appliances and buildings which were created as part of a number of national policies on energy efficiency. The country is also working with UNEP on Building sector NAMAs. All of this requires technology identification, transfer and huge capacity building of various stakeholders. As mentioned earlier, in its first efforts on Technology Needs Assessment, the building sector was not covered and therefore, this study becomes important to fill this vital gap and help the federal government achieve its EEP 2015 targets and emission reduction goals in NAMAs.

Successful and innovative energy efficiency policies (EE) can support both mitigation and adaptation objectives. EE can support adaptive capacity by increasing access to energy and strengthening the resilience of the overall electricity system to potential climate impacts and natural hazards.

Past and ongoing efforts *(up to half a page):*

EEP (2015-2036)- past and ongoing
Building sector NAMA (2013-2017)- ongoing
AEDP- past and ongoing
Voluntary rating programs

Assistance requested *(up to one page):*

As stated earlier, the key challenges faced by the implementing agencies in the country are related to technology assessment (both in terms of performance, availability, costs, market preparedness, etc.) and extensive capacity development for implementers, designers, evaluators and operators. It remains difficult to find knowledgeable architects, contractors, consultants who are familiar with the solutions that can impact energy efficiency in a building. The cost and limited availability of some energy efficient products or solutions also being considered — as many products are still imported, the high costs remain as a handicap to expand a larger adoption of energy efficient solutions. Lastly, green buildings in Thailand are still limited to commercial buildings. High building cost is more difficult for individual

tenants to bear in residential buildings.

To overcome the above two challenges, we look forward to CTCN's support for:

a) Detailed technology assessment in line with the current BEC standard and future goals

b) Technology performance evaluation across key building typologies most suited for Thailand and in line with the targeted BEC standards(and upgrades)

c) conduct study to identify threshold level of energy efficiency above business as usual (BAU) to have baseline of investments that allow developers and investors to have flexibility in selecting from a broad range of energy efficiency measures and technologies in order to meet that threshold.

d) Capacity building on green building design and evaluation, construction, technology implementation, retrofits, operation and maintenance

As stated in the earlier section, the above activities will help to achieve the mandatory/voluntary measures of the government as part of EEP NAMAs and several other initiatives. These are the building blocks which will decide the course of development of BEC to Net Zero energy buildings –both for new construction and existing buildings.

The government has long been proactive in developing programs to facilitate adoption of energy efficiency and conservation measures and very well recognizes the sector as a low hanging fruit. It has a long history of energy efficiency measures from early 1990s. Thailand scaled up investment in energy efficiency by launching the 20-year energy efficiency development plan (EEDP) in 2011, which started with an overall energy consumption reduction target of 20 percent by 2030 and eventually increased to 30 per cent by 2036 (in 2015). The Plan envisages a combination of mandatory requirements for equipment, appliances, vehicles, and buildings; support for voluntary measures by business and consumers; public awareness campaigns; support for technology development; and support for capacity building for energy efficiency promotion for public and private sector organizations (Ministry of Energy 2011). The CTCN support on detailed technology assessment and capacity building will help in achieving the EEP implementation.

Expected benefits *(up to half a page):*

Medium term impacts: Wide scale adoption of suitable technologies to meet the prevalent BEC (and upgraded standards) leading to energy efficiency in the building sector(and the learning will eventually percolate to other building typologies in the country)

Market transformation: Adoption of energy efficient technologies will help in market transformation as per the needs of the sector in the country

Sustainable development co-benefits include improved quality of life in overall and job creation of which there is a recognized dearth of appropriate skills and capabilities to implement the BEC; this capacity building exercise as part of the CTCN support will cater to the sectoral needs and shall add to the skill set of the people already working in the sector apart from generating new jobs related to energy efficiency.

Besides, the aggregated energy savings as envisaged with the implementation of BEC and BEC plus standards will help the country to avoid establishment of several new power plants.

Post-technical assistance plans *(up to half a page):*

The CTCN assistance is hereby requested to cater to the key barriers of technology (and cost) assessment and identification of appropriate technologies as per the changing BEC standards and the huge capacity building barriers often associated with implementation of such programs.

A substantial increase in the number of BEC (and BEC plus standards) compliant buildings is expected post this exercise, provided there are appropriate networks and channels to spread this knowledge of appropriate technology adoption and its benefits. It is for this reason that all relevant stakeholders including universities and academia, industry association, builders' association, etc. shall be involved in the program. At least 50 percent compliance of BEC standards by all new large building construction will be the litmus test for successful implementation of this technology assessment and capacity building exercise.

Key stakeholders:

{Please list in the table below the main stakeholders who will be involved in the implementation of the requested CTCN technical assistance, and what their role will be in supporting the assistance (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.). Please indicate what organization(s) will be the main/lead counterpart(s) of CTCN experts at national level, in addition to the NDE.}

Stakeholder	Role to support the implementation of the assistance
King Mongkut's Institute of Technology Thonburi	*Implementing agency*
Department of Alternative Energy Development and Efficiency	*Executing agency*

Alignment with national priorities *(up to half a page):*

This assistance will be pivotal in implementation of government's ambitious plans of reducing the energy intensity and specific measures envisaged for the building sector as defined in the EEDP. The government is extremely enthusiastic on submitting it's building sector related NAMAs soon, given the huge potential the building sector holds as far as emission reduction is concerned as well as from energy security perspective. The government is already working with UNEP/ROAP with financial support from BMUB, German government to identify GHG emission reduction from building sector, to be developed as building sector NAMA and later registered.

Development of the request *(up to half a page):*

UNEP/ROAP with financial support from BMUB, German government is providing technical assistance to Thailand to identify GHG emission reduction from building sector. The potential is further being developed as NAMA and will be registered as one NAMA project for Thailand.

Follow-up meeting was officially hosted by Thailand's NDE and was participated by representatives from Department of Alternative Energy Development and Efficiency (DEDE, Ministry of Energy, Office of National Environmental Policy and Planning (ONEP, Ministry of Natural Resources and Environment), King Mongkut's University of Technology Thonburi, BEC centre coordinator and UNEP. The meeting agreed that assistance CTCN is extremely timely and helpful to strengthen technology side of the NAMA potential.

Expected timeframe:

12 months upon approval

Background documents:

Building Energy Code (2009)

The National Assessment Report on Building and Energy Sector Policies for Climate Mitigation, developed under the NAMA Development for Building Sector in Asia Project.(2014)

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☒ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

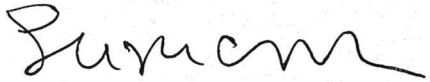
☒ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name: Mr. Surachai Sathitkunarat

Date: Nov 25, 2013

Signature:



THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org