

TECHNICAL ASSISTANCE COMPLETION REPORT

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| TA No., Country and Name TA 7615 – THA: Bangchak Solar Power | | Amount Approved: \$400,000 | |
| | | Revised Amount: \$361,195 | |
| Executing Agency: Bangchak Petroleum Public Co. Ltd. (Bangchak) | Source of Funding: CDTA | TA Amount Undisbursed \$0 | TA Amount Utilized \$361,195 |
| Approval 5 October 2010 | Signing 12 October 2010 | Fielding of Consultants 28 January 2011- 06 May 2011 | TA Completion Date Original: 12 March 2012 Actual: 31 Dec 2012 Closing Date Original: 12 March 2012 Actual: 1 March 2013 |
| Description <p>Many energy companies acknowledge the unsustainable nature of emitting carbon emissions in the long run and are therefore beginning a transition towards a lower carbon footprint by assessing the carbon life cycle of their products, investing in energy efficiency technology, and rebalancing their portfolios towards lower-emission alternatives. This represents an enormous undertaking and challenge for the energy industry, one that is particularly difficult in DMCs that lack the required legislative incentives. Without strong legislative frameworks and incentives such as carbon taxes or “cap and trade” emissions trading schemes, DMCs must rely on progressive industry leaders within the private sector to initiate environmentally sustainable strategies that take into account their overall carbon footprint and aim to reduce emissions on a company-wide basis.</p> <p>Bangchak is emerging as a leader in sustainability within the energy industry as it commits to neutralizing its carbon footprint across its operations, and in doing so, is expected to become the first and only carbon-neutral refining company in the world. Bangchak has initiated a proactive, zero-carbon strategy that will reduce its environmental impact and enhance the long-term sustainability of the company. The strategy will lead to a stronger and more resilient Thai economy as well as advance global efforts to reduce carbon emissions that contribute to climate change.</p> <p>The CDTA provided capacity support for Bangchak’s implementation of a carbon neutral strategy. The TA helped strengthen the managerial and governance capability of Bangchak as it makes the transition from a fossil-based to a carbon-neutral business model. The TA also organized a workshop to build the capacity of other energy companies in Thailand and the region by raising awareness of the long-term benefits of a low-carbon corporate strategy, as well as disseminate knowledge and best practice guidelines for tracking and abating emissions.</p> | | | |
| Expected Impact, Outcome and Outputs <p>The TA included: (i) the development and implementation of a system to determine, track, and monitor Bangchak’s carbon footprint on a companywide basis and implement strategies to offset carbon emissions with an objective of reaching zero emissions within a set time frame; (ii) training of staff on implementation of the zero-carbon-footprint strategy; (iii) establishment of assessments of the carbon life cycle of Bangchak’s products (i.e., gasoline, ethanol, fuel oil, etc.) in accordance with generally accepted standards; (iv) creation of a simulation model to assess new products and investments with regard to emissions and potential for offsetting of emissions; (v) establishment of a business-as-usual greenhouse gas emissions baseline as a reference case; and (vi) dissemination of knowledge in carbon tracking and reduction strategies through a workshop open to other energy companies in the region. The CDTA provided capacity support for Bangchak’s implementation of a carbon neutral strategy. The TA helped strengthen the managerial and governance capability of Bangchak as it makes the transition from a fossil-</p> | | | |

based to a carbon-neutral business model, as well as build the capacity of other energy companies in Thailand and the region by raising awareness of the long-term benefits of a low-carbon corporate strategy, as well as disseminate knowledge and best practice guidelines for tracking and abating emissions.

Delivery of Inputs and Conduct of Activities

The terms of reference (TOR) were comprehensive and adequately designed to meet the objectives of the TA. The contract for consultant's services between ADB and Factor CO2 in association with ERM-Siam (collectively the Consultant) was signed on 29 July 2011. A notice to proceed was issued on 8 August 2011 and a kick-off meeting was held on 12 September 2011 in Bangkok. A total of 22 person-months of international consulting services were budgeted under the TA.

The TA target completion date was extended from its original target completion date of 12 March 2012 to 31 December 2012 (Variation No.2) partly to provide sufficient time for the Consultant to gather data, given the large amount of information required and the data gathering process involved (i.e. data is needed from Bangchak's subsidiary companies as well as suppliers and distributors). There was also a disruption in activities caused by the major flood in Thailand from October to November 2011 that delayed the completion date beyond the original timeframe.¹ No change in scope or additional cost was incurred due to the change in completion date.

TA funds were deemed adequate with respect to the desired outputs of the TA. Notwithstanding the delay in completion, the TA was completed on budget (100% utilization). Payment was based on achieving certain milestones as confirmed by the EA, which provided appropriate incentives. The Consultant's performance was highly satisfactory.

Evaluation of Outputs and Achievement of Outcome

Carbon Analysis – the organizational and product carbon footprints were calculated. The analysis also provided a 'business-as-usual' baseline to represent the company's current carbon path. For the organizational carbon footprint, the Petroleum Industry Guidelines for Reporting Greenhouse Gas Emissions and the GHG Protocol were used as the methodological base, having the API Compendium and the IPCC Guidelines as the most relevant information sources for the calculations. The equity share methodology was also chosen due to the structure of the company and its subsidiaries. The product carbon footprint was calculated for the most relevant products of the company, which were chosen taking into account their production and their final use. Seven products were analyzed: gasoline, gasohol E10, gasohol E20, gasohol E85, Fuel jet, Power D (B2) and Power D (B5). The calculation was based on the PAS 2050 methodology and included the emissions from the raw materials, the upstream transport and the refining.

Emission Tracking System – The system successfully calculates carbon emissions across Bangchak's organization. The system is user-friendly and most data can be automatically collected from the company's existing IT system, or when IT restrictions are imposed, data can be added manually by the company. The system also generates reports from the calculations and includes graphs and tables.

Carbon Investment Analysis – A carbon investment analysis was performed to outline the investments required by the company to achieve its carbon neutrality strategy. Following a preliminary screening, a set of 23 low carbon investments in the areas of renewable energies, biofuels and energy-efficiency were identified.

Employees training program – An employee training program was organized for relevant staff of Bangchak, summarizing all the necessary information regarding the project, its outcomes, and fit within Bangchak's corporate strategy. Training was also provided for the operations and administration of the emissions tracking system.

¹ Request for extension of the TA was approved by the Director-General, PSOD on 15 June 2012

Public Workshop – A one day Carbon Tracking workshop was held in Bangkok which included 82 participants from 27 organizations in the energy, manufacturing and government sectors. Majority of the participants were from Thailand with a few from neighboring southeast Asian countries. The workshop included speakers from ADB and the Consultants, as well as the Deputy Director from Thailand Greenhouse Gas Management Organization, a Professor from Chulalongkorn University, and the Executive Vice President of Corporate Strategy from Bangchak.

The Consultants' outputs above were satisfactorily completed and of good quality. The tracking system is user-friendly, fully functional, and of good quality. The workshop was well executed and successful. The final report is also of good quality.

Overall Assessment and Rating

The TA was completed within the budget and the objectives were successfully realized. The TA is rated as successful.

Major Lessons Learned

Bangchak's corporate objective is to become a carbon neutral company. The TA identified and screened 23 potential low carbon investments in the areas of renewable energies, biofuels and energy-efficiency to create a carbon neutral pathway for Bangchak which includes a capital investment plan of \$1.8 billion between 2009 and 2020 and avoidance of almost 1,200,000 t CO₂ per year by 2020 will be achieved with support from the government and offsets from the completion of all potential low carbon investments. The Bangchak refinery is expected to become carbon neutral by 2017 based on the results of the TA.

Recommendations and Follow-up Actions

The final report provides a master plan for Bangchak to achieve carbon neutrality and progress should be updated regularly in parallel with the annual monitoring for the Bangchak Solar Power Project loan.

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