

# ***DEVELOPMENT OF APEC LOW-CARBON TOWN INDICATOR (LCT-I) SYSTEM***

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## **Overview**

The Asia Pacific Energy Research Centre (APEREC) has been working as the secretariat of the APEC Low-Carbon Model Town (LCMT) project. The LCMT project was initiated in 2011 in response to the declaration at the 9th APEC Energy Ministers Meeting (EMM9), held in Fukui, Japan on 19 June 2010, where Ministers discussed low-carbon pathways to energy security through cooperative energy solutions for a sustainable APEC as well as growth strategies. Among several messages, they noted that introducing low-carbon technologies in city planning to boost energy efficiency and reduce fossil energy use is vital to manage rapidly growing energy consumption in urban areas of the Asia-Pacific region.

The LCMT Project consists of three key activities:

- a) Developing and refining the ‘Concept of Low-Carbon Town in the APEC region (Concept)’ by APEC experts;
- b) A feasibility study of low-carbon development for each case town by consultants hired by the APEC Secretariat; and
- c) A policy review of low-carbon development policy of each case town by APEC experts.

The Concept is a guideline for city planners and developers who wish to implement low-carbon town design. It includes case studies of Low-Carbon Towns (LCT) in the APEC region, and incorporates practical methodologies for low-carbon town planning, design and technology.

In tandem with the Concept, the ‘APEC Low-Carbon Town Indicators (LCT-I) System’ has been developed since 2013. The LCT-I System is a self-assessment tool to assess and monitor the progress of each low-carbon town development project in the APEC region. After a basic survey in 2013, trial evaluations of the LCT-I System were conducted in 2015 with the help of these LCMT case towns. The First Edition of the LCT-I System Guideline and its evaluation sheet were published in November 2016.

The feasibility study and policy review were carried out in six case towns up to now: Yujiapu, China; Samui Island, Thailand; Da Nang, Viet Nam; San Borja, Peru; Bitung, Indonesia; and Mandaue, the Philippines. Krasnoyarsk, Russia was chosen as the next case town in 2017.

## **Methods**

The LCT-I System was designed to be as simple as possible with user-friendliness in mind. The assessment areas of the LCT-I System are comprehensive and use a five point scale evaluation (see figures 1 and 2 below). The users can easily carry out an assessment of low-carbon town development projects with various scales, characteristics and stages of progress. The results of self-assessment are not expected to be used for comparison with other towns/cities, but for monitoring the progress of each low-carbon town development project, considering the various situations in the developing economies of the APEC region.

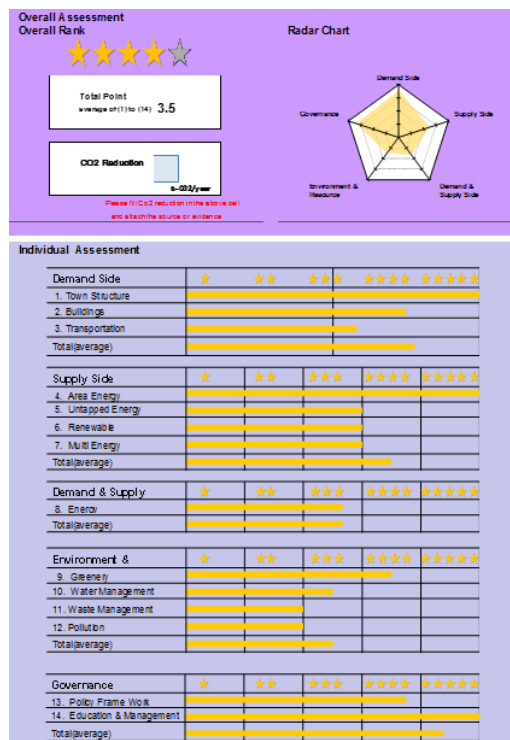
As the low-carbon measures addressed in the Concept were originally designed from an energy perspective, they were first categorised into two main ways: measures ‘directly related’ to energy usage; and measures ‘indirectly related’ to energy usage. In directly related measures, measures concerning demand, supply, and both demand and supply were included as Tier 1 items. In indirectly related measures, aspects of ‘Environment & Resources’ and ‘Governance’ were included. Though measures in these two indirectly related Tier 1 items do not concern energy usage, they are very important elements in developing LCT. Assessment targets are comprised of five major items (Tier 1) and 14 mid-level items (Tier 2). There are 35 quantitative and qualitative indicators in Tier 3.

Items in existing assessment indicators, such as Comprehensive Assessment System for Built Environment Efficiency (CASBEE), are referenced in the LCT-I System. The APEC's liaison officer has been attending ISO/TC268 meetings on Sustainable Cities and Communities since February 2015 to maintain the relevancy of the LCT-I with respect to the global standards developed by International Organization for Standardization (ISO).

Figure 1: LCT-I Assessment Areas

	Tier 1	Tier 2 (No. of Tier 3 indicators)
Directly Related	Demand	1. Town Structure (3) 2. Buildings (4) 3. Transportation (6)
	Supply	4. Area Energy System (1) 5. Untapped Energy (1) 6. Renewable Energy (1) 7. Multi Energy System (1)
	Demand & Supply	8. Energy Management System (3)
Indirectly Related	Environment & Resources	9. Greenery (2) 10. Water Management (3) 11. Waste Management (2) 12. Pollution (3)
	Governance	13. Policy Framework (4) 14. Education & Management (2)

Figure 2: Image of Evaluation Result



## Results

The LCMT project will soon move to the dissemination stage from the survey stage. The LCT-I System will have a significant impact as an education tool which can show the next step in low-carbon development in the APEC developing economies. The first LCMT Symposium is planned for Jakarta, Indonesia in September 2017 for the purpose of capacity building and dissemination of LCT. The application results of the LCT-I System will be collected and reviewed in the LCMT Symposium as a reference of the future users of the LCT-I System.

## Conclusions

The utilisation of the LCT-I System is expected to further promote low-carbon efforts at the town level and improve the management of CO2 emissions in the APEC region. The ultimate goal is to contribute to the achievement of global GHG emissions reduction targets.

## References

The APEC Low-Carbon Model Town Task Force of APEC Energy Working Group (2016), The Concept of the Low Town in the APEC Region Sixth Edition, [http://publications.apec.org/publication-detail.php?pub\\_id=1796](http://publications.apec.org/publication-detail.php?pub_id=1796)

The APEC Low-Carbon Model Town Task Force of APEC Energy Working Group (2016), The APEC Low-Carbon Town Indicator System Guideline First Edition, [http://publications.apec.org/publication-detail.php?pub\\_id=1797](http://publications.apec.org/publication-detail.php?pub_id=1797)