Climate & Development Knowledge Network

INSIDE STORIES on climate compatible development

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Key messages

- The Urban-LEDS project highlights the importance of combined efforts by technical departments and local chief executives in moving from planning to implementation.
- The completion of Bogor City's greenhouse gas emissions inventory allowed the city government to prioritise low-carbon options and identify concrete implementable projects such as pedestrianisation and streetlight retrofitting.
- Embedding LEDS considerations into long-term development plans can allow a local government to allocate funds for LEDS-related activities as evidenced by Bogor City's experience. The Urban-LEDS project integrated LEDS when formulating the city's regional medium-term plan, resulting in a commitment of financial support for LEDS activities from the city budget.
- Projects should be examined from a macro perspective and not implemented in isolation. It is important for implementers to conduct an intervention mapping in consultation with the city government in order to maximise linkages and synergies, and align projects with long-term development plans to ensure sustainability and ownership.
- There is value in networking. South–South–North exchanges enriched Bogor City's experience of integrating LEDS in its own development plans by looking at how developed European cities did it and simultaneously learning along with other emerging secondary cities under the Urban-LEDS project.

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Treading low-carbon pathways toward sustainability: The experience of Bogor City

Since 2013, the Urban Low Emission Development Strategies (Urban-LEDS)[1] project has offered Bogor City an opportunity to integrate low-carbon strategies not just in the transport sector but in its local development plans, supporting the city's vision of adopting sustainability to transform Bogor into a more liveable city. The project introduced ICLEI's GreenClimateCities[2] framework, using the analyse–act–accelerate model to offer customised guidance to Bogor City. Within 2.5 years of continuous engagement and capacity building, and numerous exchange visits with other participating countries, Bogor City's low-carbon plan has been developed and is now ready to move towards implementation.

How long does it take to reach Bogor City from Jakarta? The answer varies depending on the time of day. Located about 53 km south of Jakarta, Bogor City is supposedly accessible from Indonesia's capital by one hour or less of car travel. However, due to the high mobility of residents coupled with a limited alternative road network and insufficient capacity of public transportation, travel time can take twice as long. The transport sector is identified as one of the main challenges faced by Bogor City according to its Regional Development and Planning Agency (BAPPEDA).

From an economic viewpoint, traffic congestion causes monetary losses and contributes to inefficiencies in service delivery and performance. And from an environmental perspective, the transport sector is one of the major contributors of greenhouse gas emissions. Tailpipe emissions resulting from fuel combustion contribute to increased greenhouse gas concentrations in the atmosphere.

Owing to its strategic location and picturesque landscape, botanical garden and mountain resorts, Bogor City attracts Jakarta's more affluent citizens to reside in the city while maintaining employment in the capital. This pattern, coupled with its desire to boost local tourism, is influencing the city's development, particularly in terms of mobility. Transport and energy use, waste generation and land use are also expected to change.

CDKN has a growing portfolio of work in states, provinces, cities and districts. It is committed to capturing the lessons learned, and to better understanding what makes low-carbon and climate-resilient development efforts work well at the subnational level. CDKN and ICLEI – Local Governments for Sustainability have set up a joint learning programme to distil and share these lessons with others. This *Inside Story* is one output of the learning programme. For more in the series, visit www.cdkn.org/cdkn_series/inside-story

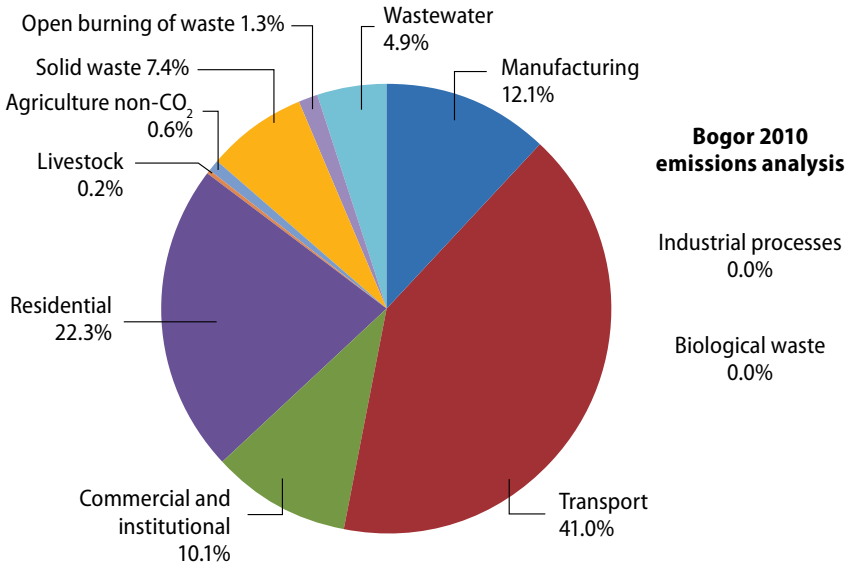
Paving the way for Bogor's low-carbon pathway

Greenhouse gas emissions inventory

Bogor's selection as a model city by the Urban-LEDS project was based on an analysis of its mitigation potential and indication of political commitment. The city government's engagement started with a signed Memorandum of Understanding between ICLEI Southeast Asia and Bogor City in July 2013, which outlined the city government's roles under the project. Following this, the city government formed a Technical Working Group representing the different departments within the local government to oversee implementation. Through consultative processes and meetings facilitated by the ICLEI Indonesia Project Office, the Working Group's first task was to assess data availability to establish the city's baseline greenhouse gas emissions, with 2010 as the base year.

Greenhouse gas activity data[3] were gathered from city departments and external sources such as the national electricity corporation, national oil and gas corporations, schools and hospitals, and the private sector. The data collection process entailed establishing effective coordination lines and maintaining good relationships with data sources. This was especially true for stationary energy and electricity sectors which required data from outside local government. In such cases, an official request from the city often needed to be followed up through other networking and communication routes to obtain the data needed. The Urban-LEDS project team also worked closely with another project, GIZ's (Deutsche Gesellschaft für Internationale Zusammenarbeit) Sustainable Urban Transportation Improvement Project,[4] to avoid overlaps regarding the transport sector. In early 2015, the greenhouse gas emissions calculation for Bogor City using 2010 as reference year was completed and yielded the following result (*Figure 1*).

Figure 1. Bogor City's community-scale greenhouse gas emissions inventory (2010 as base year)



Not surprisingly, transport emerged as the sector with the highest greenhouse gas emissions, estimated at 1,084,160 tonnes of carbon dioxide equivalent (tCO_2e), comprising 41% of the city's total. Results of the greenhouse gas emissions inventory prompted the city government to review its programmes and strategies. By running a business-as-usual scenario projecting 2020 greenhouse gas emissions, additional LEDS priorities were identified apart from transport, including energy efficiency of buildings, promotion of renewable energy, land use, and solid waste and wastewater management.

Future plans

To ensure project gains are sustained, ICLEI assisted the city government to incorporate identified LEDS priorities into its new Regional Medium Term Development Plan for 2015–19. As a prerequisite to development planning, and as mandated by Indonesian law,[5] Bogor City conducted a strategic environmental assessment, facilitated by ICLEI Indonesia, which identified strategic issues that Bogor City is facing. The process involved multi-stakeholder consultations with city government and communities, and identified both climate change mitigation and adaptation as priority areas needing intervention. In the course of finalising the Regional Medium Term Development Plan, the following were identified as key climate change objectives:

- establishing city-wide waste management schemes and facilities
- developing green building standards to accelerate the use of low-emission development technologies, materials and design strategies
- improving spatial planning and urban development projects to

Bogor

Bogor station

reduce vulnerability to climate-related risks
- enhancing accessibility of urban facilities in general to improve overall quality.

The city's five-year development plan also includes a plan to shift to an alternative energy transport system using compressed natural gas. The objective is to have 200 compressed natural gas buses in 2016 and 1,000 by 2019. These actions will not only help the city reduce its greenhouse gas emissions considerably but also lead to better air quality. Further, this initiative supports the country's Intended Nationally Determined Contribution (INDC) to achieve its unconditional emissions reduction target of 29% below business-as-usual levels by 2030, or up to 41% with international support. The Government of Indonesia has established the Indonesia Climate Change Trust Fund,[6] which allows government institutions, including local governments, to apply for grants to support climate change programmes and projects. Priority areas include reduction of greenhouse gas emissions from deforestation and forest degradation; improvement of energy security and reduction of energy-related emissions; and adaptation and resilience.

With LEDS principles embedded in the Regional Medium Term Development Plan, Bogor City was able to commit financial support to implement LEDS activities in its 2015 budget. The allocation, amounting to nearly US$12 million, will be used to revitalise Bogor City's bus rapid transit system, *Transpakuan*. The city government plans to improve and expand the 27-bus fleet, currently plying a 14 km corridor across the city, and convert the vehicles to run on natural gas. Researchers from SciencesPo Urban School[7] noted that Bogor's plans for transport improvement "[not only] aim at integrating different transport modes within the city. Rather, it looks further into the larger agglomeration plan of Bogor to Jakarta by 2017." Current infrastructure planning is already looking at possible scenarios beyond a Mayor's political term, which strongly supports Bogor City's perceived strategic role as an emerging city near the capital.

Mayor Bima explains that "the bus rapid transit project aims to reduce traffic and manage road transport in the city through transport demand management and transit-oriented development".[8] Further, the promotion of low-emission fuels and high-capacity public transport can help reduce greenhouse gas emissions. The city government expects to reduce fuel consumption by up to 24,597 litres by 2018, which will then reduce CO_2 emissions by 0.58 million tons.

Other related city projects and programmes also emphasise the co-benefits of implementing LEDS. For example, Bogor City's Walkability Campaign aims to encourage environmentally friendly commuting and thereby to reduce greenhouse gas emissions and air pollution. The campaign includes a plan to build pedestrian paths complete with bicycle lanes along the city's main roads, and green areas including urban parks and trees along road medians. These will be integrated with public transport stations and other public areas to facilitate mobility. The pedestrian path is expected to stretch up to 22.5 km with a target of completion by 2020. In addition to its environmental benefits, the Walkability Campaign is expected to contribute to reducing injuries and deaths due to traffic-related accidents involving both residents and tourists. The plan also incorporates the needs of people with disabilities and older people.

In 2014, Bogor City inaugurated a programme of streetlight conversion to light-emitting diode lamps in Surya Kencana, a community in the old part of Bogor City, during the celebration of *Hari Tata Ruang Nasional*. *Hari Tata Ruang* is a special day promoted by the Indonesian government to improve public awareness of, and participation in, spatial planning and policy, and

has been observed since 2008. Surya Kencana is envisioned as a potential tourist attraction due to its rich history and culture. To further integrate the community in revitalising this heritage area, pedestrianisation programmes are in the pipeline. The community has also been selected as one of the areas for streetlight retrofitting under the Urban-LEDS project (still in planning). While such projects and initiatives have yet to realise the full benefits of climate compatible development, they are considered important milestones in the city's pursuit of low-carbon, sustainable development.

Challenges and enabling factors

Bogor City envisions itself as an environmentally friendly city located near the national capital. As a peripheral city, it has enacted strong environmental policies, bearing in mind that the continuous development of Jakarta will have an impact on Bogor's future growth.

The success of the Urban-LEDS project in Bogor City did not happen overnight. There were challenges, especially in terms of data collection for the greenhouse gas inventory, during the project's first year. The continued presence of project implementers in the city helped to create a more enabling environment for data sharing and eventually to introduce changes to the status quo. Both technical staff and political figures were highly involved in project design and management. Bogor City has a designated Regional Planning Board to manage and streamline urban sustainable development plans, while a designated environment agency, *Badan Lingkungan Hidup*, is responsible for climate change mitigation and adaptation planning, implementation, and measuring, reporting and verification (MRV). *Badan Lingkungan Hidup* also worked with other departments, recognising that urban development is a cross-cutting concern. Concurrently, ICLEI conducted regular courtesy calls with the Mayor whenever there was a new development in the project.

By combining the expertise of technical departments and keeping the political dimension involved, the project ensured that assessments such as the greenhouse gas emissions inventory did not remain as just numbers. The city has gone beyond merely quantifying its greenhouse gas emissions. Through the collaborative efforts of the Urban-LEDS Technical Working Group and Mayor Bima's leadership, a menu of concrete interventions and infrastructure projects that the city can consider in the near future has been drawn up. Some interventions, such as the Walkability Campaign, have already begun. The city government has also observed energy-saving measures, for example by passing a memorandum concerning the regulated use of air conditioners, and by encouraging city officials to take non-motorised transport every Monday. The city government owns a city bus running

"To shift Bogor City towards a low-carbon development trajectory, the city will reduce greenhouse gas emissions by developing a set of environmental and low-emission city regulations and policies. The city priorities are: to improve the quality of spatial planning and implementation; promote mass transportation, pedestrians and cyclists; and encourage urban development responsiveness to disaster risk and climate change impacts."

– Mayor Bima Arya, Bogor City (April 2014) [10]

"2013 to 2015 [are the] milestone years for Bogor in improving the city's low-emission development strategy (LEDS). We have a strong commitment and good planning to continue and improve the implementation of LEDS in Bogor as part of the support to the Indonesian national emission reduction commitment."

– Mayor Bima Arya, Bogor City (December 2015)[11]

on cooking oil, which is used to ferry employees on Mondays, while others choose to cycle. Such actions demonstrate local government's support for LEDS principles and the importance of implementing tangible projects.

Under Urban-LEDS, Bogor City has also benefitted from numerous networking opportunities as well as international exposure. Two international networking seminars included participants from other Urban-LEDS cities from Brazil, India and South Africa. European cities that have already implemented LEDS actions and projects were invited to share their experiences and lessons learned. Through these events, Bogor City learned about potential strategies that it can adapt and localise. Bogor City hosted the second Urban-LEDS International Networking Seminar in May 2015.

Building on this momentum, Bogor City was among the first to commit to the Compact of Mayors.[12] By joining the Compact, Bogor City agrees to publicly report its climate actions and commitments. This move reiterates the important role of local governments in supporting Indonesia's goal for greenhouse gas emission reduction as stipulated in its INDC. Along with other Urban-LEDS cities, Bogor City participated during the 21st Conference of the Parties (COP21) in Paris in December 2015, where the new global climate agreement was approved.

Bogor City Mayor Bima (fifth from left) hosted the Second Urban-LEDS International Networking Seminar in May 2015

Implications for decision-makers and practitioners elsewhere

The Urban-LEDS project ended in March 2016 and the experiences of Bogor City since 2013 have generated a number of practical recommendations and good practices for those involved in similar projects.

- When conducting a city-wide greenhouse gas emissions inventory, it is very important that transparency is practised, and that sources are informed as to how the gathered activity data will be used and for what purpose. It is important to establish clear coordination lines to ensure that no authority is bypassed in terms of data collection. It is also crucial to identify the individuals who hold the data needed and to build good working relationships with them. Once data gathering is complete, it is equally important to determine who will be responsible in terms of data management and sharing.
- It is important to document the process of how the inventory was completed as well as the actual calculation. Data sources should be clearly documented, including contact details of relevant persons and ministries, to facilitate future work. This is especially true when there are changes in staff composition.
- Peer-to-peer learning is one of the strategies employed by the project. It has benefitted from South–South–North exchanges among cities in four emerging economy countries along with selected European cities. Peer-to-peer learning is not about replicating a LEDS strategy that worked in another city. Rather, it is about customising a specific strategy in order to suit the local context. For example, bicycle lanes work well in European cities with wide pedestrian areas and a cool climate. When adopted in a tropical city such as Bogor, they should include other dimensions such as temperature considerations and population density.
- It is crucial that project implementers conduct intervention mapping in consultation with the local government concerned in order to check linkages and synergies of initiatives. The Urban-LEDS project worked closely with the GIZ Vertical Nationally Appropriate Mitigation Actions (V-NAMA)[13] project, particularly in the area of vertical LEDS integration – that is, ensuring that subnational and local low-carbon actions support the achievement of national targets.
- At the city level, Bogor City complemented its efforts on Urban-LEDS by joining the Asian Cities Climate Change Resilience Network to undertake an urban systems analysis with the end goal of developing local climate resilience strategies. This helped ensure that both mitigation and adaptation are addressed by the city's long-term development plans. Such initiatives at the city level emphasise the important role that local governments can play in supporting countries to achieve national climate targets such as the INDC.

Endnotes

1 Urban-LEDS is a three-year international mitigation project funded by the European Union and implemented by UN-Habitat and ICLEI. It aims to enhance the transition to low-emission urban development in emerging economy countries by offering selected local governments in Brazil, India, Indonesia and South Africa a comprehensive methodological framework to integrate low-carbon strategies into all sectors of urban planning and development. (http://www.urban-leds.org).

2 The GreenClimateCities methodology is a process tailor-made to local government. It is a clear, flexible methodology covering three phases – analyse, act and accelerate – outlining how low-emission options can be identified and integrated into urban development policies, plans and processes. (http://www.iclei.org/gcc).

3 According to the revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, activity data are defined as data on the magnitude of human activity resulting in emissions or removals taking place during a given period of time. UNFCCC (2014) 'Definitions'. United Nations Framework Convention on Climate Change. (http://unfccc.int/ghg_data/online_help/definitions/items/3817.php).

4 Sustainable Urban Transport Improvement Project –SUTIP. (www.sutip.org).

5 Indonesian Ministry of Home Affairs Regulation No. 67 of 2012 states that the "Governor, Regent, or Mayor shall conduct a Strategic Environmental Assessment (SEA) as a basis to develop long-term and mid-term development plan [...] in order to reduce the potential impact and/or environmental risks of development that might occur."

6 Climate Funds Update (n.d.) 'Indonesia Climate Change Trust Fund'. (www.climatefundsupdate.org/listing/icctf).

7 Khant, A.A. et al. (2015) 'Local leadership's motivations for urban sustainability'. Poster presented at Resilient Cities 2015, 8–10 June, Bonn. Paris: SciencesPo Urban School. (http://resilientcities2015.iclei.org/fileadmin/RC2015/files/Poster.SciencePo.pdf).

8 Presentation by Bogor Mayor, Dr Bima Arya, at Bogor Transportation Program (B-TOP) Summit, 11 June 2015, Balaikota, Bogor.

9 LECB Indonesia (2014) *Development of bus rapid transit (BRT) in Greater Jakarta (Jabodetabek BRT NAMA)*. Jakarta: Low Emission Capacity Building Indonesia/UNDP. (www.id.undp.org/content/dam/indonesia/2015/lecb/doc/august2015/11_NAMAs_BRT_Transjabodetabek.pdf?download).

10 Cavicchioli, A., Price, L. and van Staden, M. (ICLEI World Secretariat) (2016) Urban LEDS: Cities in Action. *Low Emission Development in Brazil, India, Indonesia, and South Africa 2012–2016 Final Report*. (http://urbanleds.iclei.org/fileadmin/user_upload/publications/Urban-LEDS-Final-Report.pdf).

11 Mayor Bima's speech during the Urban LEDS side event at the 21st Conference of the Parties (COP21), 7 December 2015, Paris, France.

12 The Compact of Mayors was launched by UN Secretary-General Ban Ki-moon and his Special Envoy for Cities and Climate Change, Michael R. Bloomberg, under the leadership of the world's global city networks – C40 Cities Climate Leadership Group, ICLEI and United Cities and Local Governments, with support from UN-Habitat, the UN's lead agency on urban issues. The Compact establishes a common platform to capture the impact of cities' collective actions through standardised measurement of emissions and climate risk, and consistent, public reporting of their efforts. (www.compactofmayors.org).

13 'V-NAMAs – Involving Sub-National Actors into National Mitigation Strategies through Vertically Integrated NAMAs'. (http://mitigationpartnership.net/v-namas-%E2%80%93-involving-sub-national-actors-national-mitigation-strategies-through-vertically-integrated).

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The views expressed in this document can in no way be taken to reflect the official opinion of the European Union.

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