



# INSIDE STORIES

## on climate compatible development

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### Key messages

- Increasing greenhouse gas emissions from transport threaten the growing tourism industry in Chiang Mai. To address both climate and development concerns, the city government has advocated the use of non-motorised transport (NMT).
- Climate mitigation comes with co-benefits for local development. In addition to its potential to reduce greenhouse emissions, the NMT initiative addresses other issues such as traffic congestion, air quality, income generation for the poor and the long-term viability of the tourism industry.
- Small but concrete steps toward climate mitigation can create good examples. The project on sustainable urban tourism catalysed planning for a more ambitious expansion of NMT in the city, as well as the adoption of more sustainable land-use practices and low-carbon action in other sectors.
- This very positive local story nonetheless highlights some of the tensions and trade-offs around green tourism: namely, that local initiatives may address emissions in situ, but not the emissions produced by tourists as they travel to the locality.

### Authors:

**Kyoko Kusakabe, Pujan Shrestha and S. Kumar**, Asian Institute of Technology  
**Trinnawat Suwanprik**, Chiang Mai Municipality

## Catalysing sustainable tourism: The case of Chiang Mai, Thailand

**Chiang Mai is one of the fastest growing cities in Thailand and serves as a regional economic and cultural hub in the northern part of the country. Its rich cultural heritage and pristine natural resources draw millions of tourists each year. However, rapid growth and expansion, exacerbated by the rising tourist influx, has put a strain on the city's natural resources. Faced with rampant unplanned development, air and water pollution, waste management problems and traffic congestion, the city of Chiang Mai has launched the non-motorised transport (NMT) system, which aims to reduce greenhouse gas emissions and create employment opportunities for the urban poor. Because of its many co-benefits, this climate compatible strategy has gained support from policy-makers and citizens alike. This case study looks at how the NMT plan was developed, what characteristics of the planning process influenced its outcome, and what lessons the City of Chiang Mai has learned about climate compatible development planning as a result.**

### The need for a more sustainable approach

Supporting over 300,000 people in an area of 40,216 km<sup>2</sup>,<sup>1</sup> the capital of Chiang Mai Province serves as a regional economic and cultural hub in Northern Thailand. In the last 10 years, the city's economy has grown continuously, largely driven by the commercial sector and tourism industry. In 2012, the tourism sector generated more than 35% of provincial GDP.<sup>2</sup> Chiang Mai hosts millions of tourists every year – around 5 million in 2012 – and this number is increasing: tourism grew by 18% in 2012

compared to 2011.<sup>3</sup> The industry generates significant greenhouse gas emissions. The Department of Tourism noted that over 35% of visitors from Bangkok – which is only 750 kilometres away from Chiang Mai – arrive by air, and most tourists use private cars and buses to navigate the city.

Chiang Mai is also becoming a regional hub for transportation, aviation, education and medical services. Yet it is rapidly outgrowing its infrastructure. The once-compact city centre is giving way to sprawling expansion. Unplanned urban development, the absence of traffic management policies and

practices, and a lack of integrated transport and land use planning have left Chiang Mai with major transport issues. Traffic congestion, air pollution, an inadequate public transport system and insufficient pedestrian walkways further encourage the use of private cars and motorbikes. As a result, personal mobility, liveability and environmental sustainability have declined, and urban transport has become a major source of greenhouse gas emissions. Yet maintaining a clean and uncongested environment is integral to the tourist experience that Chiang Mai is marketing to both domestic and foreign tourists. This issue became an important impetus for the city to look further into options to reduce greenhouse gas emissions.

The city recognised the need to identify and quantify its greenhouse gas emissions. A project called ‘Sustainable Urban Tourism through Low-carbon Initiatives: Experiences from Hue and Chiang Mai’ estimated the emissions emitted by the products and services associated with the tourism sector in Chiang Mai. This was conducted in collaboration with the Asian Institute of Technology (AIT), Chiang Mai Municipality, and the Hue City Centre for International Cooperation. Funded by the Sustainable Mekong Research Network (SUMERNET) and CDKN, the project used the Bilan Carbone® tool<sup>4</sup> to estimate tourism-related greenhouse gas emissions

in 2011. It also explored strategies for low-carbon emissions while simultaneously creating green job opportunities for men and women, particularly the poor.

Table 1 summarises emissions produced by the tourism sector in Chiang Mai and their respective percentage of total emissions. In total, Chiang Mai emitted around 4,233,304 tons of carbon dioxide equivalent (CO<sub>2</sub>e) from products and services associated with the tourism sector in 2011.<sup>5</sup> As seen here, the largest source of greenhouse gas emissions is the transport sector. This case study does not directly analyse the larger carbon footprint created by travel to and from the city but focuses on progress made in reducing emissions within Chiang Mai.

### Support mechanisms and city initiatives

Programmes and strategies for low-carbon development are often technology-oriented, such as mass transit systems, and lack consideration of the impacts on local people.<sup>7</sup> This is especially true for the tourism industry, where employment benefits and economic opportunities are mostly limited to the hospitality sector (e.g. large companies) and may neglect to match jobs with the skills of local people.<sup>8</sup> Undertaking the Sustainable Urban Transport project was part of Chiang Mai’s

effort to explore a win-win strategy to alleviate poverty and promote low-carbon development in urban tourism. The city sought a multi-stakeholder partnership among researchers, local authorities, private companies, non-governmental organisations and locals, and the project adopted a participatory approach to identify suitable options for reducing greenhouse gas emissions while also creating income-generating opportunities for the poor.

Based on consultation with stakeholders, the project assessed climate change mitigation options vis-à-vis their potential for creating local employment. To reduce greenhouse gas emissions, a greater emphasis was placed on the transportation sector. Because air travel emissions are outside the city’s purview, stakeholders identified measures to reduce emissions from ground transportation and suggested developing a non-motorised transport (NMT) system in Chiang Mai Municipality.

NMT is any form of transportation that uses human or animal power to move people or goods using methods other than the combustion engine.<sup>9</sup> It includes walking, cycling, small-wheeled transport, rickshaws, carts, etc., and provides flexible options for mobility.

By reducing road congestion, NMT can enhance recreational opportunities for tourists. Walking and cycling in particular directly reduce carbon dioxide emissions that would have originated from motorised transport. These are also modes of access to public transport and, thus, their promotion may lead to increased public transport use. In terms of socioeconomic benefits, restricting motorised transport increases use of pedestrian zones, where tourists and other visitors are more likely to buy handicrafts and other goods from local vendors along the sidewalk.

Consequently, Chiang Mai prepared an NMT campaign with plans for a bicycle route and

**Table 1: Summary of greenhouse gas emissions produced by the tourism sector in Chiang Mai**

Sources	Emissions (tons of CO <sub>2</sub> e)	Percentage
Travel (travel within the city and to the city from outside)	4,233,304	95.8%
Energy (electricity and fuel used)	77,695	1.8%
Property (infrastructure and assets)	53,905	1.2%
Direct waste (food, waste and waste water)	29,851	0.7%
Inputs (material, products and services)	22,756	0.5%
<b>Total</b>	<b>4,417,511</b>	<b>100%</b>

Source: Kumar et al. (2013)<sup>6</sup>

sidewalk that connects major hotel areas with the Three Kings Monument Square and moat in Chiang Mai. Increasing the number of bicycle routes and cyclists in the inner city can create employment opportunities for specific groups such as bicycle rental shops and repair shops, bicycle sellers, street vendors, pedicab providers and tour guides. Implementing NMT options in the area could replace 535,820 to 1,339,550 local vehicle (diesel) kilometres travelled per year, cutting 230–570 tons of CO<sub>2</sub>e greenhouse gas emissions per year. This translates to a reduction of 0.6–1.6% of greenhouse gas emissions from ground transport within the city.

The Sustainable Urban Transport Project in Chiang Mai is still under detailed design and construction in parallel with improvement of the overall city centre. As of early 2014, the cycling and walking centre is being built, and some final modifications are being made to designs, in response to comments from stakeholders in nearby communities. The city government aims to increase its bicycle lane networks from 4% to 10% within the city centre. Other proposed activities include reduction of the speed limit by 20% for vehicles within the canal area, introducing car free days, promoting segways, and organising exhibitions that promote cycling. The city government has garnered support from other stakeholders to advocate cycling; for example, the Chiang Mai Sunday Cycling Club organised the 2014 Bicycle Festival in February 2014.

## Enabling factors

Three related factors stimulated the city's interest in and progress in implementing a sustainable urban transport approach:

1. **Its relevance to Chiang Mai's long-term development plan.** Decision-makers realised that the initiative is critical to enhancing the city's liveability and maintaining its attractiveness as a leading tourist destination. Particularly, the sustainable transport approach

addresses both the problem of increasing traffic congestion and the rising demand for city transportation that can serve both tourists and residents of Chiang Mai. Sustainable urban transport represents a more sustainable urban tourism characterised by shift in means of transport towards greener options.

2. **Previous experience in implementing low-carbon initiatives.** Chiang Mai had previously worked towards low-carbon development options through its involvement in the 'Action Towards Resource-efficient and Low-carbon Cities in Asia', a project funded by French Agency for Energy and Environment Management (ADEME) in collaboration with the AIT. The programme involved capacity building on climate change issues, greenhouse gas emissions inventories, climate and energy plans, and included a pilot activity on greenhouse gas mitigation. This laid the foundation for the city's interest in opportunities for climate compatible urban tourism.
3. **Potential for a win-win situation.** The most important impetus for the

municipality's decision to develop NMT is its potential to reduce greenhouse gas emissions while providing income-generating opportunities for the poor, including tricycle and bicycle operators, as well as street vendors by offering opportunities for them to earn extra income.

## Implications and lessons learned

**Support by the top authority is critical.** Any venture is more likely to succeed if it has the interest and full support of the highest authority. Obtaining the top authority's buy-in is essential to obtaining institutional backing and wider support. The Sustainable Urban Transport project generated a greater impact because of the city authorities' support for policy change. The Mayor of Chiang Mai, Mr Tassani Buranupakorn, was keen to work toward low-carbon development options, and this project advanced his vision.

**A participatory approach pays off.** The project's inclusive nature fostered a multi-stakeholder partnership. Almost all partners were involved from the beginning

### Key outcomes of the Sustainable Urban Tourism project

**Catalytic effect on low-carbon development:** Although it is too early to pinpoint any direct impacts of the project, it has served as positive reinforcement and further encouraged the city to strengthen its commitment to low-carbon development. Since the project's completion, the city has taken recommended options for the development and extension of an NMT zone as one of its policy statements and has committed to further action.<sup>10</sup> The policy statement was approved by the Mayor of Chiang Mai and local authorities aim to increase the area of non-motorised zones (e.g. bicycle lanes) in the city centre by up to 10% (currently at 4%).

**Increased public awareness:** Several activities organised within the project framework resulted in a better understanding of low-carbon initiatives by both local authorities and the general public. Public consultations and local-language publications have increased people's awareness of the importance of NMT and the need to reduce greenhouse gas emissions and address climate change issues in general. The involvement of the media as a key stakeholder increased the project's publicity. The public consultations were broadcasted on a local news channel, and this may have influenced the swiftness of local authorities' actions on the issue.



**W**e all know the problem of air pollution, traffic jams and road safety. The Sustainable Urban Transport project is the first that tackles those threats seriously. However, it is those who love Chiang Mai that truly make the change. Let us act for our health, our city, our future!

– Mr Tassani Buranupakorn, Mayor of Chiang Mai

of the project, including tourism service providers (i.e. hotels, restaurants, travel agencies, etc.) who provided data for the calculation of greenhouse gas emissions, and stakeholders who participated during the meeting to prioritise the mitigation options (suggested by the project partners) as well as to provide policy recommendations.

**A successful project can generate positive spin-off.** The project bridged the gap between climate data and actual practice, and explored how this data can be effectively communicated. As a result, the Three Kings Monument area is being used as a demonstration site in a new pilot project on NMT. The pilot project is currently

under construction with financial support from the Global Environment Facility (GEF), which aims to undertake integrated land use and sustainable urban transport planning in Chiang Mai through the improvement/development of a non-motorised zone. The Sustainable Urban Transportation project functioned as an initial catalyst and served as a discussion platform for the GEF-project. It is expected that the pilot project will make cycling and walking more appealing in Chiang Mai.

**Good results can initiate behavioural change toward low-carbon development options.** The success of the project and the level of discussion it was able to generate have paved the way forward for more low-carbon-related initiatives in the city. Chiang Mai has realised that the development of an NMT area must go hand-in-hand with a willingness in the community to adopt a low-carbon lifestyle. Chiang Mai plans to set up the Chiang Mai City Council for Climate Change to promote Low-Carbon Campuses and prepare a Low Emission Development Strategy (LEDS) for participating universities. To this end, it will launch related activities and implement LEDS for academic institutes, promoting these activities internationally to increase Chiang Mai's reputation as a low-carbon city.

## Endnotes

- 1 TIS-C (2012) *Economic structure of the region*. Chiang Mai: Trade and Investment Service Centre Chiang Mai (TIS-C). [http://tisccm.moc.go.th/tisc/content.aspx?file\\_upload\\_id=3546](http://tisccm.moc.go.th/tisc/content.aspx?file_upload_id=3546)
- 2 Department of Tourism (2012) *International Tourist Arrivals in Thailand 2012*. Bangkok, Thailand: Government of Thailand. <http://tourism.go.th/index.php?mod=WebTourism&file=details&dID=7&cID=276&dclID=620>
- 3 Ibid.
- 4 Bilan Carbone® is an Excel spreadsheet developed by the French Agency for Environment and Energy Management (ADEME) to calculate greenhouse gas emissions of organisations or territory. It provides greenhouse gas emissions in carbon or carbon dioxide equivalent in kg or ton. More information is available at <http://www.terre.tv/?lang=en&vid=1151> and at [www.ademe.fr](http://www.ademe.fr).
- 5 Kumar, S., Kusakabe, K., Pradhan, P., Shrestha, P., Goteti, S., Tuan, T.A., Meteejaroenwong, E., Suwanprik, S., and Linh, K. (2013). 'Greenhouse gas emissions from tourism service providers: Case studies in Chiang Mai, Thailand and Hue, Vietnam', in Lebel, L. et al. (eds) *Livelihoods, ecosystem services and the challenges of regional integration in the Mekong region*. Selangor, Malaysia: Strategic Information and Research Development Centre (SIRD).
- 6 Ibid.
- 7 Boyd, E. (2002) 'The Noel Kempff project in Bolivia: Gender, power, and decision-making in climate mitigation'. *Gender and Development* 10(2): 70–77.
- 8 Liu, A. and Wall, G. (2006) 'Planning tourism employment: A developing country perspective'. *Tourism Management* 27: 159–170.
- 9 Adebambo, S. O. and Yetunde, S. F. (2010) 'Evaluation of non-motorized transport (NMT) system in the movements of market wares in a medium-sized city of a developing economy'. *American Journal of Scientific Research* 11: 72–85.
- 10 AIT (2013) 'Towards green pathway-Chiang Mai Municipality'. Policy brief. Khlung Luang, Thailand: Asian Institute of Technology. [www.sut.ait.ac.th](http://www.sut.ait.ac.th)



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Ministry of Foreign Affairs of the Netherlands

[e: enquiries@cdkn.org](mailto:enquiries@cdkn.org)

[t: +44 \(0\) 207 212 4111](tel:+312072124111)

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