



## City profile

# Balikpapan: Urban planning and development in anticipation of the post-oil industry era



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## ABSTRACT

Balikpapan has grown to become one of the most important cities in Indonesia, due to its oil industry. However, with the decline in oil production and the global decrease in oil prices, the city has attempted to diversify its industrial and service activity economy. This paper assesses three key factors underlying this transformation: public policies and regulations, urban infrastructure, and knowledge creation and utilisation. Future opportunities and challenges the city may face are also discussed. In the light of urban planning and development perspectives, this study can become a lesson for other cities, especially in developing countries, which some of them may overly rely on natural resources-based economy, to anticipate the transition period after an economic boom due to natural resource endowment and its price decrease.

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## 1. Introduction

The oil industry has been a vital part of the Indonesian economy since 1900s (BP, 2015). In line with the international literature, cities or urban areas that rely on the oil industry, or other natural resource-based businesses, experience rapid increases in their economy, demand for skilled workers, and population, until the peak period of the business (Acuto, 2010; Huiping, 2013; Li, Wu, & Zang, 2014). They may also become a central node and magnet location for their regions, due to their high quality infrastructure and their investments in massive scale projects that stimulate regional economic development (Pacione, 2005; Woodworth, 2015).

Balikpapan City, in the East Kalimantan Province of Indonesia, is a good example of an oil industry helping a city. The city's land administration and its industries have been evolving, because of their oil exploration and refinery activities (BPS Kota Balikpapan, 2015). Known as the Indonesian's oil capital since the late 19th century, Balikpapan has benefitted from the oil boom and is the base for many major oil companies and related industries. The presence of these companies has attracted a significant number of middle to high income workers to settle in Balikpapan, thereby contributing to the growing influx of people,

as well as businesses and retail industries (BPS Kota Balikpapan, 2015). Naturally, the central and provincial governments have a strong interest in ensuring that oil revenue continues to economically provide for the region by heavily investing in critical infrastructure.

In the late 1990s, Indonesia's oil production – including that of Balikpapan – declined, due to the natural maturation of the existing oil fields. This was combined with a slower reserve replacement rate and a lack of investment to seek new potential oil reserves (Nordås, Vatne, & Heum, 2003). As a consequence, instead of as an oil exporter, Indonesia became a net oil importer in 2004. In 2008, the government withdrew from the Organisation of Petroleum Exporting Countries (OPEC) after being the only Asia-Pacific member of the organisation for 46 years. This decline, together with the on-going global oil industry crisis<sup>1</sup>, has led to future uncertainties concerning the urban economy, social development and the quality of life of its residents.

This study attempts to investigate Balikpapan's city profile, with a strong focus on its urban planning and development process in anticipating the transition to expand its economy beyond the oil industry. It is argued that few studies, especially from developing countries, exist that regard the transitioning process of cities with oil-based industries to attain more sustainable urban economic development. This study

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<sup>1</sup> During the process of this study (2015–2016), low oil prices (below 30 USD per barrel during its worst period in early 2016) have been affected the global oil industry, including that of Balikpapan. As a comparison, oil prices hit more than 140 USD per barrel in 2008 and 120 USD in 2012 during the peak periods.

attempts to fill this research gap with a case from Balikpapan City in Indonesia. The analysis depicts three theoretical factors as the benchmark to assess Balikpapan City's readiness and potential challenges in diversifying its economy. This paper draws its information from official government reports, scientific literature and local newspaper articles. The analysis was strengthened by a set of field surveys, conducted through observations and interviews with several key informants in Balikpapan in summer 2014.

The rest of this profile is structured as follows. In Section 2, a brief urban history, social-economic situation, and spatial plan of the city are presented. Section 3 and 4 examine theoretical practices of urban development beyond the oil-industry-based urban economy and its relevance for Balikpapan. Section 5 provides critical discussions and future challenges for the city to establish a sustainable urban development that expand to other sectors beside the oil industry. Finally, the conclusion and summary are elaborated in Section 6.

## 2. Urban history and spatial plan

### 2.1. Urban development history

Balikpapan is a coastal city on the eastern part of Kalimantan Island,<sup>2</sup> Indonesia (Figs. 1 and 2). The total land area is approximately 503 km<sup>2</sup> and the city administration is divided into six districts (*kecamatan*) and 34 sub-districts or urban communities (*kelurahan*) (Fig. 3).

The old Balikpapan was a group of scattered fishing villages that was part of the *Kutai Kertanegara Kingdom*<sup>3</sup> until the mid-19th century. With the discovery of a huge oil reserve in the East Kalimantan area, the Dutch Indies colonial administration—who occupied Indonesia between the 18th and 19th centuries—purchased these villages, including the oil reserve fields, from the *Kutai Kertanegara Kingdom*. On 10 February 1897, the first oil drilling began in Balikpapan in a location that is now known as the *Mathilda* oil well. The date of this first oil drilling was then set as the anniversary of Balikpapan City. In 1899, the Dutch Indies colonial administration gave the township's official status to Balikpapan. Later on, since 1907, *Bataafsche Petroleum Maatschappij* (BPM), a subsidiary of the *Royal Dutch Shell* oil company, made Balikpapan as its headquarters and imported skilled labourers, engineers and managers from overseas. Following this, numerous multi-national companies came to Balikpapan to invest in the oil industry. This resulted in the economy and the social structure of the village growing immensely. Consequently, Balikpapan transformed into a modern city with several industrial facilities, including an airport and modern seaport; it also provided basic services to temporal expatriates and local residents.

During World War II (WWII), Balikpapan experienced its darkest urban history. Most of its critical infrastructure, including the oil refinery stations and the seaport, were completely burned to the ground. Although Dutch colonisation in Indonesia ended after WWII, with the independence of Indonesia on 17 August 1945, BPM extended its activities in Balikpapan until 1965. In 1965, *Pertamina*, the Indonesian state-owned oil company, took control over the ownership of BPM in Balikpapan, together with its refinery facilities and some of its oil exploration activities.

The oil industry in Balikpapan has continued to grow (Fig. 4). At the present time, the city is the second largest producer of refined crude oil in Indonesia (after the *Cilacap* Regency), with a total production of about 260 million barrels per day (Hasan, Mahlia, & Nur, 2012). However, the decline of Indonesia's oil production since the late 1990 (Fig. 5) has, to some extent, affected Balikpapan's production of refined oil. Although Balikpapan's oil industry can still rely on crude oil from other

countries, the global decline in oil prices has put the city's economy at risk. The effects have been extreme in terms of economic growth since 2000 (Fig. 6).

### 2.2. Urban spatial plan

To better understand Balikpapan's situation, the history of Balikpapan's urban spatial plan and its strong association with the oil industry will be discussed. As can be seen from the map of the city that was published by BPM in 1939 (Fig. 7), Central Balikpapan was designed around the *Mathilda* oil field and other oil-related facilities. The west part of the city (east coast of Balikpapan bay) was occupied by the oil refinery plants and the seaport to transport oil. Next to the east of the oil refinery plants were the offices of the BPM and its housing area for its workers (these are now the offices of the *Pertamina* and its official residents).

On the coast of the Makassar Strait, south of the *Mathilda* oil field, was the colonial administration offices and the commercial areas, which served as the city centre. To the north of the oil refinery plants was the local residential areas (Fig. 8), or the sub-centre of the city. Figs. 9 and 10 show the developments of road and port infrastructures as part of the strategy that supported the oil industry.

The first official spatial plan of Balikpapan City was issued in 1973 and renewed in 1983. As can be seen in Fig. 11, the city spatial expansion and development has been reviewed and revised several times to accommodate the changes that have taken place in the city. The urban space has expanded to the southern and eastern part of Balikpapan, triggered by the development of critical urban infrastructures. For example, the introduction of the airport in South Balikpapan has increased built-up activities along the roads that connected southern and central part of the city. Similarly, the spatial expansion in West Balikpapan was strongly influenced by the construction of new roads that linked the city centre and several remote sub-districts. The other important element of the plan was the connection between the north and south areas of the city, through the development of the city ring-roads.

The latest city spatial plan was introduced in 2012 for the period of 2012–2032 (Fig. 12). In general, this spatial plans attempts to offer new directions in expanding Balikpapan's activities to the east and strengthening the activities in the north by establishing sub-centres of urban services in the *Teritip* sub-district (east) and *Karang Joang* sub-district (north) with several tertiary urban services centres. The plan also provides spatial zones for new industrial areas to attract new industrial development and investments from the private sector. The critical public facilities (e.g., airport, seaport, and expressways) are prioritized to be modernized. With respect to the urban environment issue, the plan allocated 37% of Balikpapan towards green zones including urban forest and natural parks.

### 2.3. Urban social and economic situation

Socio-demographic situation in Balikpapan is very fundamental to support the city's economic transformation into the post oil industry era. The population has increased gradually (see Fig. 13) to about 600,000 people in 2014, with growth rate about 1.74% between 2002 and 2014 (*BPS Kota Balikpapan, 2015*). The majority of Balikpapan's population settles in the city centre (Balikpapan Tengah or Central Balikpapan sub district), while the total population density has substantially increased over time (Fig. 14). In 2015, the population density of Central Balikpapan reached 8902 people per km<sup>2</sup>, which was twice higher than Balikpapan Selatan (South Balikpapan)—the second populous sub-district in the city. The figure also demonstrates that the total population living in Central Balikpapan was about eight times higher than the entire Balikpapan's population density (1107 people per km<sup>2</sup>). Consequently, Central Balikpapan has transformed as the city core, empowering the economic growth for the entire city due to its dense settlements, commerce activities, governmental offices, and

<sup>2</sup> It used to be called Borneo Island in the international literature. However, Kalimantan is the official name of the island.

<sup>3</sup> After the Independence of Indonesia, the *Kutai Kertanegara Kingdom* decided to join this new country. In 1960, the *Kutai Kertanegara Kingdom* officially handed over its power and authority to the government of the Republic of Indonesia.

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