Preserving Bang Krachao's Green Space through Agriculture

Kees Krul

Urban sprawl brings about considerable changes in the peripheral areas of the city. Rich in many vegetation types, mangrove forests, and agricultural plots, Bang Krachao is one of the largest remaining green areas in the proximity of Bangkok. This area is currently under threat as Bangkok's urban sprawl has not gone without effect in Bang Krachao: green areas are diminishing due to an increased developmental interest in the area together with a growing number of residents. This essay examines the role of the agricultural sector in persevering the remaining green spaces by employing a SWOT-analysis. Findings show that despite a number of weaknesses and threats, there are several important opportunities the sector can capitalize on. Corresponding initiatives are suggested that help to preserve the remaining green spaces and at the same time enhance Bang Krachao's agriculture sector. Without new initiatives to reverse urban sprawl, it is likely that the 'green lung of Bangkok' will be filled with more concrete and asphalt.

Keywords: Urban Agriculture, Bangkok, Urbanization, Green Spaces, Bang Krachao, SWOT

The world's population is on the rise: while the Earth currently holds 7.3 billion people, it is expected that this number will increase to 9.5 billion by 2050 (UNDESA, 2013). The world is getting more urbanized, both absolutely and relatively; the urban population recently exceeded the rural population for the first time in history. As an outcome the world's landscape is increasingly occupied with more and larger cities, inducing deep changes in the spatial realm. Accordingly, the combined challenges of accommodating the high pressures of economic and population growth and urbanization pose serious challenges to urban planners. Failure often results in considerable social and environmental costs, such as air and water pollution, traffic congestion, and the loss of green spaces. As this essay will demonstrate, agriculture in high-density environments make a contribution to making cities more sustainable and preserving green spaces.

This essay uses Bang Krachao, one of the largest green areas in the direct proximity of Bangkok, as a case study. The study is based on primary data collected through interviews with experts, local officers and scholars, semi-structured interviews and a group interview conducted with farmers in Bang Krachao, as well as site observations. A SWOT-analysis is employed to examine the strengths, weaknesses, opportunities and threats of Bang Krachao's agricultural sector. The SWOT - an abbreviation for Strengths, Weaknesses, Opportunities and Strengths - is widely used as a tool for planning purposes (Helms & Nixon, 2010). Weihrich (1999) modified the SWOT into the format of a matrix, matching the internal factors (strengths and weaknesses) with its external factors (opportunities and threats) to generate strategies. In accordance with the results of the analysis, corresponding initiatives are suggested with the aim to (i) enhance Bang Krachao's agricultural sector, and (ii) help to preserve the remaining green areas against the backdrop of Bangkok's urbanization.

Bangkok's green lung

Ever since Bangkok became a capital city, the city and surrounding areas have evolved as Thailand's center of urban growth. Industrial growth accelerated during the post-war period and accor-

dingly Bangkok attracted a large wave of rural and foreign migrants. The pressure in the inner city increased and resulted in soaring land prices, exacerbating pollution and heavy traffic congestion, which motivated a geographical drift into Bangkok's periphery (Thaitakoo & McGrath, 2009).

Bang Krachao, administered in the Phra Pradeang district, is a peripheral area of Bangkok and has become one of the last-standing large-scale green areas in Bangkok today (Figure 1). Rich in many vegetation types, gardens, mangrove forests and agricultural fields, the area comprises approximately 2000 hectares and is home to some 40,000 inhabitants. The 'green lung of Bangkok', as the area is often referred to, plays a key role in the city's ecological and climate control systems. Bang Krachao's many trees for instance, provide a flow of fresh air into the dense city. Culturally, Bang Krachao is rich in its cultural heritage, traditional lifestyles, and combined

Figure 1. An aerial view of Bangkok and Bang Krachao, which is sometimes referred to as a 'pig stomach' or 'green lung' (used by permission, © 2015 Esri, DigitalGlobe, Earthstar Geographics, CNES/ Airbus DS, GeoEye, USDA FSA, USGS, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community)

with its high variety of wildlife and biodiversity, the area makes for a unique and highly valuable part of the city (Figure 2).

Agriculture in Bang Krachao remains an important source of income in the area, and is widely practiced by some 800 households over an area of about 400 hectares (Sommeechai, 2012). It is mostly practiced by small-scale farmers who work on plots no larger than one hectare. The agriculture of Bang Krachao includes fruit orchards, decorative plants, or a mixed pattern of agricultural practices with fish and frog ponds, for example. The three most commonly cultivated fruits are mango, coconut and banana, while a large number of ornamental plants are also grown on the peninsula.

Figure 2. Traditional architecture in Bang Krachao (Source: the author)

The urban threat

Bangkok's continuous urban sprawl and infrastructural improvements have not gone without effect in Bang Krachao. Statistics show that urban settlements are increasingly emerging in the area: while the percentage of green areas was 85 percent in 1990, it had declined to 73 percent in 2001. Simultaneously, the percentage land area classified as urban or construction areas have increased from 11 to 24 percent during the same period (Plake, 2011). The number of residents is also rising, witnessed by an increase from 33,475 inhabitants in 1991 to 39,450 inhabitants in 2009 (ibid). While more residential areas are being constructed (Figure 3), the arrival of new residents, automobiles, and industrial sites in Bangkok and Bang Krachao have caused more waste and pollution which degrades the quality of land, air and water. Bangkok's main river for instance, the Chao Praya river, circumnavigates around Bang Krachao and determines much of the water quality in the area. Farmers argue that large industrial ships and industrial sites along the river have increasingly polluted the river. Pollution of this kind is especially alarming for food production, as it can contaminate cultivated food (Birley & Lock, 1999).

Bangkok's urban planning system remains largely ineffective in controlling urban sprawl as an outcome of decentralization, government downsizing and an overlap in planning authorities (Ratanawaraha, 2010). Planning authorities lack the staff and budget to effectively reinforce and monitor new developments in Bang Krachao (ibid). Other commenters have argued that

Figure 3 Bang Krachao has become a popular retreat for wealthy Bangkokians during the weekends (Source: the author)

national development plans have traditionally focused on maximum economic benefits while ignoring the importance of green spaces ((Kulrisombat & Siri, 2009) . Even though there are specific construction regulations in Bang Krachao that aim to restrict new developments from taking place, respondents argue that these are not always enforced by the local officials in charge. Another argument is that Bang Krachao is relatively unknown among the residents and tourists of Bangkok (Lambregts et al., 2011). This means that the loss of Bang Krachao's green spaces goes largely unnoticed and there is little public support for the preservation of the area.

A look at Bang Krachao's agricultural sector

Bang Krachao's agricultural sector is characterized by a motivated and committed group of farmers. This study finds an exceptionally high job appreciation from the farmers, with some claiming that farming is "the best job in the world". They also demonstrate a shared concern about urban sprawl in the area, and have staged their own initiatives to strengthen the sector and preserve the remaining green spaces. A related strength is the products of the farmers, which have been recognized for their high quality and excellent taste. Although Bang Krachao's environmental conditions

make it challenging to grow certain crops, farmers claim that it is exactly these conditions which contribute to the distinct taste of their fruits. It also should be noted here that most farmers exclusively use organic fertilizers, instead of chemicals, which makes products from Bang Krachao largely chemical-free and organic. Another related strength is the high market potential, as farmers indicate that there is plenty of demand for their products (Figure 4). Besides Bang Krachao's own popular 'floating market', the proximity to Bangkok also offers a huge market potential.

Several weaknesses of Bang Krachao's agricultural sector can be identified as well. Perhaps the most striking weakness is that there is no renewed interest in the farming occupation from the young generation. Farmers claim that the youth find agriculture too physically demanding or simply too dirty, and instead prefer the modern city life on offer just across the Chao Praya river. This raises demographic issues as well, as most farmers are already over 50 years old. One coconut farmer argued that he was no longer able to meet all the physical requirements of his occupation, such as climbing the ladder to collect fruits. Farmers are furthermore found to be ill-organized and communicate poorly much amongst themselves, while NGO's, governmental and extension services remain largely absent. Another weakness is that most farmers do not possess land, but lease

Figure 4 Farmers preparing products for retail (Source: the author)

it from a landholder. As land prices have gone up over the years, it has become more lucrative to sell the land for development purposes instead of using it for farming purposes. Land insecurity is a further issue because farmers often have no formal long-term agreements, and are therefore disincentivized to make the necessary long-term investments on their land. Site observations as illustrated in Figure 5 show many speculative plots in Bang Krachao that have been abandoned and are awaiting to be sold to developers.

Continuous urban sprawl in and around Bang Krachao has resulted in the environmental degradation of land, water and air, further weakening the agricultural sector. This is in addition to problems that arise from changing climatic conditions that affect Bang Krachao, for instance dying plants as a result of high temperatures and overexposure to sunlight. Despite the many weaknesses found in Bang Krachao's agricultural sector, the next section shows that there are also many opportunities that can help to improve the sector and preserve Bang Krachao's green space.

Opportunities for Bang Krachao's agriculture

Global environmental concerns are growing, and

Figure 5 Abandoned and speculative plots (Source: the author)

such concerns are reflected in city planning. Urban agriculture can constitute an important contribution in making cities more green, sustainable, and resilient to changing climatic conditions. Bang Krachao for instance, helps to mitigate Bangkok's urban heat island effect (Lambregts et al., 2011). In both the national plans of Thailand and city plans of Bangkok, environmental issues have become a priority in recent years (NESDP, 2011). It is unfortunate that given Bangkok's weak urban planning system, these intentions continue to remain largely notional (Boonprasirt, 1997). Nevertheless it underlines a concern by political actors at different levels, which can become an important opportunity for Bang Krachao.

Opportunities are also present in the agricultural sector. Sustainable and organic agriculture have been promoted in recent years, together with initiatives that aim to increase productivity yields (Rattanasuteerakul, 2010). The '1 rai 100,000 baht' initiative for example, aims to create a revenue of 100,000 baht per 1 rai (about 3,000 USD per 16 hectares). King Bhumibol's philosophy of a 'sufficiency economy', which has already been promoted by an agricultural learning center in Bang Krachao, is another initiative that stimulates agriculture (Kasem and Thapa, 2012). 'One Tambon One Product' (OTOP), a programme that supports the local products of each Thai sub-district, has also been implemented in each of Bang Krachao's six sub-districts. These examples show that the agricultural sector in the Thai context is dynamic and open to new initiatives.

The uniqueness of the area can also be considered an opportunity. The area is often referred as 'the green lung of Bangkok', 'the best urban oasis of Asia', or as a 'green paradise' (see Marshall, 2006). The area has received royal attention from Thailand's king in 1977, and by the Princess Maha Chakri Sirindhorn, who, in 2006, gave a royal recommendation for the conservation and development of the area (Sommeechia, 2012). These events have confirmed Bang Krachao's unique and green character and in turn led to a stricter planning and building code and enhanced the awareness and appreciation of the area.

Initiatives

The current situation of the agriculture in Bang Krachao can be summarized as critical but simultaneously full of strengths and opportunities. Following the findings from the SWOT analysis above, I suggest two strategies that aim to enhance the sector and preserve Bang Krachao's green spaces at the same time.

Diversification of agricultural activities recognizes the different roles and functions that agriculture can offer. The proximity to Bangkok, which in the analysis is interpreted as both a threat and opportunity, plays a key role: over ten million Bangkokians and a large number of tourists make a vast group of potential visitors to the area. Bang Krachao's agricultural sector can diversify from merely food production to other functions such as tourism, recreation and education. A sleeping-on-the-farm initiative, farmer's markets, or educational seminars are common examples among urban agriculture initiatives, which have also been suggested for Bang Krachao (Lambregts et al., 2011; Plake, 2011). Bang Krachao's floating market, which sells local products, as well as various homestay programs have already tapped into some of these opportunities. Income diversification can make the agricultural sector more resilient especially in periods when the sector is hit by natural adversity or market fluctuations. Orientating services towards the general public will also result in more awareness of Bang Krachao and could spark a renewed interest in agriculture, something that is needed to preserve the green areas.

A second initiative is to create a special label for Bang Krachao's agricultural products. Like other similar labels for food, the producers receive benefits such as improved income, economic stability, diversification of income, and

access to new markets (Nelson & Pound, 2009). The farmers can capitalize on the organic nature and high quality of their products, and distribute these throughout Bangkok. Moreover, the label will act as an enticement for people to visit the area and its farms, while also gaining public support for preservation. With a diversification of agricultural activities and a Bang Krachao label, the sector can in turn become more vital by offering prospects for younger generations.

Agriculture in Bang Krachao: A critical but promising future

Given that Bangkok's urbanization continues to enter into Bang Krachao's green realm, without new initiatives it is likely that the 'green lung of Bangkok' will be filled with more concrete and asphalt. This is something that ultimately will ameliorate Bang Krachao's function as a major green space and thus its unique character. This study has indicated that although urbanization poses the greatest threat to Bang Krachao's green domain, the proximity to the city is paradoxically the area's source of potential opportunity. Through the injection of new initiatives, Bangkok's many citizens and tourists need to become more engaged with Bang Krachao's agricultural sector. A healthy interaction stimulated through visits or the selling of local products can prompt the much needed public awareness to preserve the area, whilst concurrently enhancing the agricultural sector. A revived and more resilient agricultural sector will then bring some fresh air into Bangkok's green lung.

Kees Krul recently graduated with a Master Asian Studies from the Centre for East and Southeast Asian Studies at Lund University. His primary areas of interest are food security and agriculture and he is currently in Beijing studying Chinese. Email krul.kees@gmail.com

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