Renewal of Tiexi old industrial area

by Zhang Liming, Institute of Applied Ecology Chinese Academy of Sciences

Old industrial areas had often showed long periods of economic growth, before they declined or even collapsed. Their position became vulnerable due to technological change or the increasing opportunities to shift production to other regions or countries. The old industrial areas have been facing many challenges, such as increasing environmental pollutants, ecological degradation. Recently, many regional and national authorities have devised policies to renewal old industrial areas.

The old industrial areas in Northeast China had done huge contribution to the economic development of the whole country. Since the reform and opening, the old industrial areas in Northeast China have been hustled to the edge of socio-economic development. The national government has launched a national development strategy – revitalization of northeast China and other old industrial bases. Tiexi old industrial area is located in Shenyang city, northeast China. Shenyang government started a relocation project to redevelop Tiexi district in 2002. The renewal of Tiexi old industrial area should start with a regeneration scheme oriented towards the physical aspects of the local environment, and end up with institution building. Advanced technologies and methods should be applied to run the process.

In the field trips in 2012 ProSPER.NET Young Researchers' School, I have experienced several progressive methods, and want to borrow these advanced view in the renewal process of Tiexi old industrial area.

Field trip: Bumi Langit Institute, Imogiri

Bumi Langit Institute is a privately owned permaculture site developed by Mr. Iskandar Waworuntu. Covering 3 hectares of land, the institute introduces sustainable development by integrating Islamic values in the relations between human and nature. This site also acts as a site of environmental education through dissemination of sustainable development methods to various public institutions as well as community groups and individual. In this place, production, consumption and disposal of natural resources are maintained in the way that its ecological impacts of natural resource use can be minimized and the economic value of natural resources may support the maintenance of the local ecosystem.

The renewal of Tiexi old industrial area includes the development of the countryside. Ecological agriculture is a relatively recent agricultural and rural development approach, which has emerged in light of continuous efforts in exploring sustainable agriculture and rural development. Ecological agriculture is an integrated agricultural system whose establishment and development is under the guidance of harmonious development of economy and environment. It summarizes and absorbs the successful experiences of varied agricultural models based on the combined principles of ecology and economics, and the applied system engineering methodology. Ecological agriculture demands that the development of grain production should be integrated with the development of diversified commercial crops, forestry, animal husbandry, fishery, and auxiliary products. The primary agricultural production should be integrated with the secondary and tertiary production. Ecological agriculture takes advantage of the merits of both traditional agriculture and modern sciences and technologies, and employs an agro-ecological engineering approach that is able to harmonize the relationship between development and environment, and that between the exploitation and protection of resources, to establish ecological and economic favorable circulation.

Ecological farms should be established in Tiexi district under the guidance of ecological agriculture concept. The government should increase the investment in ecological farm projects and infrastructure. Besides gaining environmental and social benefit, ecological agriculture concept should be diffused to the public.

Field trip: SukunanVillage

Sukunan village is famous of its eco-tourism concept. Independent, productive and eco-friendly waste management system is a unique feature of this village. Waste management is conducted without the involvement of the government. The waste is also seen as economic resources to generate revenue for villagers. Women and young generation in this village are involved in recycling economy through applying 3R principles (reduce, reuse, and recycle).

The traditional industrialization is popular in Tiexi old industrial area, which typically produced negative pollution and environmental degradation, should be reformed and replaced, applying the principles of circular economy. To alleviate problems such as pollution, resource scarcity and climate change, the old industrial areas have traditionally tried to reduce wastes and lessen environmental impacts. A circular economy, although a more ambitious approach, may be easier to implement. By preventing waste at the source as well as turning waste into a resource, a circular economy can reduce both waste to be treated and levels of resource consumption. There is a great potential in increasing resource use efficiency, as indicated by decreasing consumption of water and energy per unit GDP and also in reducing the amount of waste and pollutants produced and disposed through efforts targeting the corporate, industrial zone and municipal levels. However, challenges still exist, and there is a need for Tiexi old industrial area to further promote circular economy strategies. The municipality will respond by encouraging the participation of industry, providing financial support and encouraging public involvement in circular economy initiatives.

Field trip: Gamping Fruit Market

The development of biogas installation at Gamping Market is facilitated by collaboration between the Waste Refinery Research Unit UGM and Sleman District Government since 2006. Out of 4 tons of fruit waste produced everyday in this market, at least 300m^3 of biogas can produce 500 KW. This project aimed at resolving waste problems as well as to support energy provision through utilizing local resources.

China is now facing two major energy-related issues, namely the shortage of the traditional fossil energy and the environmental pollution associated with the fossil energy. With mounting pressure for carbon reduction, China is standing at a crossroads for determining its future energy policies. Without a doubt, low carbon will be the watchword. But low carbon society is difficult to reach in old industrial areas. The activities in old industrial areas remains focused on heavy industry and energy-intensive sectors. The key drivers of these economies are the production of capital goods and infrastructure industries such as shipbuilding, heavy engineering and railway engineering. Despite slow progress and efforts to diversify (e.g. towards high-tech and service sectors), the old industrial areas continue to rely upon these traditional sectors. Old industrial areas may face certain competitiveness concerns resulting from climate policies. Because the most energy- and CO2-intensive sectors are concentrated in them, their disadvantages will be more acute. Because backward in technique, energy transfer efficiency is low in old industrial area. The utilization of new energy plays an important role in saving energy and protecting environment. The local government of Tiexi old industrial area should increase investment in renewable energy projects.

In a nutshell, the local government of Tiexi old industrial area should increase investment in urban infrastructure and environment construction and pay more attention on circular economy and low carbon development so that a more balanced development can be achieved.