



PROJECT PROGRESS SHEET IMPLEMENTING INDUSTRIAL SYMBIOSIS AND ENVIRONMENTAL MANAGEMENT SYSTEMS IN TIANJIN BINHAI NEW AREA





BRI	EF PR	OJEC
D	ESCRI	PTION

Tianjin Binhai New Area (TBNA) needs to tackle problems such as large quantities of industrial waste, lack of effective networks for creating waste exchange synergies between companies, and weak environmental management capacity. By creating an industrial symbiosis network, TBNA attempts to facilitate material, by-product, energy and logistic exchange among 800 SMEs to achieve sustainable production.

The SWITCH-ASIA Industrial Symbiosis project aims to promote sustainable production among SMEs in Tianjin Binjai New Area by introducing industrial symbiosis and environmental management systems, and by demonstrating a large scale industrial symbiosis network. The four-year project involves a total budget of 1.85 million Euros, of which 1.48 million will be funded by the EU. The project will build the industrial symbiosis network of the TBNA, recruiting 800 member enterprises, and will facilitate 80 synergies (cases of industrial waste being diverted from landfill and replacing raw materials). The project will carry out capacitybuilding for a greener supply chain among big enterprises and offer training and education programs concerning environment management systems as well as swift auditing among small and medium-sized enterprises as well as swift auditing. With its activities the project aims to pinpoint practical demands about environmental policy (circular economy in particular) in the TBN area.

The objectives:

- To create an industrial symbiosis network based on National Industrial Symbiosis Programme (NISP) methodologies in order to create 80 synergies.
- To promote ISO14001 certifications through dissemination materials, group training courses and 100 walk-through audits.
- To build adequate institutional and policy environments to ensure the overall sustainability of the industrial symbiosis network.
- To build capacity for a greener supply chain among big enterprises and offer training and education programs concerning environment management systems as well as swift environmental auditing.
- To pinpoint practical demands for environmental policy (circular economy in particular), and work to have such policies effected in TBNA.

PROJECT PARTNERS

PROJECT WEBSITE PROJECT ABBREVIATION PROJECT DURATION

TARGET GROUPS

PROJECT MANAGER ORGANIZATION ADDRESS

> E-MAIL TELEPHONE

Tianjin Economic and Technological Development Area (TEDA), National Industrial Symbiosis Programme (NISP), United Nations Industrial Development Organisation – Investment and Technology Promotion Office China(UNIDO ITPO China), Tianjin Municipal Economic Commission (TMEC), Tianjin Port Free Trade Zone (TJFTZ), Tianjin Harbour Industrial Park Administrative Commission

Industrial Symbiosis

www.ecoteda.org

November 2009 - November 2013

- 800 SMEs within the TBNA areas, including manufacturing enterprises, general recyclers, and technology and science services providers, etc.
- Government agencies (local government)

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OUTPUTS UNTIL DECEMBER 2010 TO BE SHARED WITH WIDER AUDIENCE

The project has engaged over 200 companies so far. Six industrial symbiosis activities, including Quick Win Workshops and CEO dinner events, and three ISO14001 training sessions have been carried out. The project conducted ISO14001 oneday walkthrough audits. Seven synergies case studies were completed, among which, five can be downloaded at the following address:

English Version

http://www.ecoteda.org/english/list. php?catid=993

Chinese Version

http://www.ecoteda.org//news/list. php?catid=299

Sucessful examples:

The SWITCH-Asia Project *Industrial Symbiosis* supports industrial symbiosis with success as the following examples show. Erasteel Innovative Material (EIM) is a company specialized in non-ferrous metal processing. In 2009, EIM generated 72 tons of waste. More than 50% of the





waste was alumina which was used in a cleaning process. The company was actively seeking an environmental friendly solution for the waste but no recycling alternatives were found. In the past, waste alumina was sent away for final treatment and disposal. Useful resources were being wasted and the cost of disposal was straining the company's budget. Today EIM sends their alumina waste to a local manufacturer of fireproof materials. They tested the suitability of waste alumina for the production of refractory bricks production and it worked.

As a result, EIM saves up to €14,400 annually while Northern Refractory has reduced its cost for raw material procurement and increased its market competitiveness. This industrial symbiosis synergy helped EIM to divert approximately 48 tons of waste from landfill every year. It improved the effective-ness of resources reuse, and reduced the negative impact on the environment.

Other companies at TBNA have had similar successes. Fiberweb, for example, specialises in non-woven fabrics, primarily to producers of feminine care products. The company was dealing with a large amount of waste zinc-plated steel and stainless steel pipes occupying a huge storage area. When the company extended their plant to the Tianjin Binhai New Area, the SWITCH-Asia Project Industrial Symbiosis included them in their discussion. Project experts facilitated cooperation between Fiberweb and a resource management company. The company already recycled and processed 20 tonnes of their metal waste. Mr. ZHANG Xiuzhen from Fiberweb concludes: "We are very glad that we can recycle our spare resources and improve the environment in our factory".

RESULTS ACHIEVED TILL JANUARY 2011

The project is managed to engage its target group with the assistance from the local environmental protection bureau as well as project partners from other zones. The project provided SME representatives with an opportunity to fully discuss each other's needs and demands. Judging from the feedbacks of these activities, the participants are satisfied with the efforts in deploying the Industrial Symbiosis concepts. The direct sustainability gains involve in a communication network which facilitates the resources/ by-product exchange between SMEs. By the end of the year 2010, the project has engaged 248 companies and identified 38 by-product exchange opportunities, completing five synergies, which contributed to 105 tons of landfill diversion and approximately 750 tons of carbon dioxide reduction.

Three ISO14001 training session were carried out and the total number of participants were over 150. By the end of 2010, 12 one-day walkthrough audits were completed by the ISO14001 team.

OUTREACH AND SYNERGIES

This project has linked with many other environmental protection projects implemented by the TEDA Eco Center. The Tianjin-Ibaraki Environmental Cooperation Project, supported by the Japan Ministry of Economy, Trade and Industry, is a research project which aims to investigate the material flow of manufacturing enterprises, i.e., the production, recycling and reuse of solid wastes. The *Industrial Symbiosis* project is closely related to the Tianjin-Ibaraki project – research and site investigation results have been shared among these two projects.

The project has raised sufficient awareness from government departments, ranging from regional level to national level. The project team reported the project progress to Binhai Economy and Information Commission, Binhai Environmental Protection Bureau, Tianjin Environmental



Protection Bureau, Tianjin Science and Technology Commission and Chinese Ministry of Industry and Information. These communication channels would allow us to rally further government support and build a solid foundation for future funding opportunities of the project.

The project team is actively seeking for other Chinese funding opportunities in order to continue practicing industrial symbiosis after the EU funding period is over. Now the Teda Eco Center is attempting to apply for a Chinese Ministry of Science and Technology funded project, in which industrial symbiosis will be a key component.

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ADDITIONAL HIGHLIGHTS OF THE PROJECT

Binhai Industrial Symbiosis Forum

The Binhai industrial symbiosis forum is one of the most important activities of the SWITCH-Asia Project and is held 4-5 times per year. The participants of the forum are leaders of various relevant government departments, top managers of enterprise and experts in low-carbon and environmental protection from China and abroad. The forum aims at introducing the *Industrial Symbiosis* project to enterprises, sharing experience on the benefits of industrial symbiosis, disseminating the latest domestic and foreign dynamics in the relevant fields and enhancing communication between enterprise's top executives.

Quick Win workshops

In order to increase the cooperation opportunities among cross-industry enterprises, the Industrial Symbiosis project drew on the successful experience by the British National Industrial Symbiosis Project and launched the quick win workshop activity. The main participants of the workshop are the principals of various enterprises who are familiar with production, environmental protection, wastes and other resources. In a relaxed atmosphere, delegates can discuss abandoned or idle resources with commercial value, and seek the potential for symbiosis. Delegates participating in the meeting can also discuss the existing problems in the resource sharing, recycling and reuse, etc. At the same time, the project team will invite recycling enterprises to attend the conference in order to provide solutions to problems existing in enterprises' resource recycling. The quick win workshop offers a platform to the enterprises to expand their communication network and promote their mutual understanding and communication.



Binhai Industrial Symbiosis Information Investigation

In order to carry out the project and identify the docking opportunities more effectively, the project team firstly needs to collect the basic information of various enterprises. To achieve this, the project has designed the Binhai Industrial Symbiosis Resource Information Form. The form contains four parts, namely:

- Basic Conditions of Enterprise
- Energy and Water Consumption
- Product and Material Consumption
- Waste Resources Situation

The project team collects, sort and analyze the information provided by the enterprises and looks for the potential docking opportunities among them.

Follow-up Work

By virtue of professional industrial symbiosis software provided by British National Industrial Symbiosis project, the project team will sort and analyze Binhai industrial symbiosis information investigation and various data from the Ouick Win Seminar. As to the potential docking opportunities, the project team will contact enterprise representatives and go to factories to conduct an investigation to determine the information between the potential docking parties. If the docking intention is achieved between two parties, the project team will help the two sides to organize meetings and mutual visits, etc. and also to coordinate the two parties to communicate on time. If the docking programme is successfully implemented, the project team will make a report on the docking case for both sides; under the permission of both sides, the project team will show the case report to the public to reach the publicity purpose.