Supplementary Note to
Sino-Singapore Tianjin Eco-City Master Plan (2008-2020)
Environmental Impact Assessment of April 2008

Environmental Bureau
Sino-Singapore Tianjin Eco-City Administrative Committee
January 2010

1. Background

Sino-Singapore Tianjin Eco-City (SSTEC) project is an international initiative by the
governments of China and Singapore to build a model and demonstrating eco-city for
improving the living environment and developing an eco-culture. Since signing of the
cooperation agreement between the two governments in 2007, the SSTEC
Administration Committee (SSTECAC) has completed a Master Plan and corresponding
environmental impact assessment or strategic environmental assessment (SEA) and is
now in Phase I implementation. SSTECAC has sought a technical assistance from the
World Bank through a Global Environmental Fund (GEF) grant to support the Phase I
preparation. During the GEF TA funding appraisal process, the Bank task team reviewed
the SEA, provided a number of comments and held a preliminary round of discussion
with the environmental bureau of SSTECAC. This document is prepared to respond the
comments and intends to be a supplementary note to the original SEA.

The task team basically provided four major comments and required additional
information, clarification or analysis. They are: (i) analysis of alternative sites and
justification of the current site selection for the eco-city; (ii) integration mechanism of
recommended conservation, protection and mitigation measures from SEA into project
design during the master plan implementation; (iii) institutional arrangement and
capacity building; and (iv) further studies on best practices, measures and options for
energy and resources conservation, GHG emission minimization and environmental
protection in the urban development context. The following sections present responses to
each of these comments.

2. Site Selection Justification

The eco-city site selection process was primarily conducted at the state level with the
input and endorsement of the current site from Tianjin government. In July 10, 2007,
during her meeting with Singapore Premier Minister Lee Hsien Loong, Vice Premier Wu
Yi set out two key principle criteria for eco-city site selection: (i) capable of
demonstrating an eco-city development under the scarce conditions of natural resources,
no occupation of arable land and area with limited water resources; and (ii) close to a
urban center, capitalizing on the big city transportation and services, so as to minimize
the cost for infrastructure development. Under these guidelines, several Chinese
The area where the proposed site is located is adjacent to big urban centers and has an extensive transportation network. The site is about 45 km to Tianjin city proper, 150 km to Beijing, 50 km to Tangshan and 15 km to downtown Tianjin Binhai New Area. The site is bordered by Beijiang Power Plant circular economy demonstration zone to the east, Hangu old city to the north, TEDA, Tianjin port free trade zone, and central commercial district to the west and south. The proximity to these urban centers provides good services and support to the eco-city development.

There is an extensive railway and highway network near and surrounding the site. The planned Jing-Jin-Tang inter-city high speed train will pass the north side of the site, with a station planned about 2 km to the northeast. The planned Tianjin to Qinhuangdao dedicated high speed passenger train line is about 4 km to the site with a station in the nearby Hangu old city. The construction of this rail line has started and is to complete in 2010. The Beijing-Tianjin inter-city rail line is to be extended to Tianjin Binhai New Area in 2010. The coastal expressway connecting Tianjin and Hebei is located east of the site while Jing-Jin-Tang expressway II is on the south. There are also a number of highways, urban roads and country road network within and surrounding the site. The site is about 40 km to Binhai International Airport and 20 km to Tianjin port.

There is well established infrastructure which will provide the support to the eco-city development and minimize the new construction and thus impacts to the environment which would otherwise occur. The site water supply is to be provided by Hangu Water Plant and the proposed Hangu Sea Water Desalination Plant. Wastewater can be discharged to the Yincheng Wastewater Treatment Plant which was completed by the end of 2009, while the eco-city may have its own regenerated water plant for tertiary treatment and water recycling. The site will be serviced by the Tianjin Binhai New Area power grid for electricity and Hangu communication company for telephone and internet. The existing 600 mm diameter natural gas pipeline along the Hanbei highway will supply natural gas to the site. Beijiang cogen power plant will supply heating which would otherwise be wasted. Municipal solid waste will be disposed of at the Hangu sanitary landfill west of the site although the eco-city itself will build solid waste recycling and resource recovery facilities.

The eco-city has a poor environmental baseline. Under the current conditions, approximately one third of the site is discarded salt field, one third polluted water and wastewater collection ponds and one third saline land. There is no arable land within the site. The site is carefully selected to avoid the direct impact to nature
reserve. At its closest point, the site is about 2.5 km to the border of a nature reserve. The site, together with the city of Tianjin is scarce of fresh water resources. There are no significant wildlife resources, sparse vegetation, and low biodiversity. As such there will be low sensitivities to the large scale eco-city construction and development and substantial increase in population.

At the same time, the development of the eco-city will not occupy any the natural water bodies and will restore and improve wetland and ecosystems by the substantial tree planting and ecological restoration programs. The master plan also includes remediation of the heavily polluted wastewater reservoir, Jin canal old course and other area water bodies, significantly improving environmental quality. As predicted by the SEA, the eco-city development would help increase bioactivities of the site, increase biodiversity and total area biomass, if the eco reservation and environmental protection programs in the master plan and SEA recommendations are properly executed.

The appropriate industry positioning at the eco-city will help synchronized economic development and environmental protection. Based on the circular economy and low carbon emission criteria, the eco-city Phase I will primarily develop animation industry and other low resources consumption, no pollution and high yield industries. The eco-city will also adopt clean energy, renewable energy, green transportation system, green buildings programs, encourage and promote green life style and low carbon consumption, establish green offices, communities and schools and achieve sustainable development.

3. Integration of SEA Requirements into Master Plan Implementation

The SSTECAC has set up a mechanism to ensure the recommendations of the SEA be integrated into the project design of the individual projects during master plan implementation and eco-city development. This mechanism has the following key steps:

- Early involvement of environmental staff in the entire project development circle from planning, implementation to operation. SSTECAC’s environmental bureau specialists will actively participate in project promotion, planning, feasibility study and site selection to ensure the project content design give adequate, timely and appropriate considerations to environmental issues and that the recommendations of the SEA be incorporated where needed. The following table shows a flow diagram of environmental management in the project development circle. As shown by this chart, there will be substantially more environmental input, review and control for projects within SSTEC (blue and green coded actions) than a typical project (yellow coded action) elsewhere in China, especially in the early stage of project development. This will provide a better assurance that sufficient considerations on environmental issues be given during the critical project planning and design stages.
and the SEA recommendations and any other required environmental protection and conservation measures be appropriately incorporated into the project design.

### Environmental agency involvement in project development

<table>
<thead>
<tr>
<th>Project development stage</th>
<th>Class I project (industrial)</th>
<th>Class II project (infrastructure)</th>
<th>Class III project (urban buildings)</th>
<th>Class IV project (services)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration/Early stage</td>
<td>Promotion</td>
<td>Environmental entry control/Environmental service</td>
<td>EIA approval</td>
<td></td>
</tr>
<tr>
<td>Site selection</td>
<td>Environmental input in site selection</td>
<td>Joint and integrated environmental review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning permit</td>
<td>Drawing registration</td>
<td>EIA approval</td>
<td>Environmental commitment</td>
<td></td>
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<tr>
<td>Construction</td>
<td>Construction permit and environmental supervision</td>
<td>Environmental commitment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Commercial registration</td>
<td>EIA approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental acceptance</td>
<td>Trial operation</td>
<td>Environmental acceptance</td>
<td>Trial operation</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Discharge permit</td>
<td></td>
<td>Discharge permit</td>
<td></td>
</tr>
</tbody>
</table>

Color codes: Yellow: city environmental protection bureau (the regulator agency); Blue:: SSTECAC environmental bureau joint with construction bureau; Green: SSTECAC environmental bureau

SSTECAC has set up an environmental bureau dedicated specifically to all aspects of environmental management of the eco-city development. The bureau is staffed with experienced professionals with appropriate managerial and technical skills, providing the necessary institutional assurance for environmental considerations for master plan implementation. The bureau will be supported by third party consultants and institutions to ensure sufficient technical and procedural capabilities. The details on institutional arrangement are present in the next section. Led and coordinated by the environmental bureau, other bureaus within SSTECAC will participate in environmental management from their perspective in project promotion, development, construction and operation. The environmental bureau is also to provide support and services to enterprises which are to invest and set up their operations within SSTEC.

The SEA will be circulated within all management and technical bureaus of SSTECAC, as well as the top leadership, and the environmental bureau is to provide necessary training to other staff of other bureaus as needed of the SEA contents, conclusions and recommendations. This is to increase SSTECAC staff’s awareness on environmental and conservation issues especially as they related to master plan implementation and to SEA recommended measures and actions.

The environmental bureau has started to establish a digital environmental management system, providing a platform in this information age for project
application, review, registration, statistics data collection and other supports and services in environmental aspects of project development. This is to enhance the environmental management efficiency and to have better control of the project design and development to ensure incorporation of the needed environmental and conservation measures.

Use the World Bank supported public house and school projects as a pilot program for environmental management plan (EMP). The details of the EMP are presented in separated document already submitted to the Bank’s task team. This pilot program is to divide and assign environmental management responsibilities to the specific relevant organizations and institutions to achieve integrated management approach and explicit responsibility system for optimal environmental management. The successful experiences and lessons learnt from this pilot program will be extended to the management of other SSTEC projects.

Finally, all projects of SSTEC development will need to go through the national regulatory procedures, primarily the environmental impact assessment and its review and approval. To ensure better environmental considerations in the SSTEC project design and effectiveness of implementation of environmental requirements from EIA documents, SSTECAC is to request each individual project proponent to conduct their respective project EIAs at the project planning stage according to laws and that there will be sufficient interactions between the EIA institute and all other project technical teams such as planning, engineering, and design. SSTECAC has already followed this practice by conducting the SEA at the same time with the master plan development and had encouraged and pushed for substantial exchanges between the SEA and the master plan teams so that the various environmental protection and conservation concepts, measures, options and actions had been incorporated into the master plan.

4. Institutional Capacity Building

The environmental bureau within the SSTECAC is the primary organization responsible for all aspects of environmental management of the SSTEC including implementation of master plan projects and SEA recommendations. The environmental bureau now has the following four divisions, each with specific mandates and responsibilities:

General affair division: responsible for (i) general affair management, service, coordination and assist the bureau management for the day to day work; (ii) documentation, communication, work circulars preparation, review, report and event recording; (iii) reception of visitors, meetings and event organization, and external affairs; (iv) publicity, information collection and statistics; and (v) integrated science and technology research work.
Environmental protection division, responsible for (i) implement relevant urban environmental protection laws, regulations, and policies; (ii) organize R&D for eco-city environmental protection; (iii) organize environmental monitoring; (iv) develop pollution control and remediation annual plan; (v) as needed, draft environmental management documents for SSTECAC; (vi) execute sector management and administrative enforcement; (vii) integrated environmental publicity and education; (viii) information compilation from the environmental industry; and (ix) environmental new technology promotion.

Urban sanitation division, responsible for (i) implement and enforce relevant urban sanitation laws, regulations and policies; (ii) review and approve urban sanitation annual plan; (iii) as needed, develop relevant policy documents for SSTECAC; (iv) administate and enforce urban sanitation regulatory requirements; (v) information collection and statistics; and (vi) urban sanitation new technology promotion.

Water division, responsible for (i) implement and enforce water related laws, regulations and policies; (ii) develop water affair projects and prepare water related facility maintenance annual plans; (iii) as needed develop water related policy documents for SSTECAC; (iv) water sector information collection and statistics; and (v) water new technology promotion.

SSTECAC’s environmental bureau currently has 10 staff members, all with university degrees and seven of them have post graduate degrees. Five of the staff members are fluent in English or Japeness, enabling the bureau for effective communication and exchanges with international experts, institutions, other relevant organizations and the Singapore counterpart as well as to collect international environmental and conservation industry new technologies and trends. The language skills would also help the bureau to provide necessary services and environmental management to international companies setting up operations within SSTEC.

The professional staff of the environmental bureau has broad technical and academic backgrounds including environmental management, environmental engineering, environmental monitoring, chemistry, biology, ecology and planning. Most staff has previous work experiences in various environmental managerial and technical capacities.

In terms of capacity building, the environmental bureau is to provide training programs to its staff on environmental impact assessment, environmental monitoring, environmental management, etc. to enhance the professional capabilities. The bureau is also organizing translation of relevant foreign books and international professional literature to provide the staff a broader vision on the latest development in urban environmental management, energy and resource conservation, ecosystem restoration and enhancement, renewable energy, etc. The bureau believes it is important to learn from the international advanced experiences, innovative practices, new technologies as well as to learn from other parts of China. The part of the World Bank financed TAs will
also include capacity building through on-the-job training and study tours to global best practice cities.

As a government administrative agency, the staff size and technical capabilities may be limited. The bureau is to use third party organizations to overcome this constraint and to supplement and expand its technical and staffing capabilities. The following is a list of such organizations that the bureau would call upon for environmental impact assessment and other technical support and assistance.

### Primary Environmental Institutes in Tianjin 2009

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Certificate No.</th>
<th>Serviced sector (primary)</th>
<th>Serviced sector (secondary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tianjin Academy of Environmental Sciences</td>
<td>1101</td>
<td>Chemical, petro, pharmaceutical, metallurgical, machinery, construction materials, urban development</td>
<td>Light industry, textile</td>
</tr>
<tr>
<td>2</td>
<td>Tianjin Environmental Impact Assessment Center</td>
<td>1102</td>
<td>Metallurgical, transportation, light industry, textile, chemical, petro, power plant</td>
<td>Urban development</td>
</tr>
<tr>
<td>3</td>
<td>MOC Tianjin Water Transportation Engineering Research Institute</td>
<td>1103</td>
<td>Transportation</td>
<td>Ocean engineering</td>
</tr>
<tr>
<td>4</td>
<td>MOR Third Survey and Design Institute</td>
<td>1104</td>
<td>Transportation</td>
<td>Urban development</td>
</tr>
<tr>
<td>5</td>
<td>North China Municipal Engineering Research and Design Institute</td>
<td>1106</td>
<td>Urban development</td>
<td>Transportation</td>
</tr>
<tr>
<td>6</td>
<td>Nankai University</td>
<td>1108</td>
<td>Urban development</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>SNOOC Environmental Services (Tianjin) Ltd.</td>
<td>1109</td>
<td>Petro chemicals, pharmaceutical ocean engineering, urban development</td>
<td></td>
</tr>
</tbody>
</table>

5. Conservation and protection measures and options

The primary focus of the SEA is on strategic issues and concerns as they related to the master plan and to the eco-city development. Although this document includes recommendations for specific measures, options, actions and programs for impact mitigation, ecosystem restoration and preservation, energy and water conservation, new energy, urban transportation planning, urban environmental and sanitation management, etc., they are by no mean to be complete and exhaustive. It is well understood that there will be more in-depth studies on the available measures, options and practices from other cities in China and from around the world. These can be individual project EIAs as well as dedicated studies on specific topics initiated by SSTECAC. SSTECAC is also to capitalize on the previous experiences, practices and technologies of and lessens learnt from the dozens of World Bank financed urban environment and development projects and TAs in China including the two in Tianjin alone.

As an example, SSTECAC has already sought the assistance from the World Bank and through a GEF grant to soon receive the following assistance/start the following studies:
Technical assistance in software and equipment for implementation framework of SSTEC project and dissemination activities, including advisory board for implementation overview and guidance, software for policy development, training and study tours to visit global best practice cities as part of capacity building.

Technical assistance in public transport system where various practices and systems will be evaluated and recommended for project design and feasibility where appropriate.

Green building pilot project and technical assistance to demonstrate and study various energy efficiency, renewable energy, resource conservation, new construction materials technologies and their applications in green buildings and best practices in construction.

In addition, SSTECAC would initiate other studies on various urban environment and conservation topics such as renewable energy usage in urban area, non-motor vehicle system, urban noise control, water recycling, solid waste minimization, ecosystem restoration and conservation, clean fuels, motor vehicles emission control strategies, etc. These can be either part of the environmental impact assessment for individual projects or dedicated studies. These in-depth studies will carry forward on the basis of the SEA recommendations and will provide further details on available environmental protection and conservation measures and practices.