Sino-Singapore Tianjin Eco City

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THE WORLD BANK

Overview

• What is the SSTEC?
• Key Performance Indicators to Drive Development
• Specific Proposals
• Opportunities and Risks
• Why is this Case so Important to Understand?
What is the SSTEC?

- Project: Develop a strategically located area of 34km² as an Eco City for a Population of 350,000
- Sino-Singapore Partnership: Prime Ministerial Endorsement; Technology Transfer
- KPIs: Frame and Monitor the Project with Key Performance Indicators
- PPP: Involve the Private Sector Upfront
- Special Legislation and Institutional Arrangements
- Scale Up: A Model for China?

Strategic Location

- SSTEC is located to the North of the Tianjin Binhai New Area (TBNA)
- TBNA produces 44 percent of Tianjin’s GDP with only 10 percent of its population
- TBNA annual GDP growth of 20.6% (1994-2005)
- SSTEC is 45 km from Tianjin City Center, 150 km from Beijing, and 50km from Tangshan.
- Infrastructure Connects TBNA and SSTEC to Beijing and the Larger Economic Ring
- TBNA mostly Industrial & Commercial; has a High Demand for Housing
TBNA Demographic Context

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<tbody>
<tr>
<td>Tianjin Metropolitan Area</td>
<td>10,080,000</td>
<td>13,500,000</td>
<td>3,420,000</td>
<td>1.5%</td>
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<td></td>
<td>Urban districts</td>
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<td>3,903,000</td>
<td>4,100,000</td>
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<td>Inner suburban clusters</td>
<td>1,774,000</td>
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<td>1,516,000</td>
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<td>Coastal districts</td>
<td>1,139,000</td>
<td>2,410,000</td>
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<tr>
<td></td>
<td>Suburban and rural area</td>
<td>3,192,000</td>
<td>3,700,000</td>
<td>508,000</td>
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<tr>
<td>TBNA</td>
<td>1,350,000</td>
<td>3,000,000</td>
<td>1,650,000</td>
<td>5.5%</td>
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Source: 1) Tianjin City Master Plan (2005-2020); 2) TBNA Master Plan (2006-2020)

Responding to Land Shortage

- Site Selection – Converting Non-Arable Land, Polluted Water Bodies and Deserted Salt Pans into an ‘Eco City’ (34km2)
- Re-Vitalization of Scarce Land and Water Resource
- Minimal Relocation
- Reduces Urbanization Pressure on Agriculturally Productive Land
  - Contributes to Social, Economic and Ecological Benefits
  - Reinforces National Priorities for Protecting Agriculture
  - Replication Potential in China (Land Re-Vitalization)
Institutional Arrangement

Key Performance Indicators

- 22 quantitative and 4 qualitative Indicators
- KPIs Broader Scope, and in some Cases more Ambitious than National Standards
  - KPI 5: Carbon Emissions 150 tons/million US$GDP
    - National Average is 750 tons
  - KPI 7: Proportion of Green Buildings – 100%
    - Separate Building Codes Define Green Building (SSTEC has higher standards than national green building codes)
  - KPI 12: Proportion of Green Trips – 90%
    - 30% walking and bicycling and 60% public transport
  - KPI 19: Renewable Energy Use – 15%
  - KPI 20: Waster Supply from Non-Conventional Sources – 50% (as high as Singapore)
  - KPI 13: Overall Solid Waste Recycling Rate 60%
  - WB: Estimated Emission Reductions: 1,073,161 (tCO2e/yr)
    - Revenue Stream of US$ 10 million a year (at $10 a ton)
Specific Proposals: Urban Form

- **Aggregate Density**
  - 11,000 persons/km²

- **FAR Distribution**
  - High FAR along Nodes and Spine

- **TOD**
  - 100% population within 400 meters of some sort of Public Transport

- **Mixed Land Use**
  - 300-500 meter walking distance for day-to-day needs

- **50% Live-Work Target**

- **Basic Modular Urban Form**
  - Aggregation of 400m by 400m Blocks
  - Challenge of Basic Block Size
Specific Proposals: Urban Form

Specific Sector Proposals

- **Transport**
  - Regional: Linkages Established (Metro)
  - Overall TOD at Macro Scale – But Micro Design Issues (Block Size)
  - Is Road Network Conducive to Walkability and Human Scale?
  - Every Residential Unit has One Parking Space
  - Can SSTEC achieve 90% Green Transport? Neighboring TEDA has a Public Transport share of only 15%...

- **Energy**
  - CHP supply from outside city
  - Renewable Target Tricky: Not Many Sources in SSTEC (Geothermal)
  - Not Exploiting All its Options (for instance to move from group to building substation design strategy)
  - Energy Efficiency through Green Building Code
    - SSTEC Code at Similar Level as Tianjin’s Existing Codes
    - Still a Good Target at – 100%
    - But What Policy and Incentive Measures will Achieve these?
Specific Sector Proposals

- **Water**
  - 50% from non-conventional (Reclaimed and Desalinated)
  - SSTEC Location – Extreme Water Shortages (Water Sector is a Critical Factor of Sustainability)
    - Introduction of Singapore Expertise in System Design and Treatment for Reclaimed Water
  - Strong Measures: But High Economic Costs (Clearer Cost/Benefit Analysis Needed to Justify Investment)

- **Waste**
  - Achieving 60% Recycling is Challenging – Singapore is 51%
  - Pneumatic System (Clearer Cost/Benefit Analysis Needed to Justify Investment – Also a Clearer sense of Environmental Benefit)
  - Per Capita Waste Generation Target of < 0.8 Kg/cap/day is Ambitious (How Will it be Reached?)

Opportunities and Risks

- Strong Indicators/Visions Need Clear & Strong Strategies to be Accomplished
- Integration Opportunities (Transport, Urban Form and Land Use)
- Implementation Challenges
- ‘New Town’ Planning Risks (Japan and Europe)
- Phases: Opportunity for an Incremental Approach
- Balancing Commercial and Public Interest
- Sector Specific Opportunities and Risks
- Affordable Housing (20% Provided for Low Income Groups)
Why is This Case Important to Understand?

- If Successful, GHG reductions are very impressive 150 vs. 750 tons GHG/US$ 1,000,000 of GDP
- Builds on Strong Foundations
- Framed with Clear Indicators
- Specific Proposals need to be more Closely Evaluated
- Opportunity to Further Improve the Approach and Likelihood of Meeting Targets
- SSTEC Reveals Benefits and Challenges of this Particular Approach to Ecological Urban Development
- Is this a Replicable Model? Maybe for Some Cases, But Not All
- Context is Critical