

13th UIC Sustainability Conference



SUSTAIN - Sustainable Stations

**Best practices, benchmarking,
guidelines and recommendations**

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12, 13, 14 October 2016

Objectives & Scope



Objectives

- Improve overall Attractiveness of Stations
- Enhance safety and experience, increase revenues, reduce environmental impact
- Integrate Sustainability into development Strategies

Scope & Methodology

- Holistic and balanced approach: environmental, economic & social performance
- Environmental: Energy, carbon footprint, resource efficiency, construction
- Social: quality of public space, safety & security, integration into communities
- Economic: Mobility hubs, commercial centers, functionality and passenger flow



Work Program & Output



1 Best practice collections

- Examples for sustainable stations from all over the world
- Technologies for improving the sustainability performance of railway stations

2 Sustainability Performance Profiles

3 Sustainability Impact Assessment

4 Guidelines and Recommendations

- SUSTAIN Checklists = Checklists for the improvement of the sustainability performance

5 Guidelines for a Future Standardization Process

- Methodology of sustainability performance and impact assessment

6 Final report and brochure

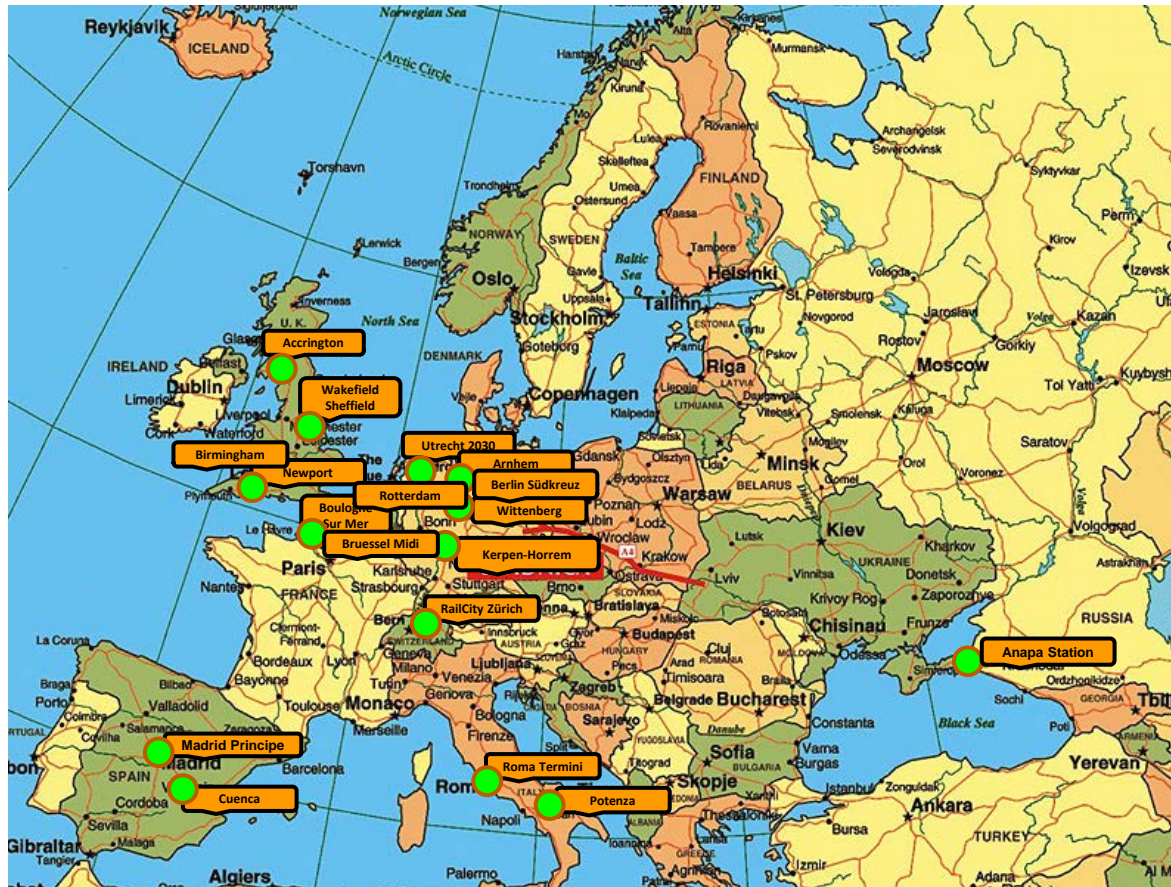
- Best practice collection, assessment results. guidelines



First Results – Best practice collection

Sustainable Stations - Best Practices in Europe

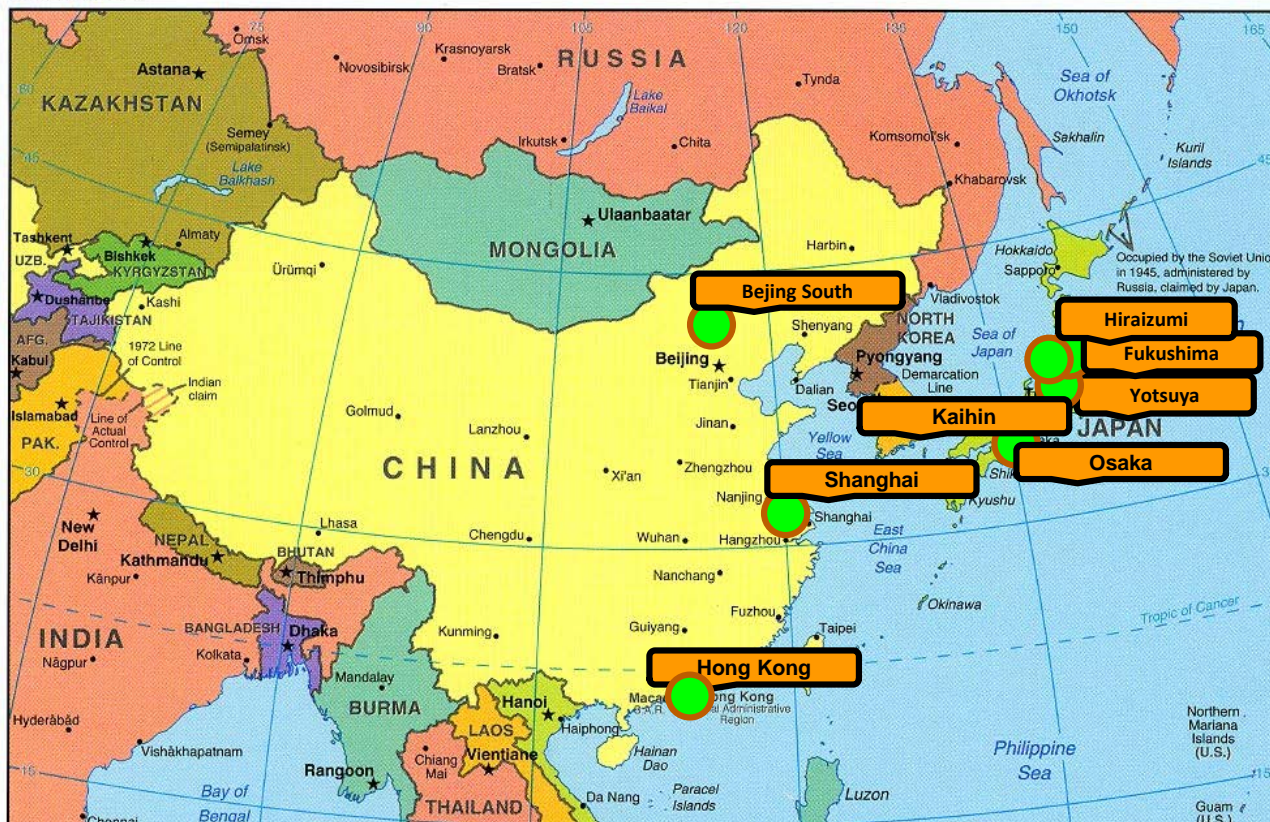
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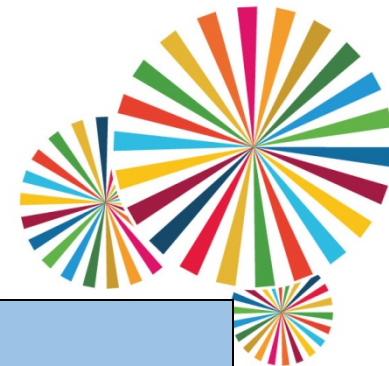
Best practice collection – overview 2




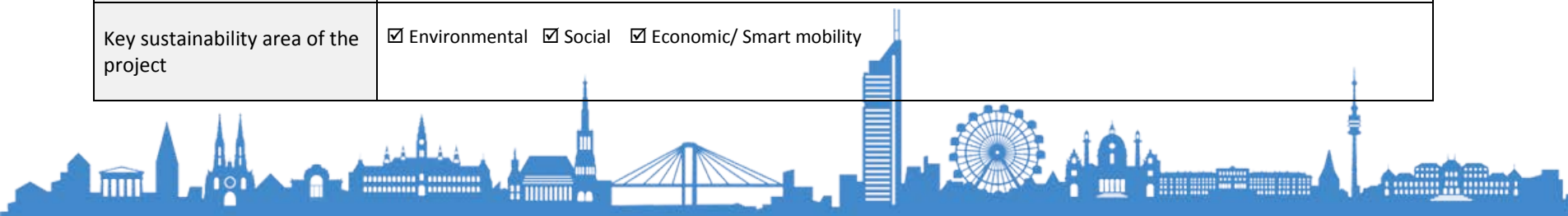
Sustainable Stations - Best Practices in Asia



Best practice collection 1



General information	
Name of the Railway Station	UTRECHT CENTRAL STATION 
Quelle: http://www.cu2030.nl/page/kantoren-mineurslaan	
Typology of the Station	<input checked="" type="checkbox"/> Tier 1 More than 100,000 passengers per day, 16 platforms 900 trains per day
Country	The Netherlands
Project type	<input checked="" type="checkbox"/> New construction <input checked="" type="checkbox"/> Large scale reconstruction
Project duration	Ongoing (2016)
State of implementation	<input checked="" type="checkbox"/> In Implementation
Project focus	
Project name and aims	"Utrecht 2030": Utrecht is building a new Central Station Area and is reconstructing part of the old one
Key sustainability area of the project	<input checked="" type="checkbox"/> Environmental <input checked="" type="checkbox"/> Social <input checked="" type="checkbox"/> Economic/ Smart mobility



Best practice collection 2



Environmental performance (applied Technologies and Measures)	
Energy:	<p>As part of Climate-KIC's Smart Sustainable Districts Program the Utrecht Central Station is set to become a global exemplar project for testing smart, sustainable systems: Opportunities for co-development include:</p> <p>hybrid systems for heating and cooling at district level using a thermal energy storage (TES) for heating and cooling offices and stores and highly energy efficient frequency controlled heat pumps</p> <p>use of local renewable power e.g. for smart solar electric vehicle charging.</p> <p>Replacement of old canopies for three new canopies with solar cells. The solar cells will provide energy for lighting, escalators and lifts.</p> <p>Smart lighting concept with focus on optimum use of ambient light.</p> <p>The new traffic control centre (so-called Corten) is a sustainable building which is built using triple glazing, solar cells and hybrid chillers.</p>
Waste:	Waste separation at the source and dedicated recycling system, pilot station for separate paper collection and recycling, Green Deal program for waste management at stations.
Water:	Water retention and active rain water management.
Carbon Footprint	By means of the thermal energy storage system for heating and cooling the annual carbon footprint of the station was reduced by 0.5 million kg of CO ₂
Eco-design (construction and EOL)	<p>The new canopies are made of steel and translucent curved glass with a new lighting concept of natural and artificial light.</p> <p>The new Central Station Area, water will flow once again in the canal that was filled in during the 70's.</p> <p>Green spots, cool spots, roof top farming, water retention for an efficient and clean personal mobility.</p>
Green materials for construction	For the exterior of the Corten building a steel type with a typical rust brown color has been used which also functions as a natural sunscreen. In addition to the use of sustainable materials the new traffic control is also used as a pilot site for raw materials management and new purchasing systems, where purchasing forms the starting point



Best practice collection 3



Social performance (applied Technologies and Measures)	
Safety and security	A modern control centre was opened in 2014: the 1000 m ² control floor provides a large open space from which the 100 staff have a view of the tracks and the surrounding area
Community engagement:	Integration of the energy system of the station into the energy system at district level with benefits for both sides.
Accessibility of the station:	Accessible Toilets, Elevator, Boarding Ramp, Travel Assistance, Tactile paving, Accessible Platforms
Economic performance/ Smart mobility (applied technologies and Measures)	
Multimodality:	Bus and tram services. You can park your bicycle at a free bicycle park or store it with a supervisor present during opening hours. Because of the huge number of cyclists, the world's largest 3-floor bicycle parking station for 12,500 bicycle is under construction (completion is foreseen in 2018)
Mobility services:	Cars and bicycles can be rent. At most locations, you can get your bicycle repaired. Ticket Machine and NS-Service Desk are available.
Passenger flow and guidance	The "Station Transfer Model" allows professionals to estimate passengers flows at stations and to use it for understanding and optimizing their processes
Transport & passenger Information flow	<i>Dynamic Traffic Information System (Dynamische Reis Informatie Systeem, DRIS) (pilot):</i> via displays at the stops buses depart from, overview screens at central points and overview screens in the main hall of the station.
Attractiveness/Passenger Comfort:	<i>Many shops and restaurants are available within the station¹. Besides, the station is attached to the biggest shopping centre in the Netherlands (Hoog Catherijne).</i>



Technology collection



Relevant Technologies, Measures & actions for Sustainable Stations

Lighting

Heating, Ventilation & Air
Conditioning

Water Management

Energy generation &
management

Safety & Security

Accessibility & Multimodality



First Results – Assessment Tool

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Sustainability Performance Assessment

Economic Performance

- Transport Hub rating
- Operation and Maintenance costs
- Effectiveness of Connection
(Intermodal transport, Passenger flow)
- Attractivity & Comfort level
- Mobility Services
- Information Flow and Services
- Business Place & Service Spectrum
- Extended Lifetime
- Life Cycle Costs

Environmental Performance

- Energy Performance & Efficiency
- Energy Concept (renewables, local integration, smart grids...)
- Carbon Footprint
- Water & Waste Water
- Smart Material Flow and Waste Management
- Building Materials & Concept
- Ecodesign
- Resource Efficiency

Social Performance

- Quality of Use
(Functionality, Accessibility)
- Safety Level
- Impact on Health
(Air Quality, Noise....)
- Quality of Public space
- Cultural Performance

Range of Application: Station Type (tier1, tier2, tier3, tier4) Project Type (newly build, refurbishment, extension)

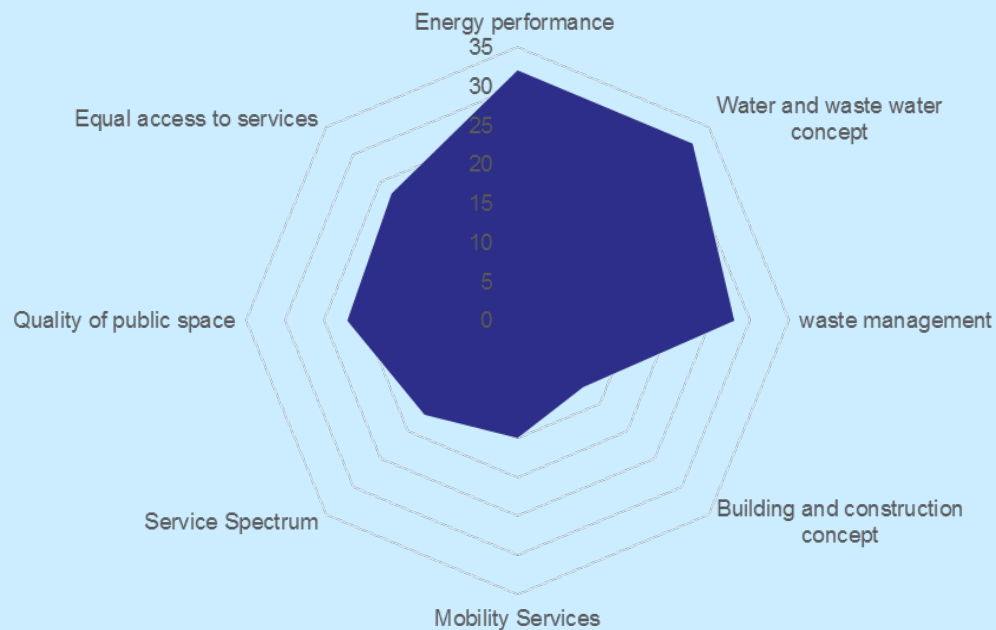


Next Steps – Performance Profile

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Sustainability Profile (example)



Contacts



Thank you very much for your attention!

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