TÜV NORD

Introducing the Company

for

German Global Trade Forum Berlin, Ltd.

Business Mission to China 2012

Green Cities - Green Industries

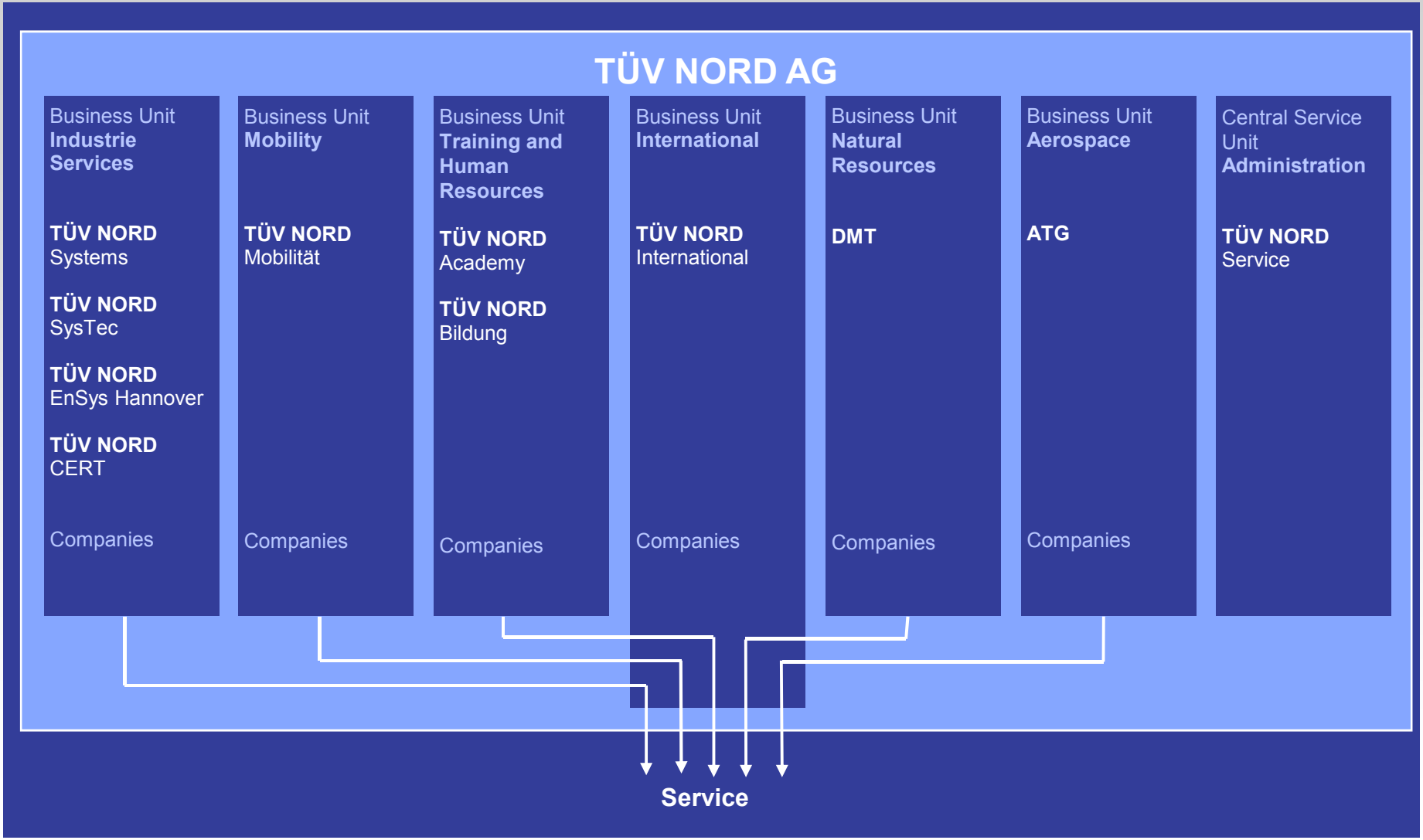
TÜV NORD, a competent and international service partner

- **Competence**
  with broad expertise, impartial and independent
- **International**
  present at locations throughout the world
- **Your partner**
  thanks to customer orientation, comprehensive service and reliable expert consultancy
- **Strategic M&A Investor**
  partnership approach focusing on long-term relationships

Our key data

- Foundation of the associations:
  - TÜV Nord e.V.: **1869**
  - RWTÜV e.V.: **1872**
  - TÜV Hannover/Sachsen-Anhalt e.V.: **1873**
- Foundation of TÜV NORD: **2004**
- Headquarter: **Hanover, Hamburg, Essen (Germany)**
- Number of employees: **more than 10.000**
- Turnover in 2010: **€923 million**
- Turnover in 2012 exp.: **over €1.000 million**
- operates in more than: **70 countries**

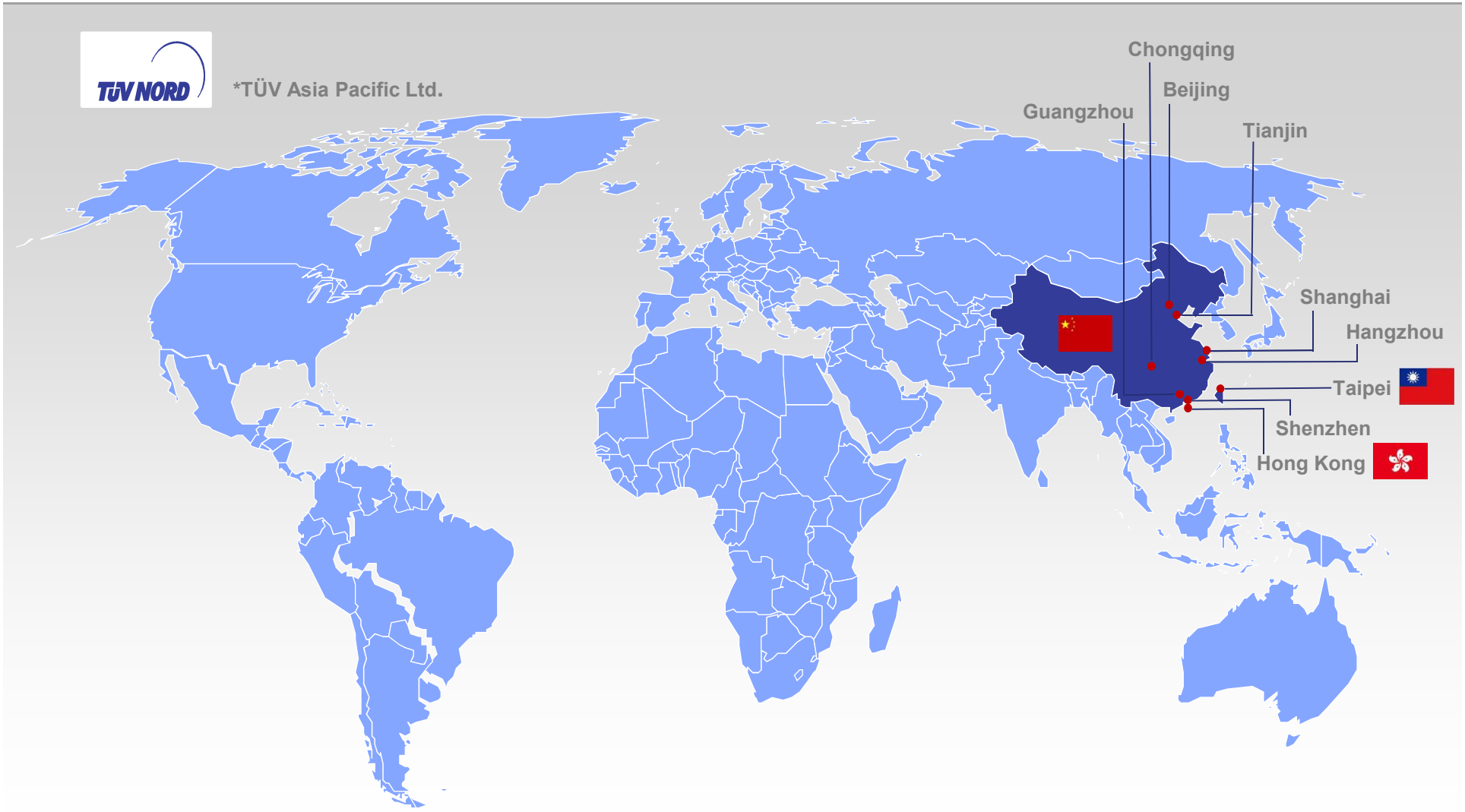
International / Operations of TÜV NORD



New areas of work year after year

- Steam boilers
- Mining
- Conveyor systems
- Electrical systems
- Pressure vessels
- Materials
- Motor vehicles
- Welding
- Driving licence examinations
- Piping
- Tank farms & storage tanks
- On-site supervision
- Noise control
- Conventional power generation
- Nuclear energy
- Education
- Occupational safety
- Occupational medicine
- Radiation protection
- Microelectronics
- Water protection
- Medical devices
- Biotechnology
- Quality assurance
- Information technology
- Telecommunications
- Certification
- Environmental impact assessment
- Renewable energies
- IT security
- Railway technology
- Data protection
- Health
- Aviation
- Natural resources
- Aerospace

Asia and Pacific Region
Presence - Greater China



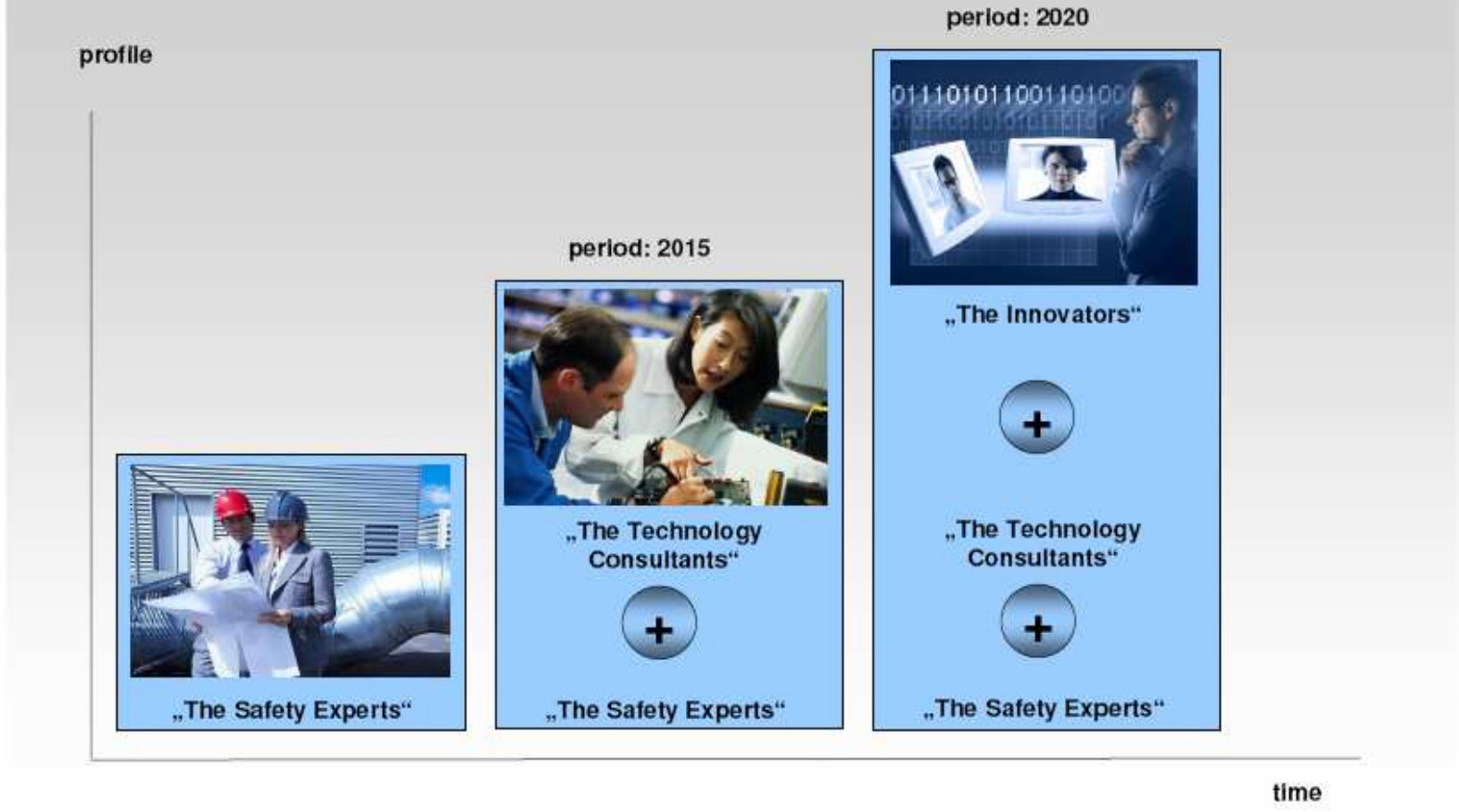
Qualified personnel provide the basis for high-level services

- Aerospace engineers
- Automotive engineers
- Biologists
- Chemists
- Civil engineers
- Economists
- Electrical engineers
- Geographers
- Geologists
- IT specialists
- Materials engineers
- Mechanical engineers
- Medical specialists
- Meteorologists
- Physicists
- Process engineers
- Psychologists

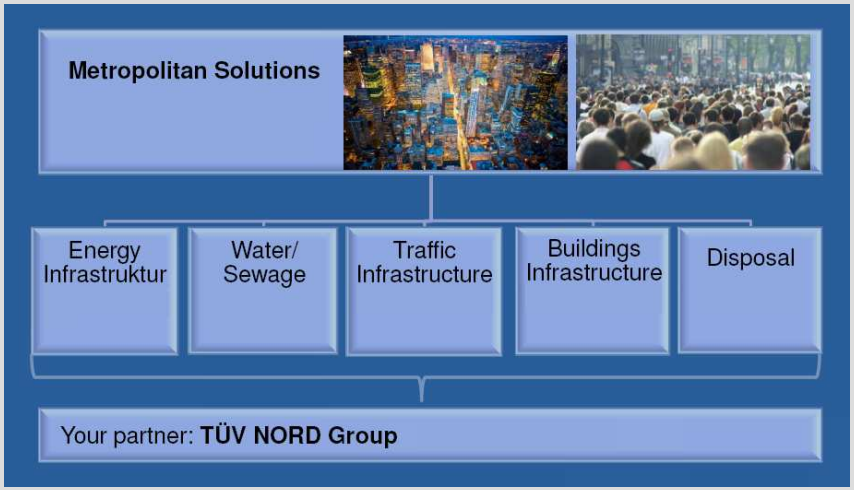
- 70% of all employees work in the technical domain.
- More than 2/3 of these are graduate engineers, and the rest are master craftsmen or technicians.

The future: long term perspective

Positioning of TÜV NORD Group
The long-term perspective 2020



Metropolitan Solutions



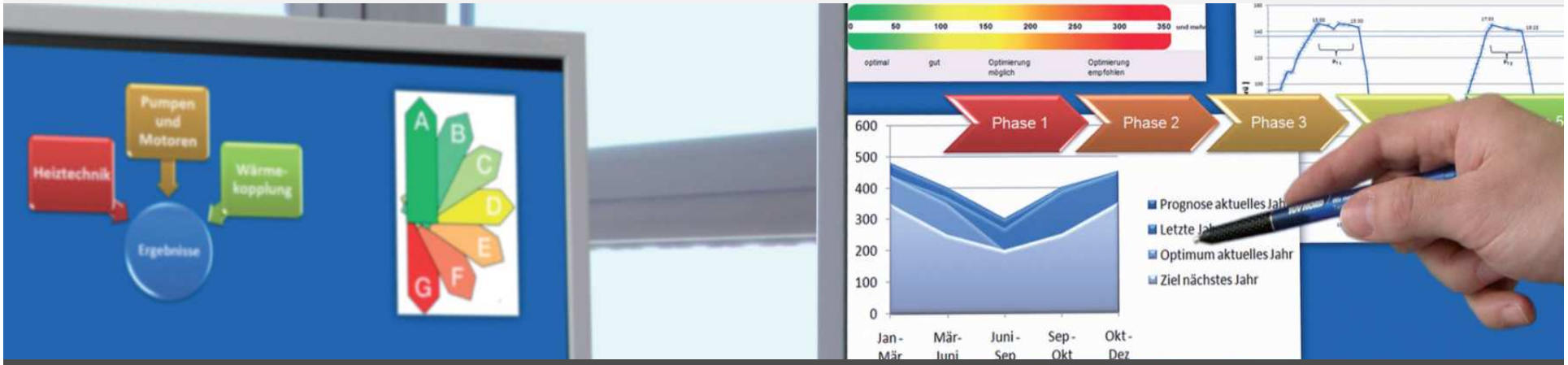
Metropolitan Solutions – Building Solutions
Urban planning

- Land use plans
  - Calculation and measurement of noise
  - Proposals for proper assessment
  - Preparation of appraisals for identifying commercial and industrial areas
  - Calculation of noise immission plans
- Authorization procedures
- Development plans
  - Project and infrastructure plans
  - Interior and exterior zone rules
  - Change prevention policy
- Environmental report
- Green structures plan

Metropolitan Solutions – Building Solutions

Energy management system (EnMS)

- Concetption and implementation
  - According ISO 50001
- Analysis of the organizational and communication structure
- Determination of unused potential
  - Energy controlling
  - Recording of energy data
  - Recording and assessment of energy consumers
  - Defining and optimizing of energy-relevant operational processes and systems
  - Identification of existing suboptimal features
- Continuous monitoring of the improvement
  - Review and adaption of the methods of measurement and assessment
- Preparation on internal energy audits and management reviews



Metropolitan Solutions – Building Solutions

Carbon neutral building, Carbon neutral company

- Certificate “Carbon Neutral Building”
  - Certificate “Carbon Neutral Erection” one-off certification
  - Certificate “Carbon Neutral Building Utilisation” annual certification
- Certificate “Carbon neutral Demolition”
- Certificate “Net Zero Emission Building”
  - one-off certification before the start of erection regarding the calculated carbon footprint for building operation
- Certificate “Carbon Neutral Company”
  - Verification of the Carbon Footprint for companies
  - Compensation of CO2 emissions by making valid CO2-Certificates available

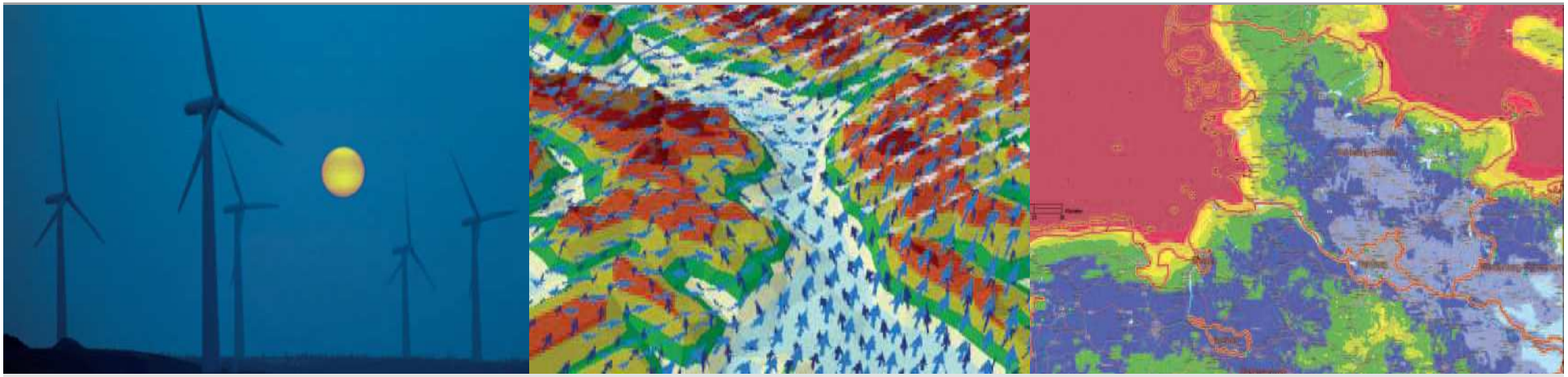
Metropolitan Solutions – Building Solutions

Environmental report

- Basic evaluation
- Determining of effective factors of the project
  - construction phase, normal operation, interruptions of operation, decommissioning
- Condition analysis
- Impact forecast
- Total assessment by experts
- environmental impact study

Metropolitan Solutions – Building Solutions

Energy production: Wind energy



- Due diligence examinations
- Certification of systems and system components
- Onshore and offshore facilities
- Wind potential, energy analysis
- Site appraisals, project inspections, ground expert reports
- Performance curve measurements and acoustic inspections
- Risk and damage assessments
- Quality management
- Acceptance testing and regular inspections
- Production inspections

Metropolitan Solutions – Building Solutions

Energy production: Photovoltaics

- Design approval and certification of photovoltaic modules and power converters forming part of photovoltaic energy systems
  - According to EN 61730-1, EN 61730-2, EN 61215 and prEN 62109-1
  - Execution of type approval testing, initial inspection of the production site, test symbol and manufacturing monitoring control measures
- "TÜV NORD type-tested"
  - Symbol ensures safety and guarantees compliance with the respective product standard and the rules of good technological practice

Metropolitan Solutions – Building Solutions

Energy production: Biogas

- Feasibility and profitability analyses
- Support in licensing procedures
- Explosion, fire and lightning protection
- Safety tests
- Construction supervision, performance measurement and guarantee acceptance
- Certification of biogas plants, components and products

Metropolitan Solutions – Building Solutions

Energy production: Fossil energies

- Certification „Carbon Capture Ready“
- Designing testing intervals and scopes
- Emission measurements
- Material tests and damage inspections
- Performance and efficiency calculations
- Emissions trading
- Emissions measurement
- Valuations for power plants
- Life cycle analyses

Metropolitan Solutions – Building Solutions

Energy Distribution: Pipelines

- Planning and routing of pipelines
- Draw up approval documents
- Undertake environmental compatibility studies
- Test concepts
- Quality assurance
- Selection of materials and processing methods
- Lifetime calculations
- Pigging data assessments
- Periodic testing
- Protective measures against operational disturbance

The Ecopark Project

TÜV NORD – 2nd Party
Assessment of the Ecopark Index-System

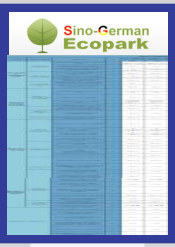
中德生态园指标体系二方评估

Sino-German Ecopark 中德生态园

Economic and Technological Development Zone of Qingdao

Ecopark Index-System 生态园指标体系

Ecopark Index-System 生态园指标体系



Economic Optimization
经济优化

Environmental Friendly
环境友好

Resource Saving
资源节约

Inclusive Development
包容发展

Qualitative Indicators
定性指标

Contains 40 Indicators from 5 main areas
指标体系包含40个指标，涵盖五个方面

Ecopark Index-System 生态园指标体系

Topics	Sub Topics	Indicators	NO.	Indicator Value	
				The Year of 2015	TheYear of 2020
		Coverage of Social Insurance for Local Residents	32	100%	100%
	Exchange and Coorperation Strengthening	Professional Training Hours for Labor Polulation	33	⩾20 hours/year	⩾25 hours/year
		Frequency of Sino-Germany exchange activities	34	≥1次/年	≥1次/年
Qualitative Indicators		Improving Air Quality	35	N/A	N/A
		High level Delivery of Intelligent System on site	36	N/A	N/A
		Priority of New Marine Industry	37	N/A	N/A
		Local Industrial Symbiosis and Encourage of Service Facilities for Key Industries	38	N/A	N/A

Requirements 主要评估依据

- Domestic Regulation
  国内规范、规划或标准
- International Guidelines
  国际导则
- Statistic Data
  统计数据
- Best Practice
  最佳实践案例

Indicator Value 指标值

- Measurability of the objectives
  设置可测量、可达到的目标值

Project participation 项目各参与方

- **Customer/ Owner**
  Sino-German Ecopark
  客户/业主：中德生态园

- **Concept & Design**
  Bluepath City Consulting
  指标体系设计：天津御道工程咨询有限公司

- **2nd Party**
  TÜV NORD – China
  二方评估：**TUV NORD** 中国

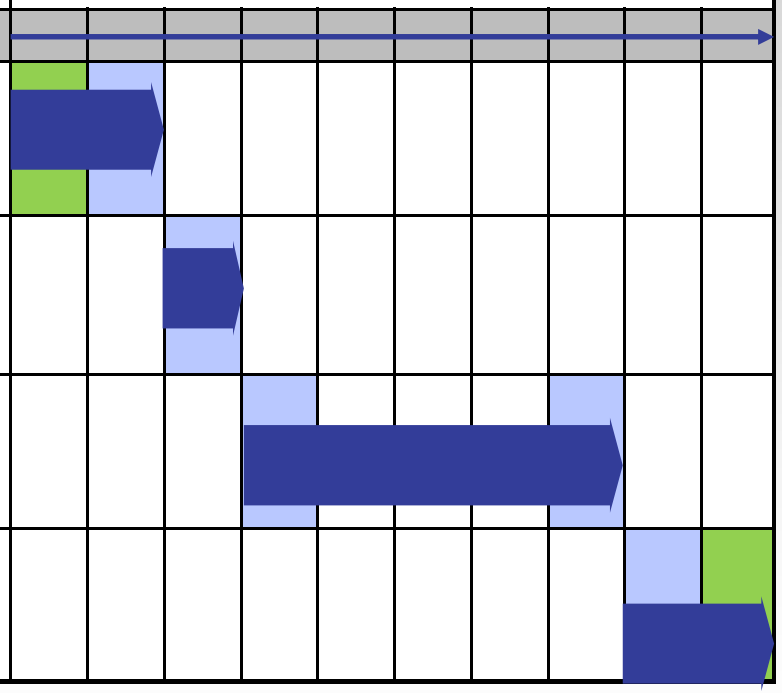
- **Project Management**
  Sino-German Ecopark - Construction Headquarter Office
  项目管理：中德生态园建设指挥部

Assessment 评估

Statement of the Ecopark Index-System
中德生态园指标体系评估意见

Procedure 工作方法及流程

No. 步骤	Tasks 工作	Project plan 项目过程
1	**Pre-study** (Index, Guidelines, Statistic data) 文献评估（项目设计相关文献）	
2	**On site audit** (Interview: Ecopark Projekt Team) 现场探勘（对项目团队进行访谈）	
3	**Technical assessment** (review, evaluation of documents) 技术评审（对相关报告进行审核评估）	
4	**Statement** (Assessment Report) 评估意见（评估报告）	



Assessment Principle 评估标准—原则

SMART - Specific, **M**easurable, **A**chievable, **R**elevant, **T**ime-based
具体的、可量化、可实现、有相关性、有时限性

Conformity
符合评估

Comparision of the domestic and international references with the design of the indicators
对指标体系和国内国际参考文献、指标进行比较

Qualitative
定性评估

Decide by experts' taking the applicability and relevance of the references into account
基于专业能力，对文献的适用性、相关性和现实符合度进行分析

Practical
实践评估

On site interview weather the index was designed with consideration of the existing development plan and implementation in future practice
现场踏勘和访谈中，评估指标体系的设计是否考虑了当地的规划

Transparency
透明评估

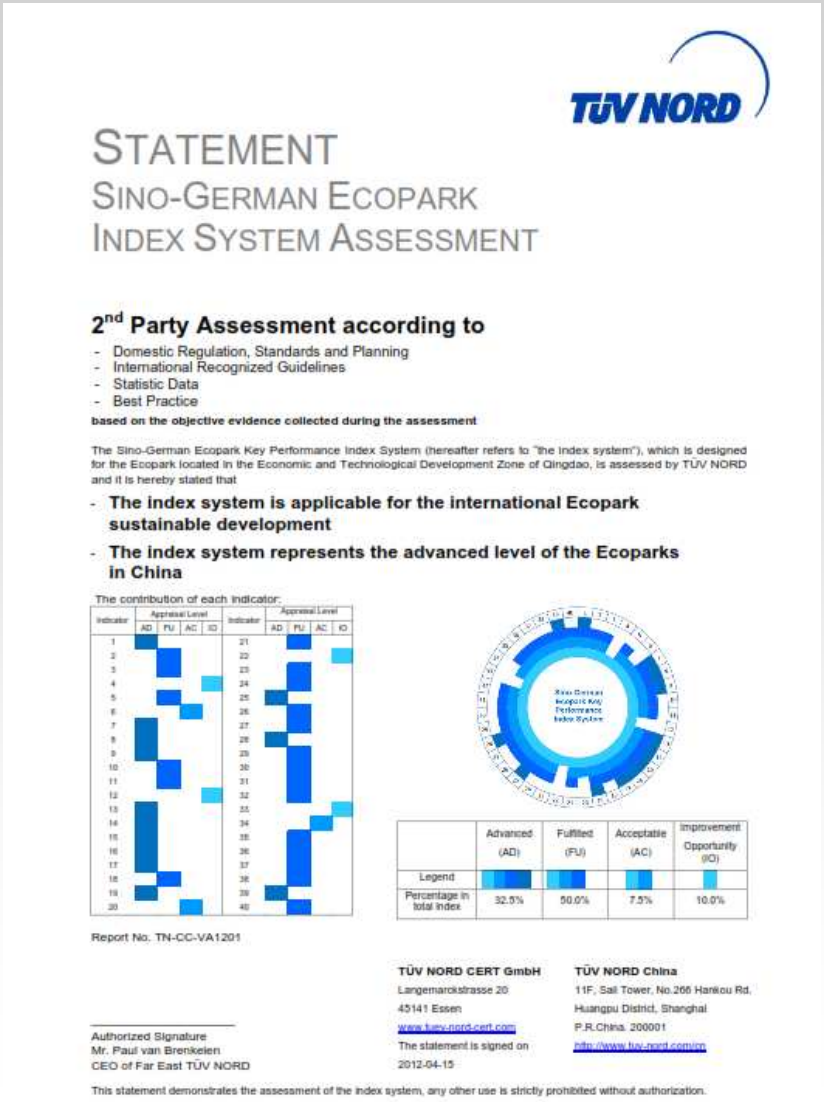
The assessment process and conclusion/opinion were well documented to make further desicion with resonable confidence
评估过程和结论均在报告中详尽反映，为报告使用者提供进行理性判断的支撑

Appraisal Level 评估

Based on assessment principle, each indictor was assessed and classified into four levels.
根据评估原则，对每个指标评级，共分四级

- **Advanced** 前瞻性
- **Fulfilled** 符合性
- **Acceptable**可接受
- **Improvement Opportunities** 待改进

Statement 评估意见



TÜV NORD

STATEMENT

SINO-GERMAN ECOPARK

INDEX SYSTEM ASSESSMENT

2nd Party Assessment according to

- Domestic Regulation, Standards and Planning
- International Recognized Guidelines
- Statistic Data
- Best Practice

based on the objective evidence collected during the assessment

The Sino-German Ecopark Key Performance Index System (hereafter refers to "the index system"), which is designed for the Ecopark located in the Economic and Technological Development Zone of Qingdao, is assessed by TÜV NORD and it is hereby stated that

- **The index system is applicable for the international Ecopark sustainable development**
- **The index system represents the advanced level of the Ecoparks in China**

The contribution of each indicator:

	Advanced (AD)	Fulfilled (FU)	Acceptable (AC)	Improvement Opportunity (IO)
Legend				
Percentage in total index	32.5%	50.0%	7.5%	10.0%

Report No. TN-CC-VA1201

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The statement is signed on
2012-04-15

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Huangpu District, Shanghai
P.R.China. 200001
http://www.tuv-nord.com/cn

Authorized Signature
Mr. Paul van Brenkelen
CEO of Far East TÜV NORD

This statement demonstrates the assessment of the index system, any other use is strictly prohibited without authorization.

- The index system is applicable for the international Ecopark sustainable development
  指标体系符合国际生态园可持续发展的实践要求
- The index system represents the advanced level of the Ecoparks in China
  指标体系代表了国内的先进水平

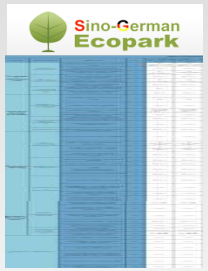
Improvment Opportunities 持续改进

ID33 – Professional Training
ID33 – 培训和发展

► **Demand orientated**
基于企业员工的培训需求

ID 4 – Energy Recovery
ID 4 – 工业余能回收利用

► **Attetion to the selection of industry type (Investment Phase)**
考虑未来进入生态园的产业类型（招商引资阶段）



► **Local feasibility study**
基于本地的可行性研究

ID 12 – Outdoor Illumination
ID 12 – 室外照明功能区

► **Should align with muncipal infrastructure planning**
与当地市政规划衔接

ID 22 – unconventional water use rate
ID 22 – 非传统水资源利用率

* ID = Indicator No.

Your Professional Partner for the Sustainability

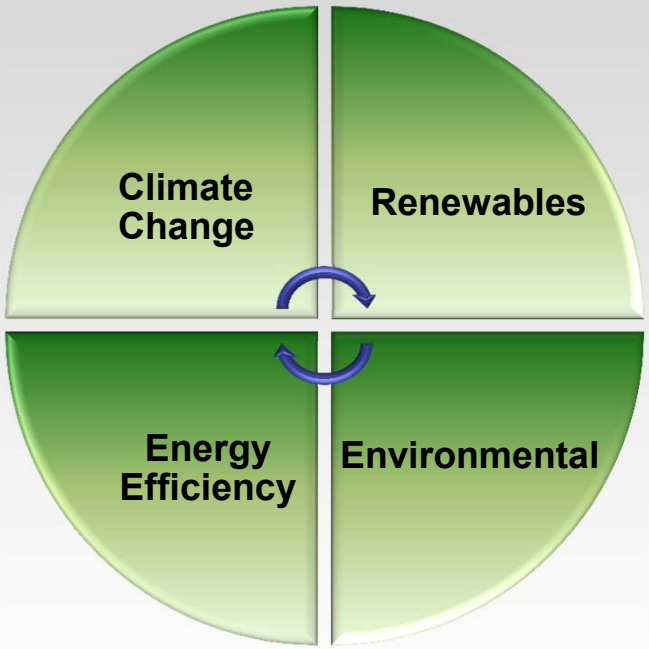
Further Cooperation Opportunities

- Capacity building in sustainability field
- Indicator monitoring & measurement
- development
- Technical support for the green institute
- Technology, consultation and experience
- Exchange
- Customer-oriented service

TÜV NORD Capacity in the Sustainability

- Carbon Footprint
- Eco-design
- Carbon neutrality
- Carbon offsetting
- GHG assessments
- Carbon Academy

- PV module testing & certification
- Training and consultation for lab
- Factory inspection
- Pre-shipment inspections



- Wind turbine safety inspection
- Certification
- Production inspections
- Due diligence examinations
- Performance measurement

- Green Building
- Energy Efficiency Solution
- 2nd party Energy management audit
- Energy Systems

- Life Cycle Assessments, Eco Balancing Environmental Impact Analysis
- Environmental management
- Social Accountability
- Sustainability reports

TÜV NORD – contacts 联系方式

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