EVALUATING SUSTAINABILITY OF ICT SOLUTIONS IN CITIES

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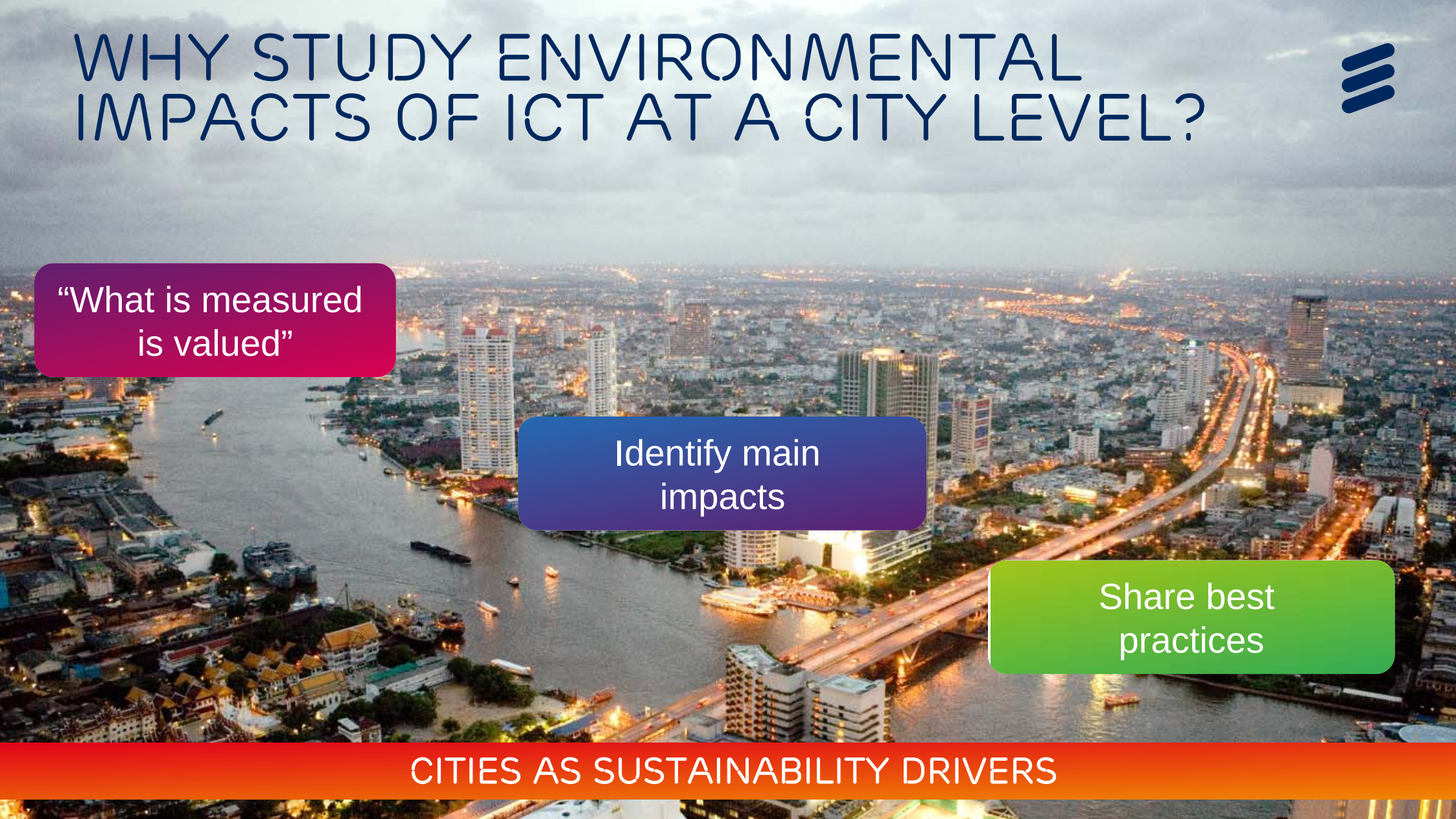
EIGHTH ITU SYMPOSIUM ON ICTs, THE ENVIRONMENT AND CLIMATE CHANGE

ICT AND SMART CITIES

SMART CITIES = SUSTAINABLE CITIES?

WHY STUDY ENVIRONMENTAL IMPACTS OF ICT AT A CITY LEVEL?



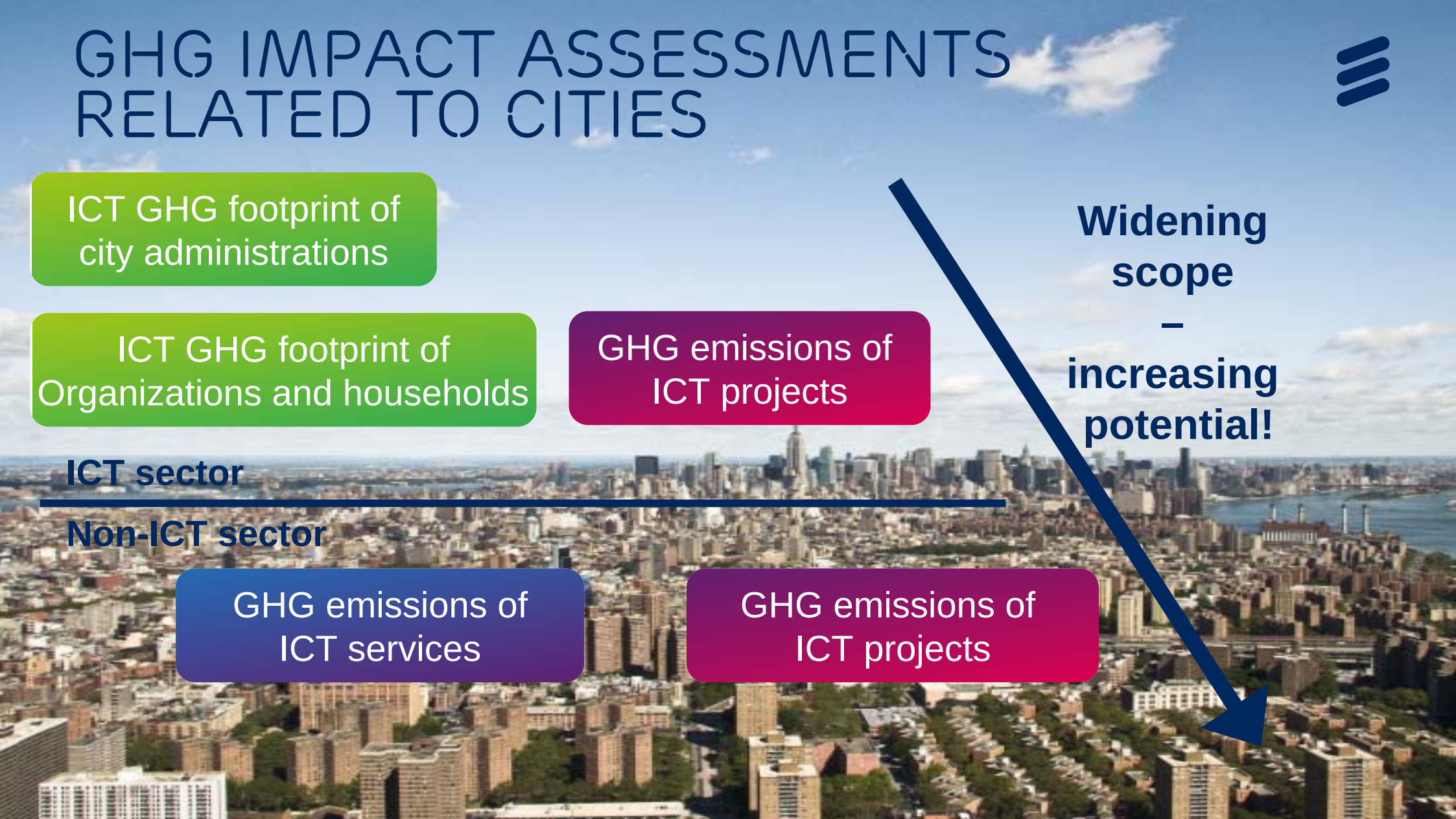
"What is measured is valued"

Identify main impacts

Share best practices

CITIES AS SUSTAINABILITY DRIVERS

GHG IMPACT ASSESSMENTS RELATED TO CITIES



ASSESSING ICT SOLUTIONS IN A CITY

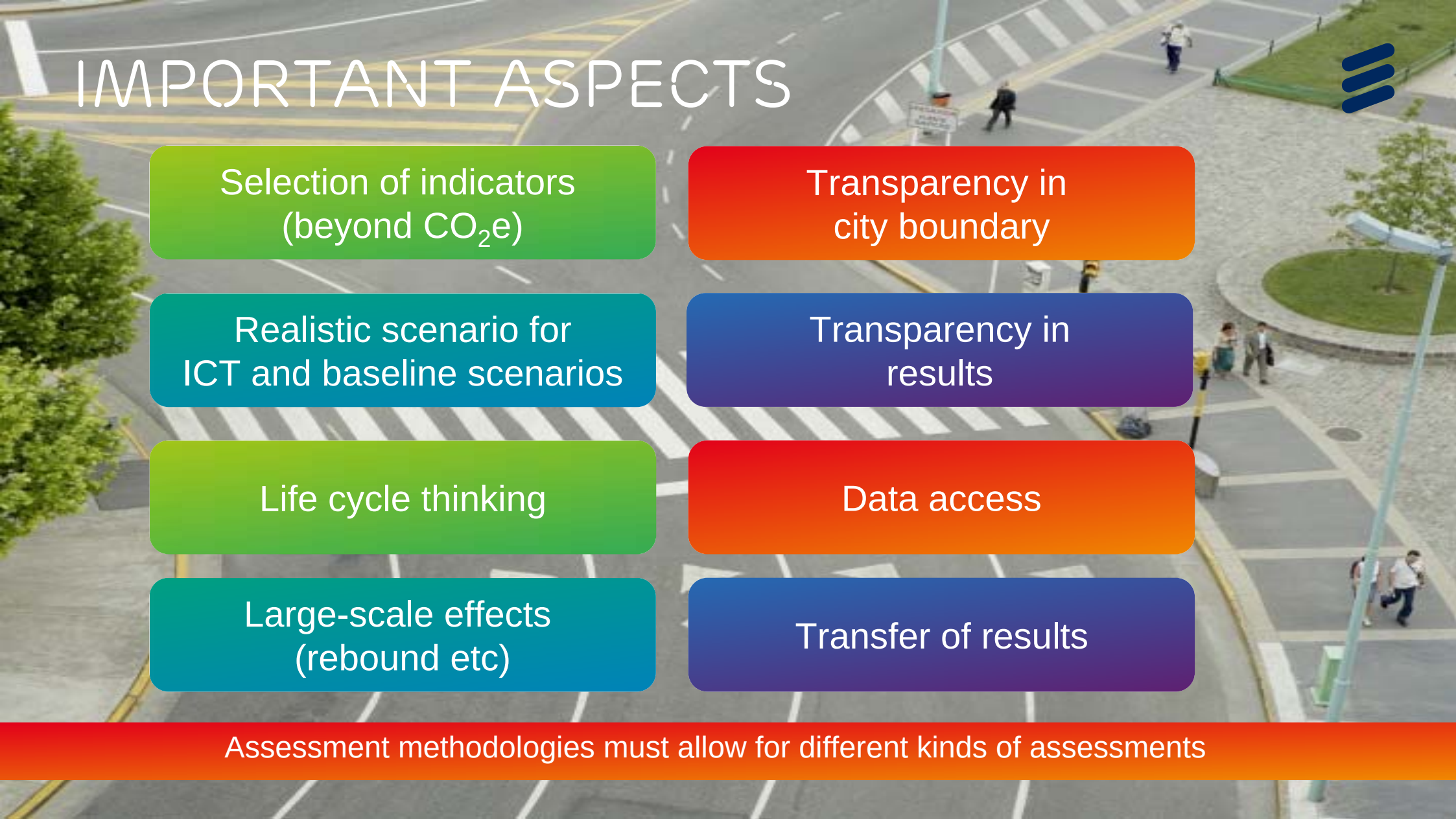
Describe the ICT solution

Select functional unit and system boundaries

Build a usage scenario

Calculate impacts

IMPORTANT ASPECTS



- Selection of indicators (beyond CO_2e)
- Transparency in city boundary
- Realistic scenario for ICT and baseline scenarios
- Transparency in results
- Life cycle thinking
- Data access
- Large-scale effects (rebound etc)
- Transfer of results

Assessment methodologies must allow for different kinds of assessments

SHARING BEST PRACTICES
- TRANSFERRING RESULTS BETWEEN CITIES

Assessment of ICT solution in City A

Assessment parameters:
- ICT solution components life cycle impacts
- Changed activities due to solution
- Environmental, social and economic effects
- Energy mix in geographic area

Impact

Scaling method

City profile A	City profile B
• Energy mix A	• Energy mix B
• Activities X,Y,Z	• Activities W,Q,R
• Type of ICT components	• Type of ICT components
• Drivers and barriers	• Drivers and barriers
• Location profile	• Location profile
• Addressable market	• Addressable market
• …	• …

Results transferred to City B

Impacts e.g. resource depletion, kWh, CO_2

City A
Setting and profile

City B
Setting and profile

METHODOLOGY APPLICATION – TRANSFERRING RESULTS BETWEEN CITIES

Corporate level results

Stockholm

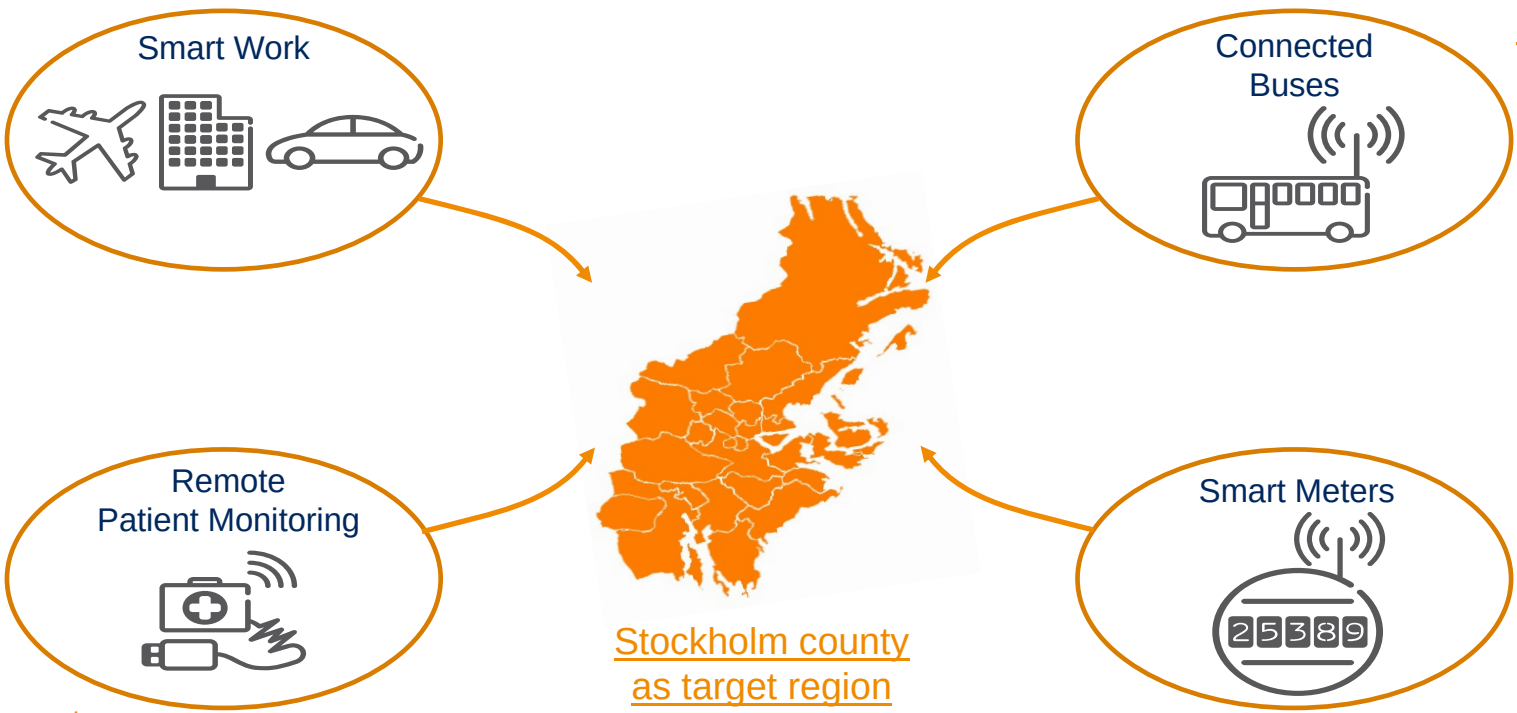
ICT solution concept

ICT solution implemented and evaluated

City in Brazil

ICT solution implemented, not jet evaluated

Region in Australia



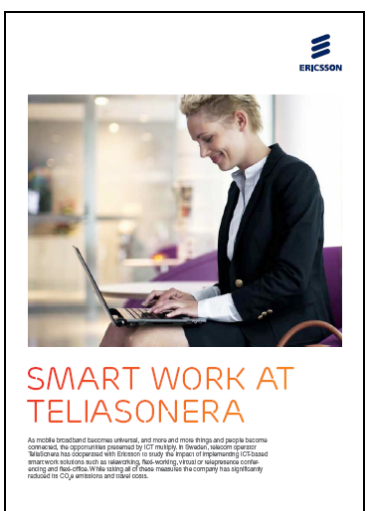
Stockholm county as target region

FURTHER READING

Methodology:

Evaluating sustainability of using ICT solutions in smart cities – methodology requirements
(N. Lövehagen, A. Bondesson)
http://e-collection.library.ethz.ch/eserv/eth:6558/eth-6558-01.pdf p 181-188

Case studies:



http://www.ericsson.com/thecompany/sustainability_corporateresponsibility/enabling_a_low_carbon_economy

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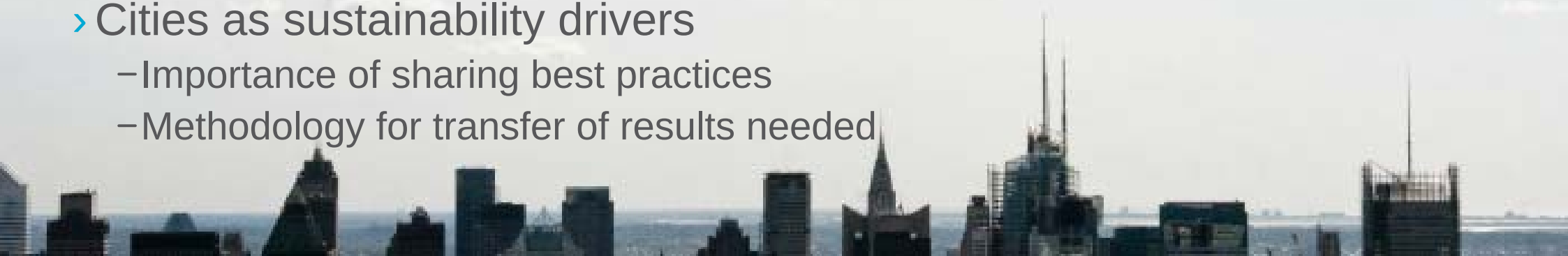
SUMMARY

- Environmental assessment of ICT impact at city level
  - Various assessment targets – different sustainability potential
  - Different cities – different setups
- Important methodological aspects
  - Data access and transparency of boundaries and results
  - Life cycle perspective and realistic scenarios…don´t forget the baseline!
  - Large-scale effects (rebound etc)
- Cities as sustainability drivers
  - Importance of sharing best practices
  - Methodology for transfer of results needed



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CITY MODEL

Non-community services

- Finance
- Workplaces
- Persuasive information

Community services

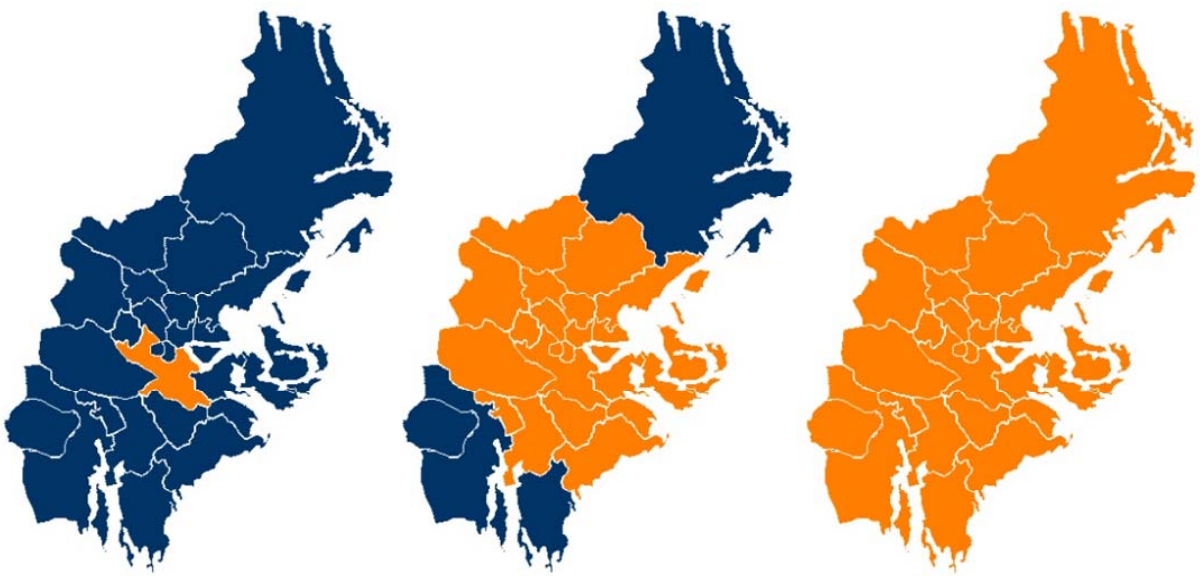
- Healthcare
- Education
- Recreation & Commerce
- Travel & Transport
- Security & Safety
- Living Environment

Infrastructure Services

- Energy Electricity
- Water
- Buildings
- Transport Infrastructure
- Waste
- Data- & Tele-Communication

EXAMPLE OF SETTING SYSTEM BOUNDARIES – STOCKHOLM, SWEDEN

- The Stockholm Municipality (to the left), the target geographical system boundary for assessments of impacts in Stockholm (middle), and geographical boundaries used in the assessment (to the right).



Stockholm municipality

Target definition

Stockholm county (selected geographical area)