Green Buildings and Greening Infrastructure; – a Shared Framework?

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DBSA
Development Bank of Southern Africa

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Overview

- **Policy assessment:**
  - **“from intent to action”**
- **Regulation, Codes, Standards, Measurement and Assessment Tools, Guidelines, ...:**
  - **“how green is my infrastructure”**
- **Green Buildings:**
  - **emerging policy framework**
  - **monitoring**
- **Towards a policy framework for green infrastructure**
- **Concluding comments**

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Policy Assessment

“from intent to action”

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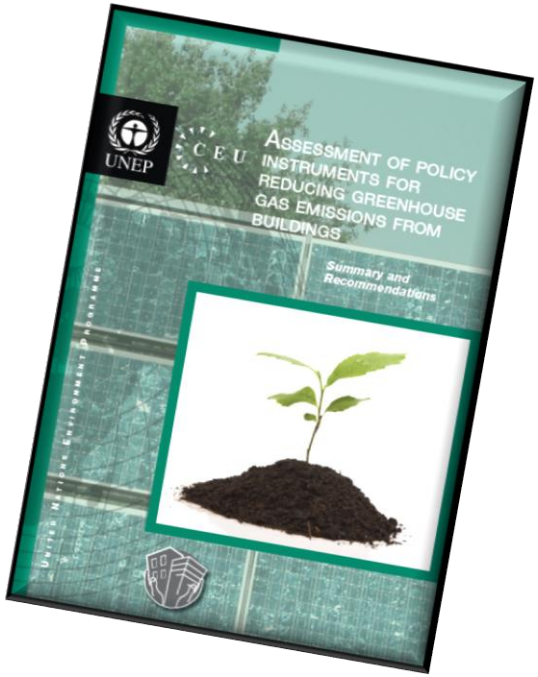
UNEP-SBCI; Policy Instruments

- **Regulatory instruments and control instruments, such as building codes and appliance standards, are both most effective and normally also most cost-effective**



UNEP (2007) Assessment of Policy instruments for Reducing Greenhouse Gas Emissions from Buildings. www.unep.org

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Policy Instruments

Policy instrument	*Emission Reduction Effectiveness*	*Cost-effectiveness*
Appliance standards	**High**	**High**
Building codes	**High**	**Medium**
Energy efficiency certificate schemes/ white certificates	**Medium**	**High/ Medium**
Labeling and certification programs	**Medium/ High**	**High**

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Regulation, Codes, Standards, Measurement and Assessment Tools, Guidelines, ...

"how green is my infrastructure?"

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Green Regulations, Codes, Standards, ...

Buildings

Infrastructure

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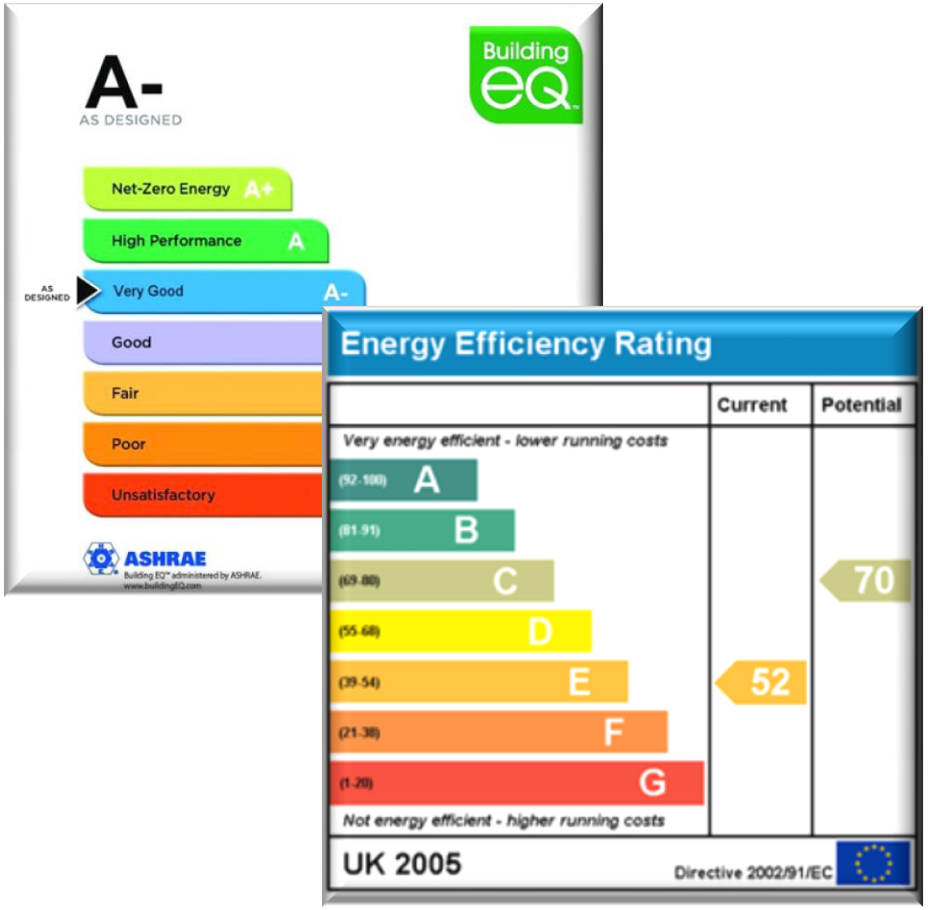
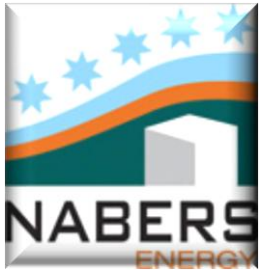
Green Rating, Labelling & Certification





Buildings

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Green Rating, Labelling & Certification

- **EU Union Directive 2002/91/EC for energy performance certificates for buildings provides for reference values such as current legal standards or other benchmarks**

- **Green buildings:**
  - **energy, GHG, water**
- **Green infrastructure:**
  - **impact vs consumption**
  - **range of metrics / benchmarks required**
  - **complex**

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Green Rating, Labelling & Certification

Buildings

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Green Star SA Office

- Management
- IEQ
- Energy
- Transport
- Water
- Materials
- Land use & ecology
- Emissions
- Innovation

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Green Rating, Labelling & Certification

Buildings

Infrastructure

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Green Roads

- Mandatory requirements
- Environment & water
- Access & equity
- Construction activities
- Materials & resources
- Pavement technologies
- Custom credits

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Green Rating, Labelling & Certification

Buildings

Infrastructure

Neighbourhoods

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LEED - ND

- **Smart location & linkages**
- **Neighbour pattern & design**
- **Green infrastructure & buildings:**
  - **construction activity pollution prevention**
  - **site disturbance**
  - **contaminant reduction**
  - **stormwater management**
  - **heat island reduction**
  - **on-site energy generation**
  - **on-site renewable energy sources**
  - **district heating & cooling**
  - **infrastructure energy efficiency**
  - **wastewater management**
  - **recycled content**
  - **……**

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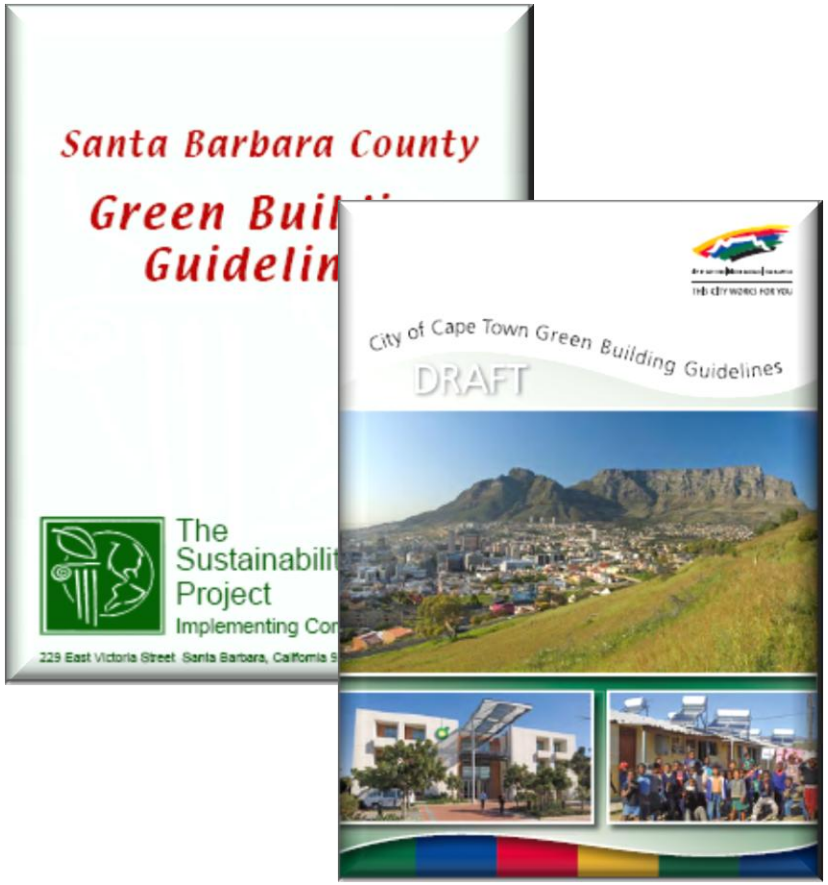
Green Guidelines, ...



Buildings

Infrastructure

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Green Buildings;
An Emerging Policy Framework

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An Emerging Strategy

- **Stakeholder:**
  - **public**
  - **private**

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An Emerging Strategy

- **Stakeholder:**
  - **public**
  - **private**
- **Sector:**
  - **non-residential**
    - **commercial, education, health, ...**
  - **residential**
    - **non-subsidy, subsidy**

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An Emerging Strategy

- **Stakeholder:**
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  - **residential**
    - **non-subsidy, subsidy**
- **Stock:**
  - **new (design)**
  - **existing (operation)**

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Emerging Strategy; Commercial Buildings

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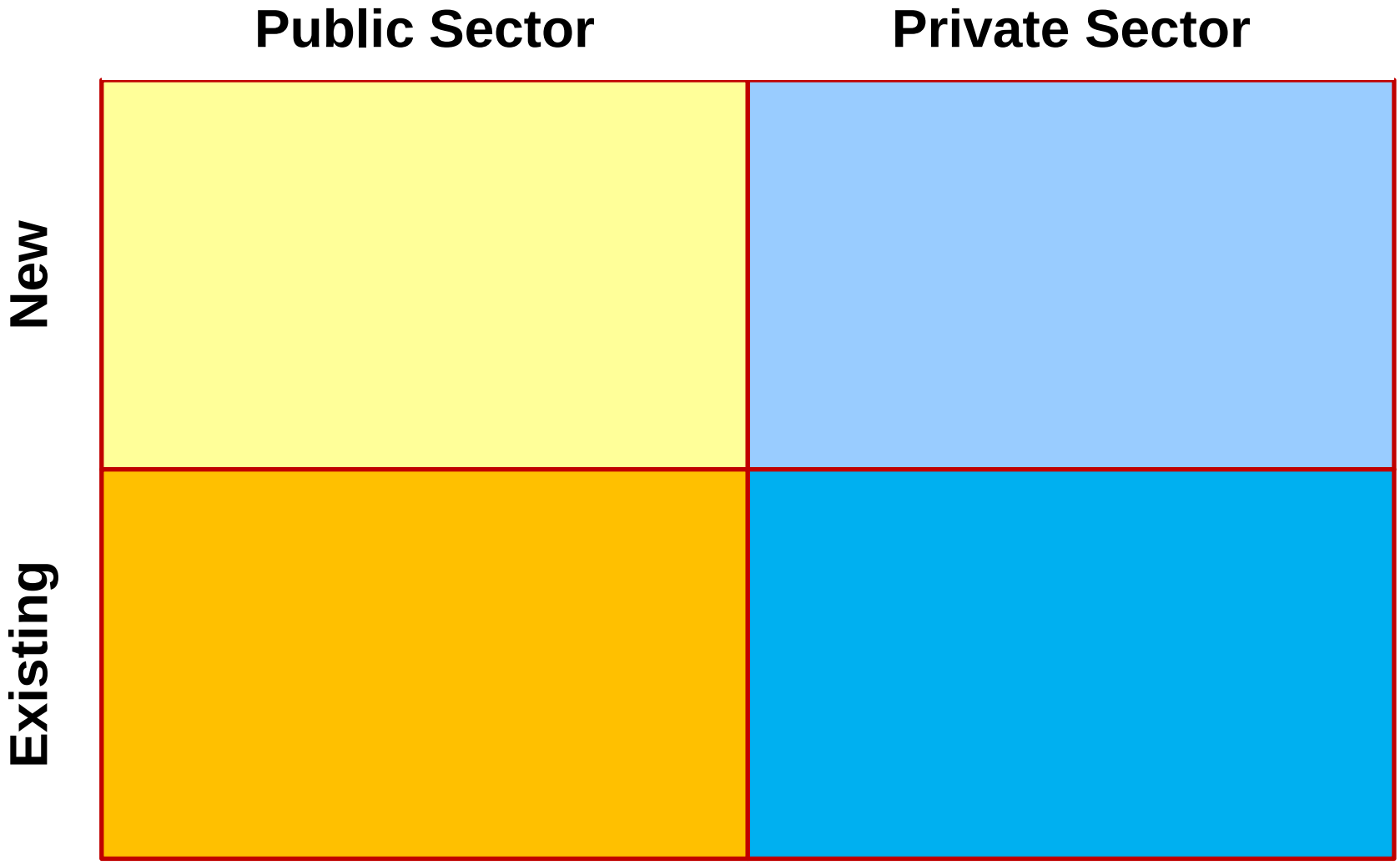
Emerging Strategy; Commercial Buildings



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Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New		•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing		

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Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing		

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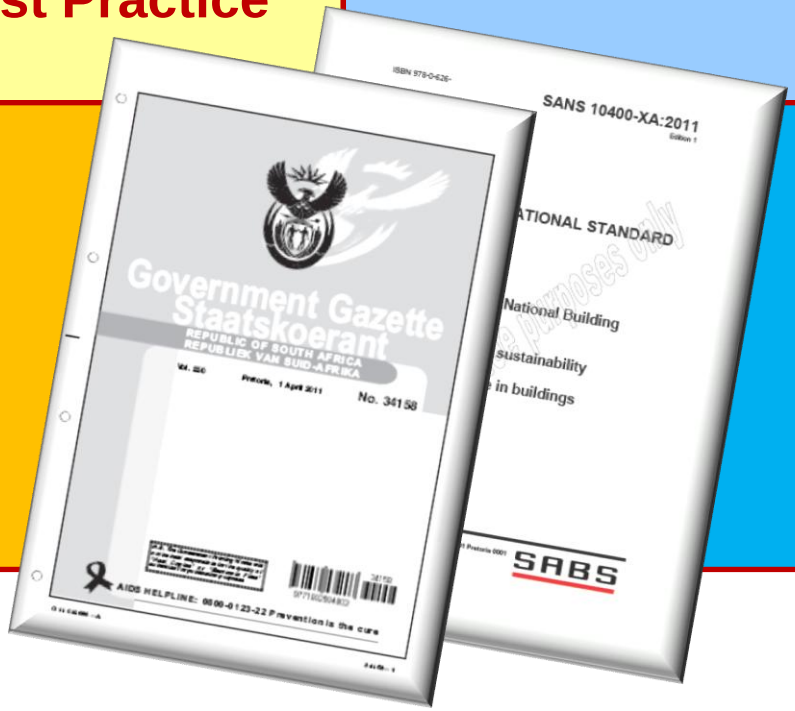
Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard •4Star Green Star SA Certification; Best Practice	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing		



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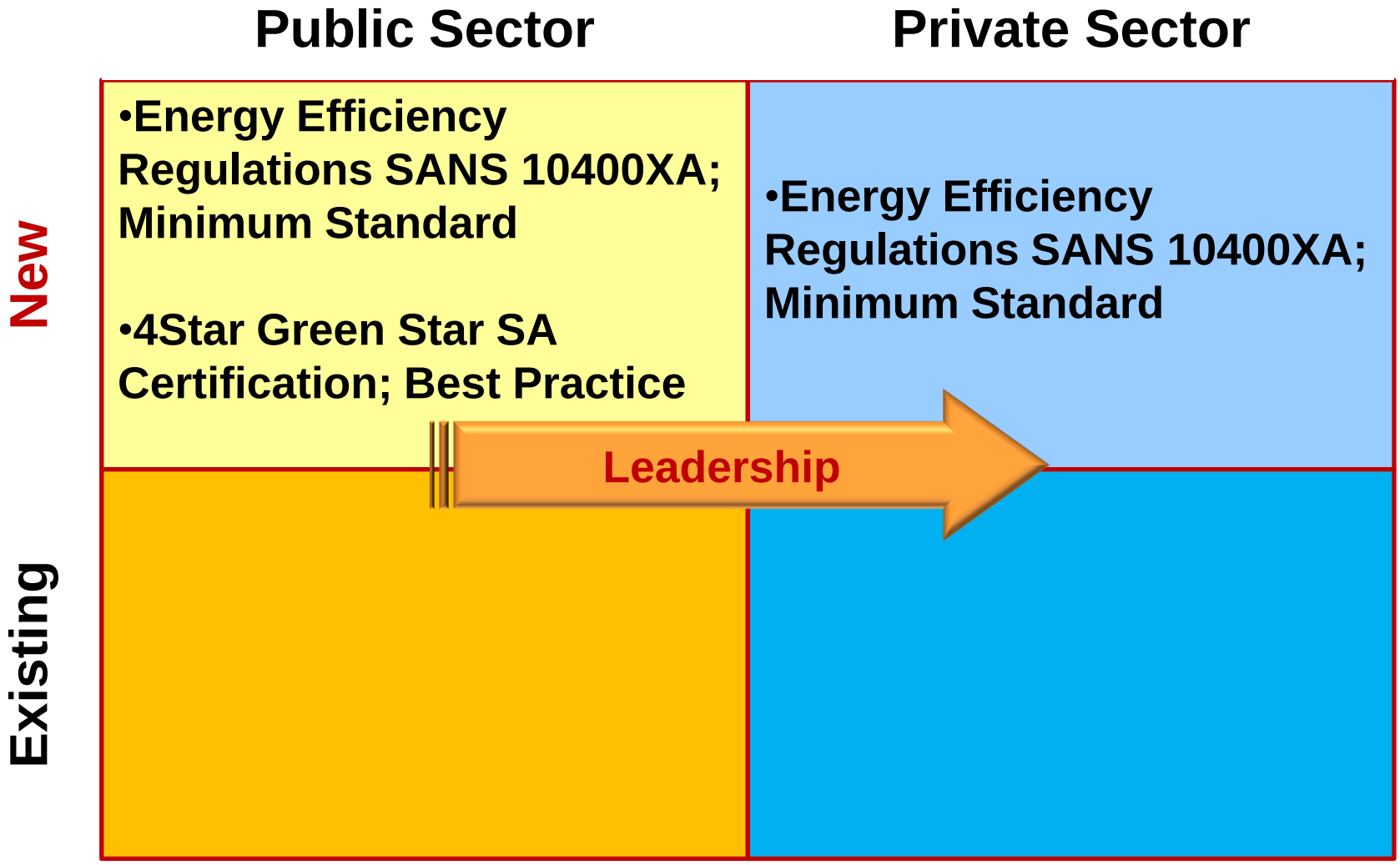
Emerging Strategy; Commercial Buildings



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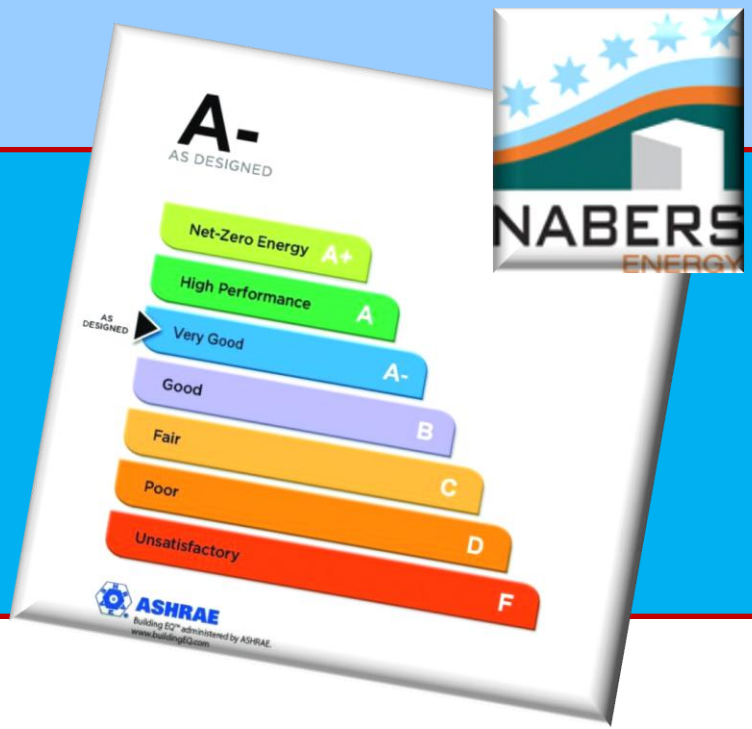
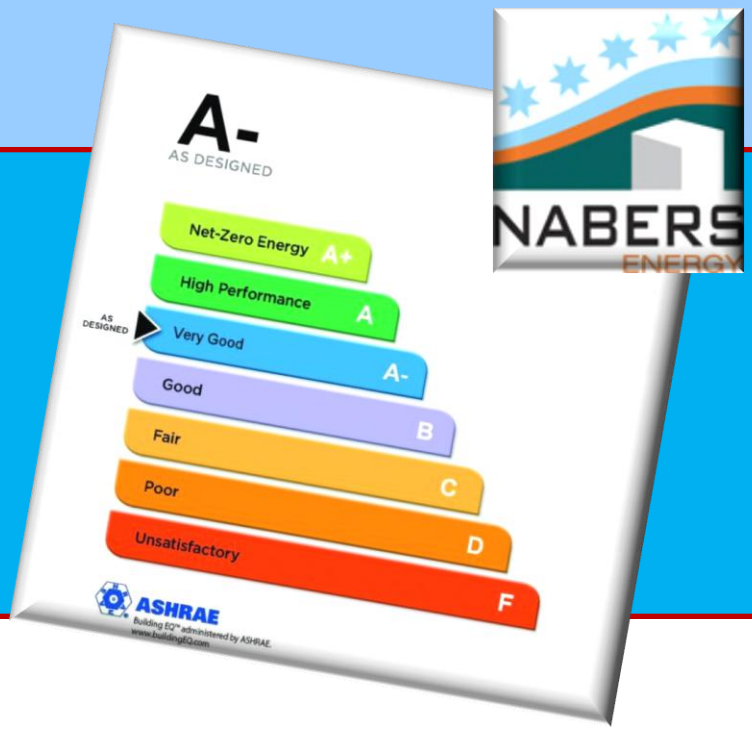
Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard •4Star Green Star SA Certification; Best Practice	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing	•Energy & Water Performance Certificates	

Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard •4Star Green Star SA Certification; Best Practice	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing	•Energy & Water Performance Certificates •Mandatory retrofitting below thresholds?	

Emerging Strategy; Commercial Buildings

	Public Sector	Private Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard •4Star Green Star SA Certification; Best Practice	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard
Existing	•Energy & Water Performance Certificates •Mandatory retrofitting below thresholds?	•Energy & Water Performance Certificates on sale or change of ownership / tenants

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Emerging Strategy; Residential

	Non-Subsidy Sector	Subsidy Sector
New	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard	•Energy Efficiency Regulations SANS 10400XA; Minimum Standard ?
Existing	•Energy & Water Performance Certificates on sale or change of ownership / tenants?	•?

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Green Buildings; Monitoring

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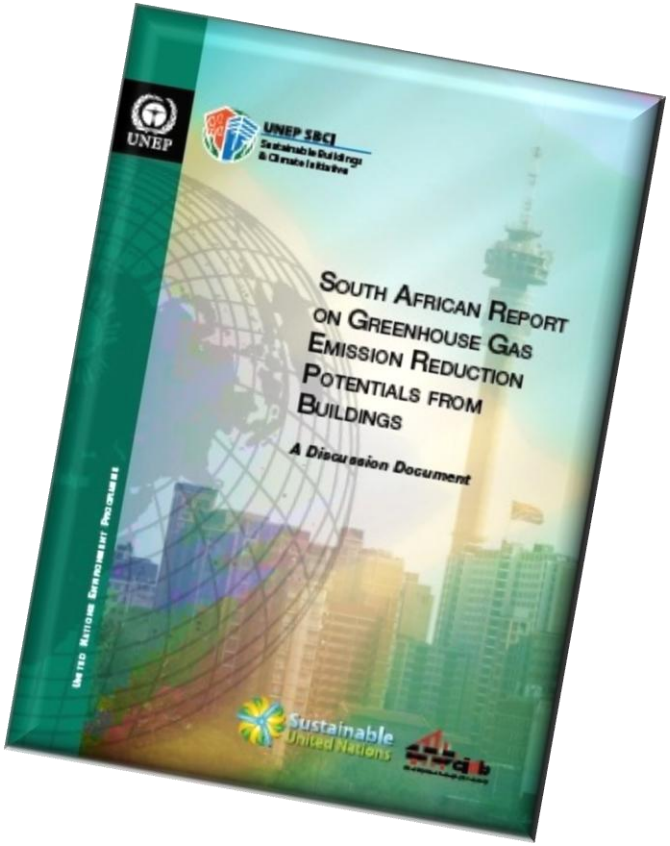
Monitoring

South African Report on Greenhouse Gas Emission Reduction Potentials from Buildings



UNEP SBCI
Sustainable Buildings & Climate Initiative

UNEP

http://www.cidb.org.za
http://www.unep.org/sbci

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UNSP-SBCI SB Index

- **... a globally consistent framework to understand, measure and report the influence of the performance of the building stock on core sustainability issues**
- **.... a tool to support the generating of annual reports on progress made by jurisdictions in improving the sustainability of building stock**

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UNSP-SBCI SB Index (Draft)

Indicator	Measure	Policy Instrument	Scope
GHG Emissions; Building Operations	Minimum requirement: • kg/CO_2e/yr Optional requirement: • kg/CO_2e/UNIT/yr, where UNIT = • per area • per capita • per economic unit	Mandatory policy instruments with a likely substantive impact	• GHG emissions arising from the building operations ..... • Policy and regulatory impacts on GHG emissions arising from the building operations

UNSP-SBCI SB Index (Draft)

Indicator	Measure	Policy Instrument	Scope
Water Use; Building Operations	Minimum requirement: • kl/yr or tonne/yr Optional requirement: • kl/ UNIT/yr, where UNIT = • per area • per capita • per economic unit	• Mandatory policy instruments with a likely substantive impact	• All water used within the building systems ..... • Policy and regulatory impacts on water use arising from the building operations

Green Infrastructure;
Towards a Policy Framework

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Green Infrastructure; Class

- **Public:**
  - **transport**
    - **road, rail, port**
  - **water**
    - **storage, bulk supply**
  - **energy**
    - **generation, distribution**
  - **waste**
  - **...**
- **Private:**
  - **manufacturing**
  - **mining**
  - **telecoms**
  - **commercial**
  - **....**

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Green Instruments / Tools

- **Regulation, Codes, Standards:**
  - **impact: EIA, pollution, waste, recycling, noise, ...**
  - **design / operation: ?**
- **Measurement and Assessment Tools:**
  - **rating: Greenroads, LEED ND, AGIC, ...**
  - **labelling & certification: ?**
- **Guidelines:**
  - **FIDIC PSM, ...**

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Towards a Regulatory Framework

- **Stakeholder:**
  - **public**
  - **private**
- **Sector:**
  - **transport, water, energy, waste, ...**
  - **manufacturing, mining, telecoms, commercial, ...**
- **Stock:**
  - **new (design)**
  - **existing (operation)**

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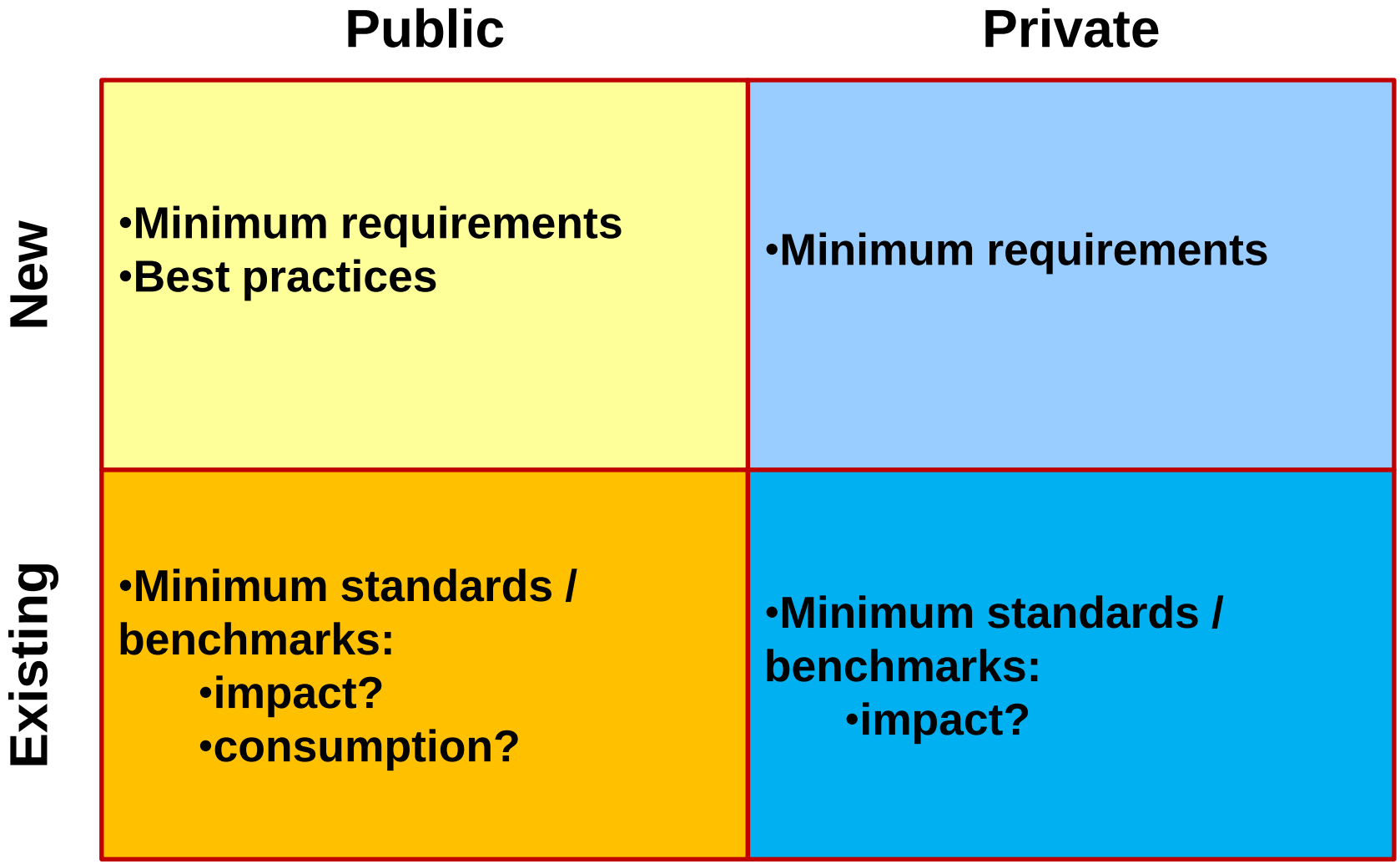
Towards a Regulatory Framework



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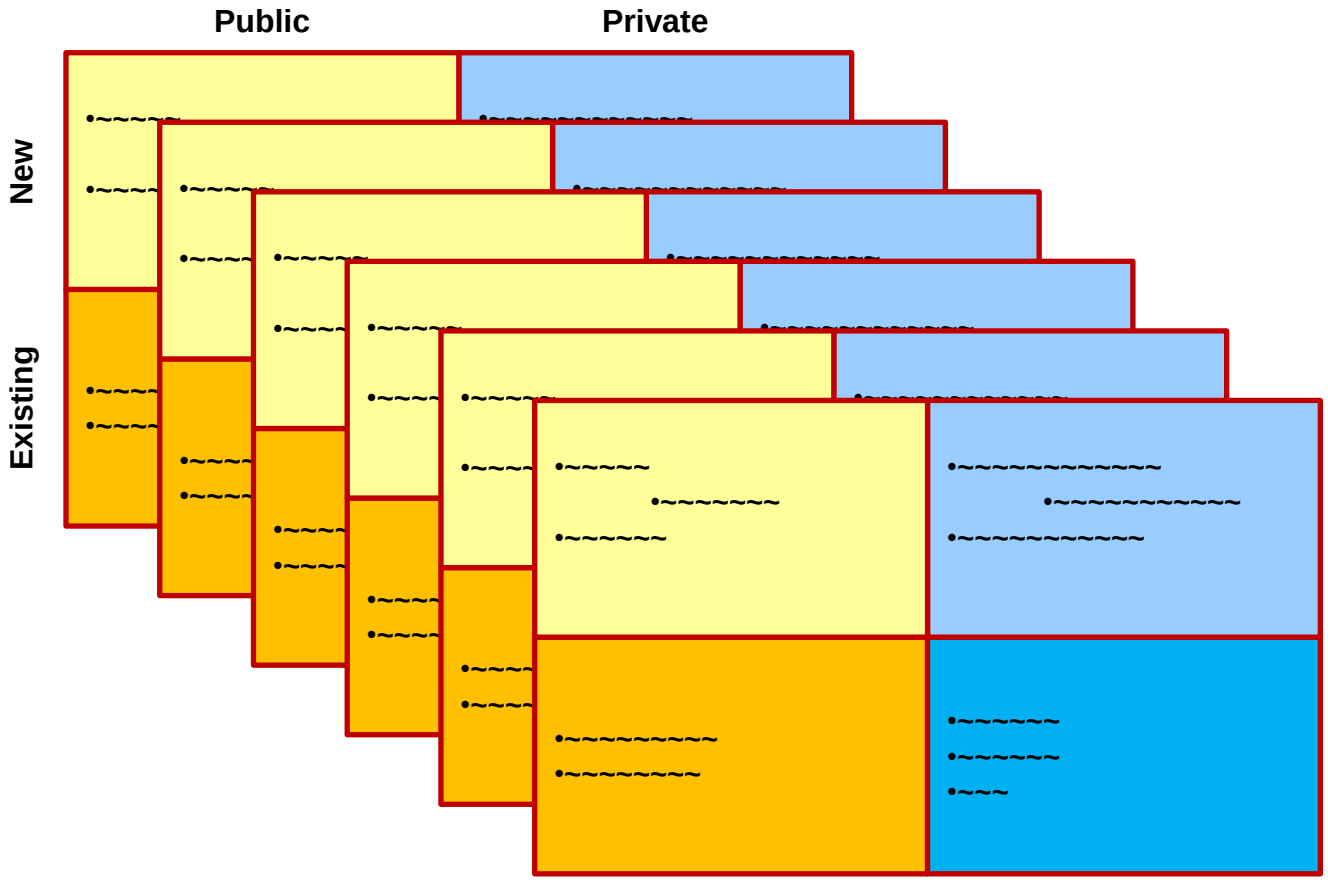
Towards a Regulatory Framework

- **For each infrastructure class**



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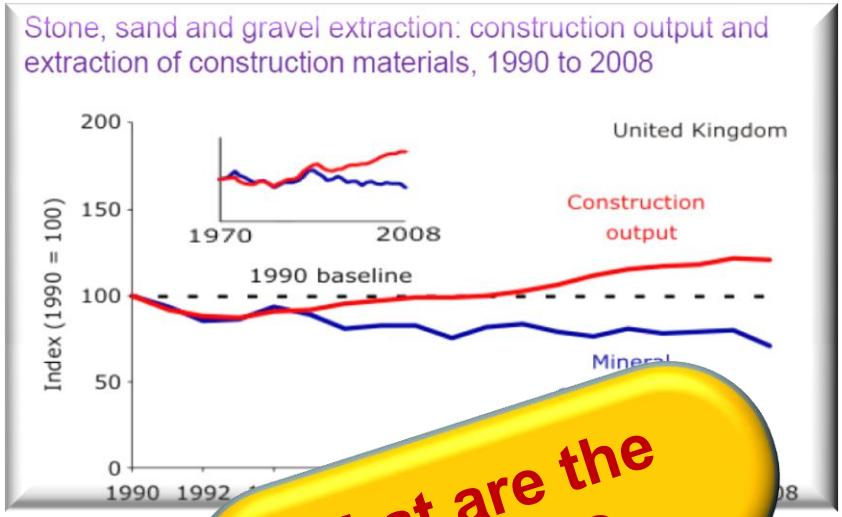
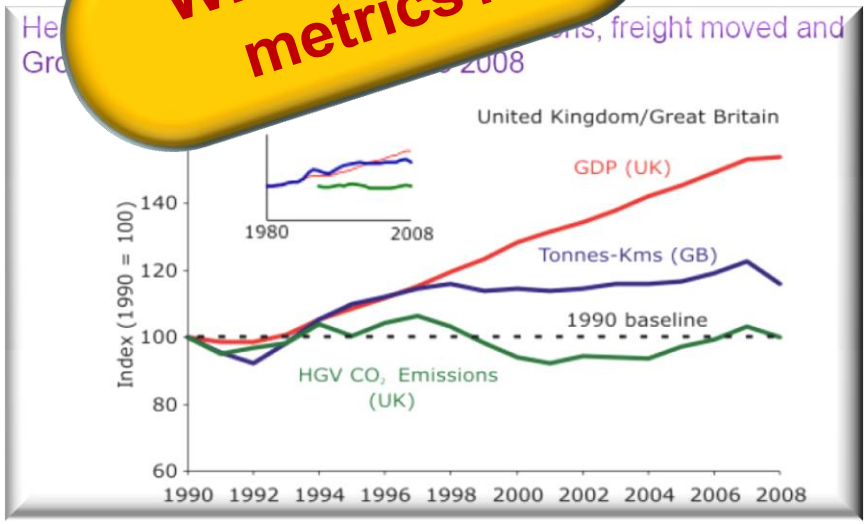
Monitoring



What are the metrics?



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Concluding Comments

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Concluding Comments (i)

- **Regulation & control is a key driver**
- **Instruments & tools are being developed:**
  - **regulation, codes, standards, ..**
  - **measurement and assessment tools**
    - **complex for green infrastructure**
  - **guidelines**
- **Green building framework is developing:**
  - **complex for green infrastructure**
    - **stakeholder, infrastructure class, new/existing**
- **Green building monitoring systems developing:**
    - **complex for green infrastructure**
      - **what are the metrics**

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Concluding Comments (ii)

- **Incremental approach is required for green infrastructure:**
    - **stakeholder, infrastructure class, new/existing**

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Thank You

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