

Perspective on Energy Efficiency Building Regulations; A South African Perspective

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cidb

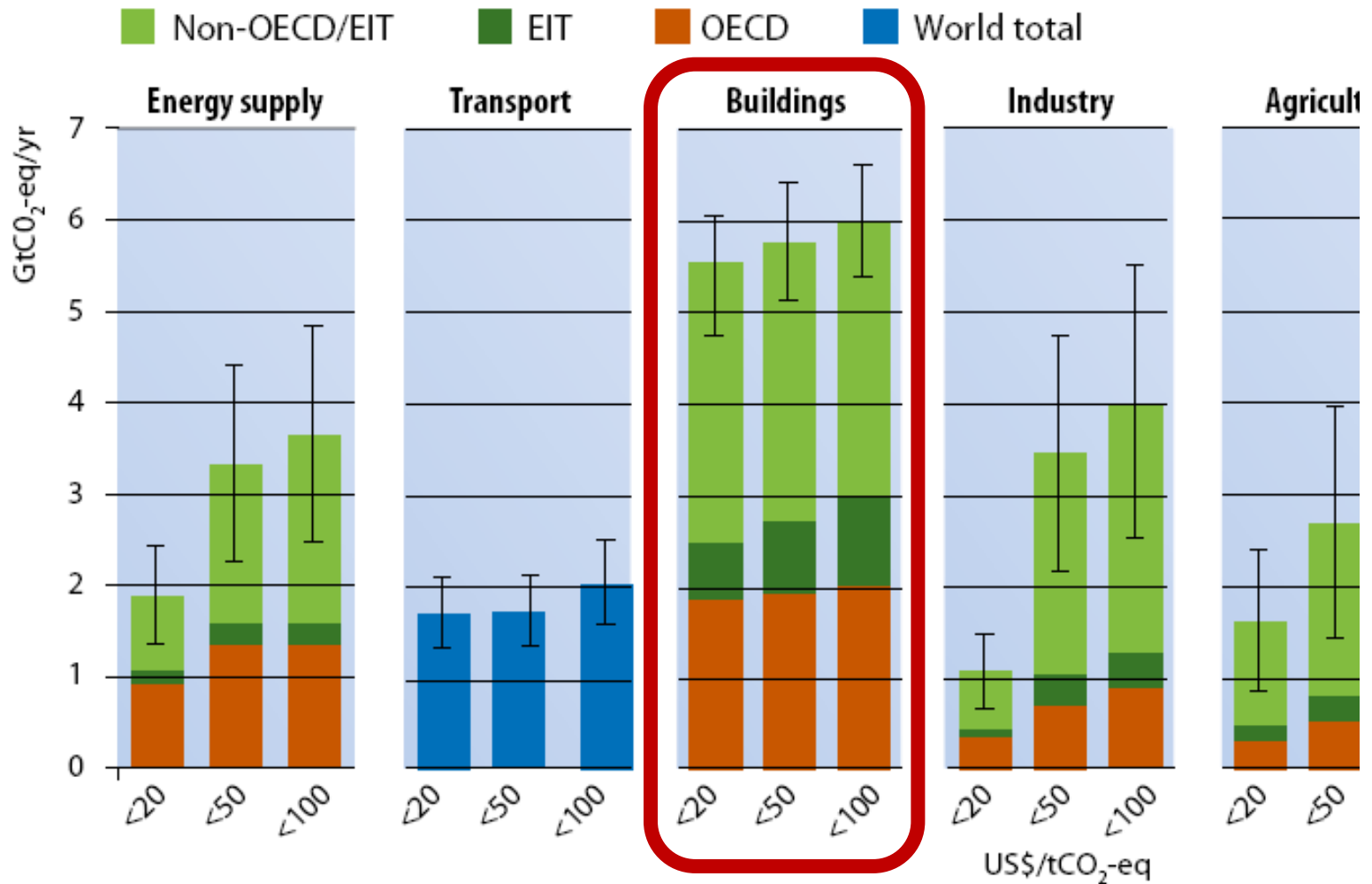
Overview; EE Building Regulations

- **Context;**
 - energy & GHG emissions from buildings
 - EE vs Green
- **Regulation, Codes, Standards, Certification;**
 - current status (SA)
- **An Emerging Strategy?**
- **Concluding Comments**

Context

IPCC Fourth Assessment Report (2007)

- The building sector has the largest potential for reducing greenhouse gas emissions



South African Report on Greenhouse Gas Emission Reduction Potentials from Buildings



UNEP SBCI
Sustainable Buildings
& Climate Initiative



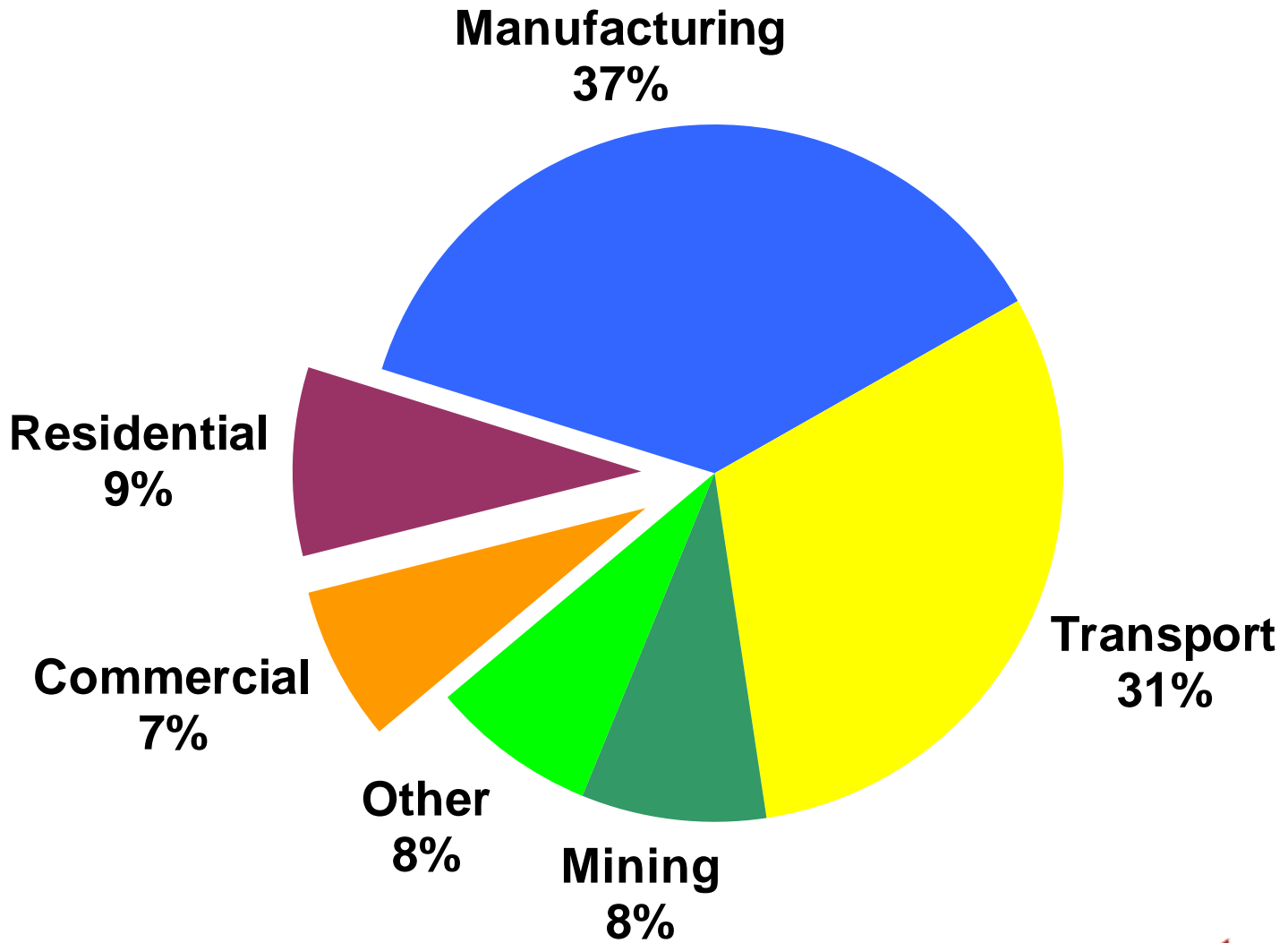
UNEP



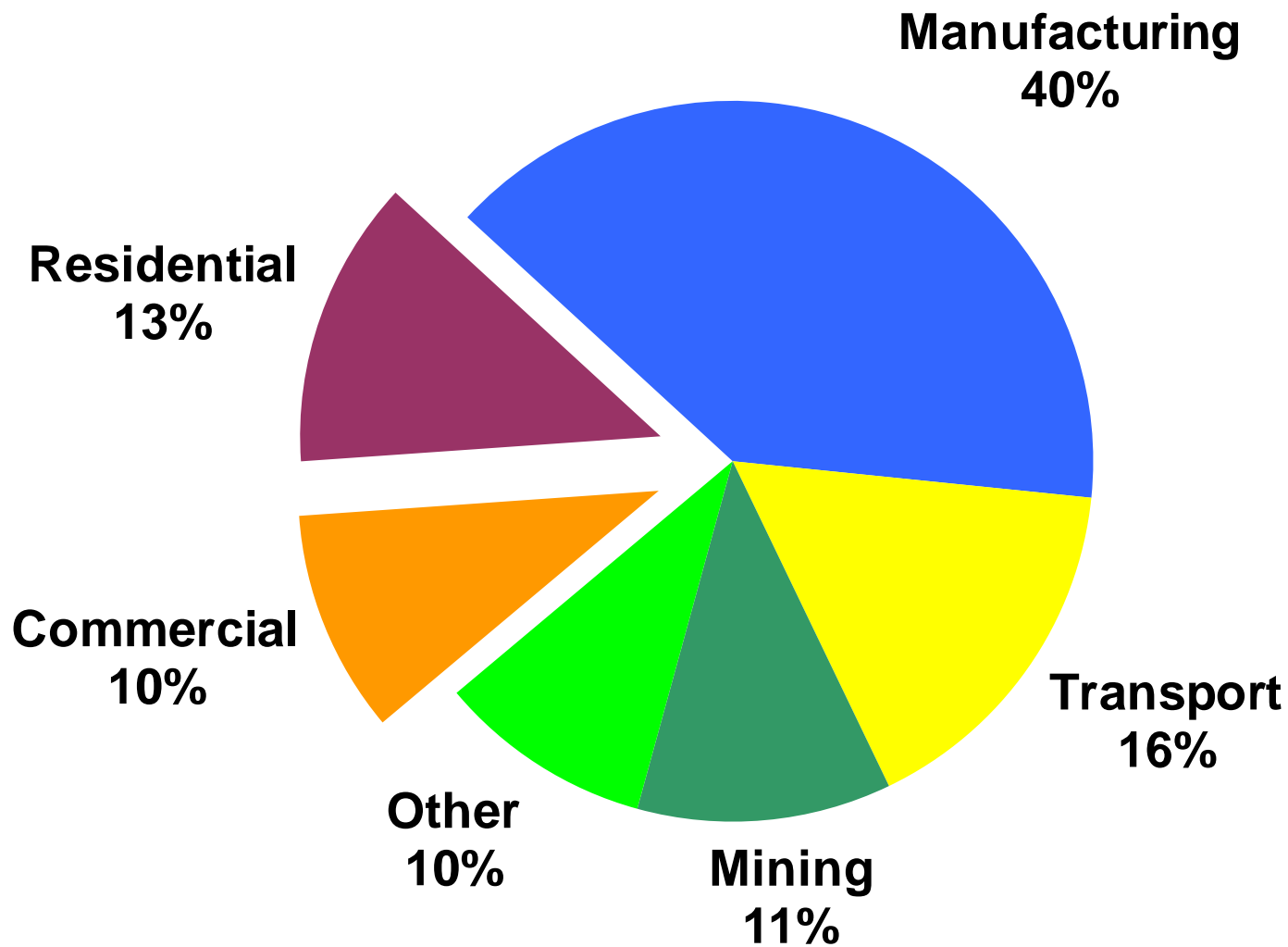
<http://www.cidb.org.za>

<http://www.unep.org/sbcI>

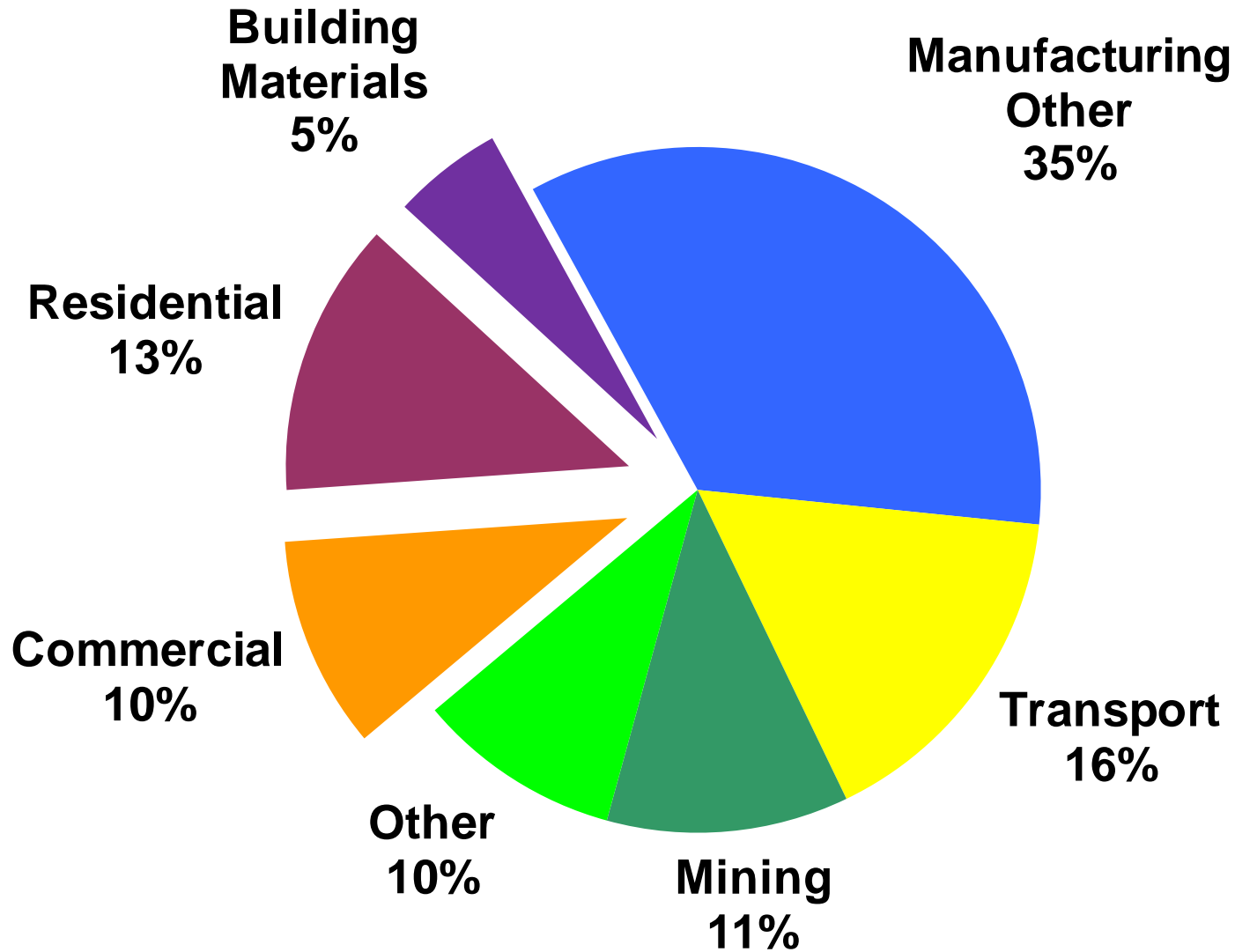
Energy Use per Sector



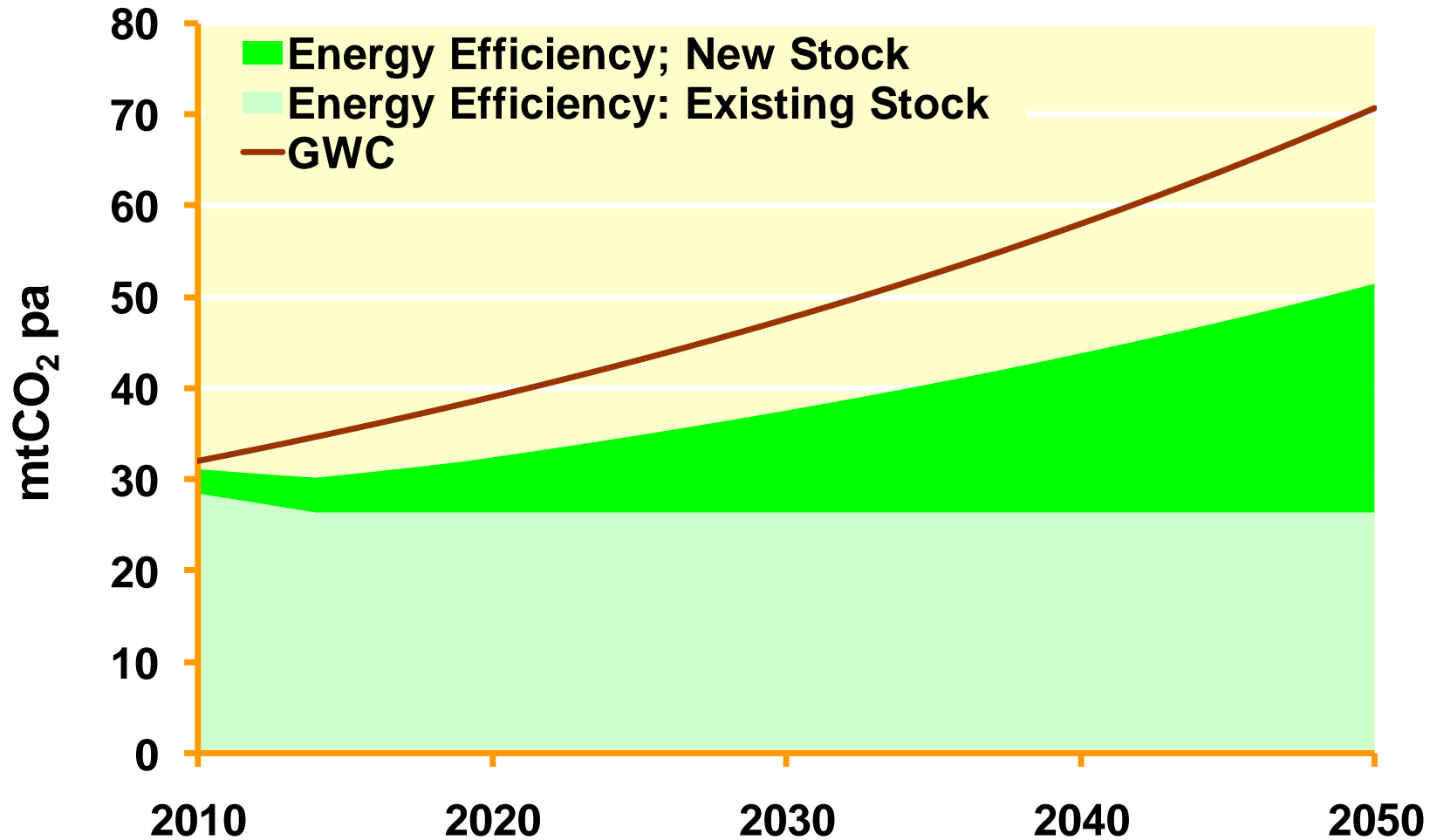
CO₂ Emissions per Sector



CO₂ Emissions per Sector

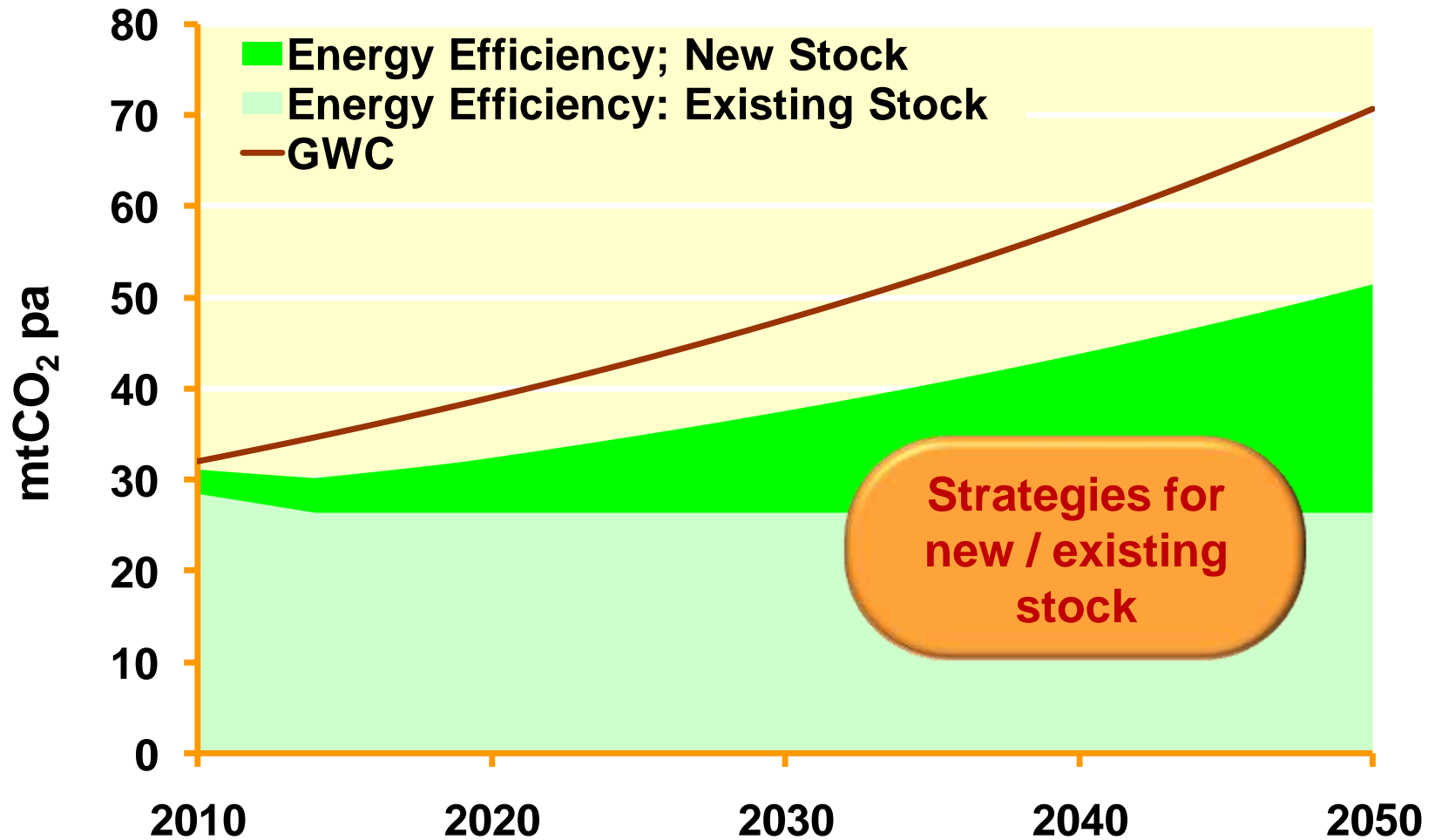


Energy Efficiency Options



After UNEP-SBCI cidb

Energy Efficiency Options



After UNEP-SBCI cidb

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**
- **Combinations of policy instruments is usually most effective:**
 - e.g. financial instruments



Regulation, Codes, Standards, Certificates

Codes, Standards,



Codes, Standards,



NBRs, SANS 10400XA & SANS 0204

- **National Building Regulations (updated 2011)**



- **SANS 10400XA; Application of the NBRs, Energy Use in Buildings (2011)**



- **SANS 0204; Energy Efficiency in Buildings (2011)**



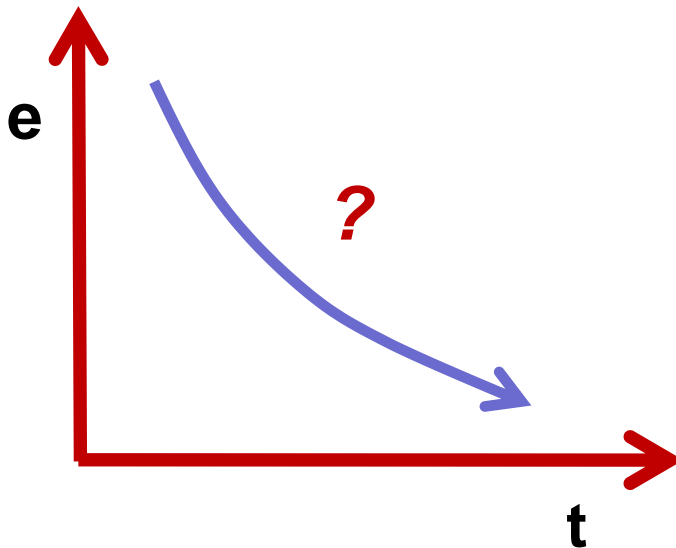
NBRs, SANS 10400XA & SANS 0204

- **Minimum standards for energy efficiency in buildings:**
 - new buildings
 - retrofits requiring planning approval

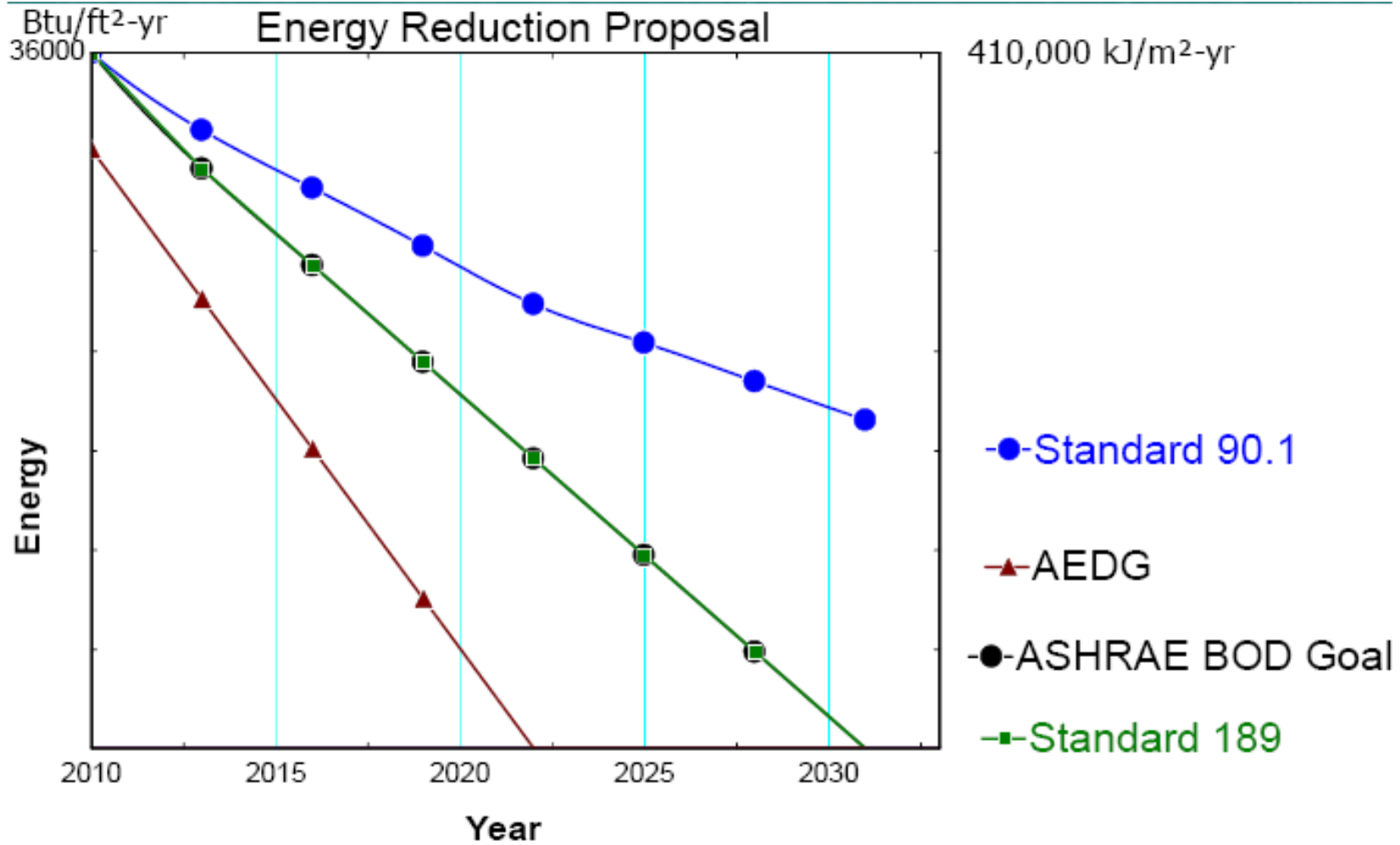


Raising the Bar: Energy Standards

1	2	3	4	5	6	7	8
Classification of occupancy of building	Description of building	Maximum energy consumption kWh/(m ² ·a)					
		Climatic zone ^a					
		1	2	3	4	5	6
A1	Entertainment and public assembly	420	400	440	390	400	420
A2	Theatrical and indoor sport	420	400	440	390	400	420
A3	Places of instruction	420	400	440	390	400	420

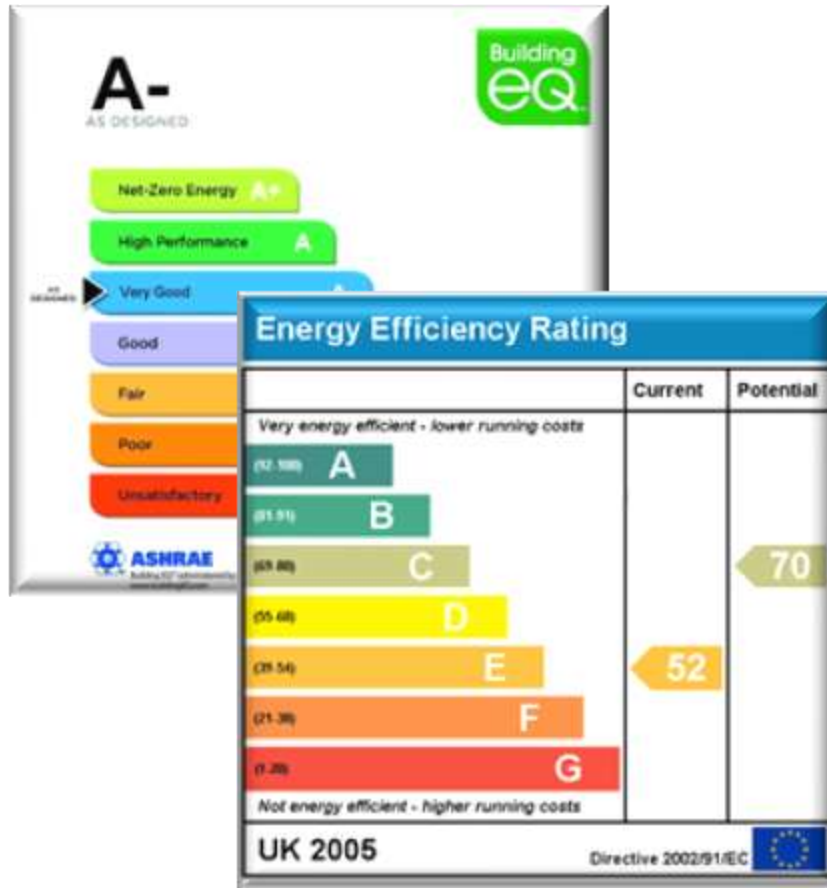


Raising the Bar: Energy Standards



Source: ASHRAE

Energy Performance Certificates, Labelling, ...



Energy Performance Certificates;

- **European Union Directive 2002/91/EC;**
 - The energy performance certificate for buildings shall include reference values such as **current legal standards** and **benchmarks**
- **Legal standard;**
 - e.g. SANS 10400XA
- **Benchmarks;**
 - national Commercial Building Energy Consumption Survey (CBECS) (DoE, USA)
 - NABERS (NSW Department of Environment, Climate Change and Water)
 - GBCSA Benchmarking Tool

Green Rating, Labelling & Certification



Buildings



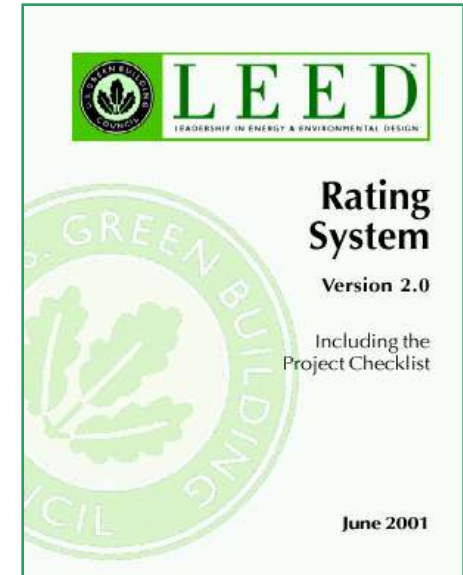
Neighbourhoods

Green Building Accreditation; USA

- **Executive Order D-16-00:**
 - to site, design, deconstruct, construct, renovate, operate, and maintain state buildings that are models of energy, water, and materials efficiency; while providing healthy, productive and comfortable indoor environments and long-term benefits to Californians

State of California, August 2000

- **To date, 11 federal agencies, 17 states and 53 municipalities require buildings to meet either local green standards or those set by the USGBC**



- **The Department is developing a Green Building Policy Framework which will facilitate the introduction of environmentally sound/ sustainable building, mitigate against Greenhouse Gas emissions, promote social cohesion in all government owned and leased properties as part of contributing to the Green Economy**



Green Building Policy Framework

- **Code for Green**
- **Energy performance standards**
- **Best practice standards**
- **.....**



cidb Best Practice Standard

- **Draft for discussion**
- **Green Star SA Office V1 gazetted as a best practice**

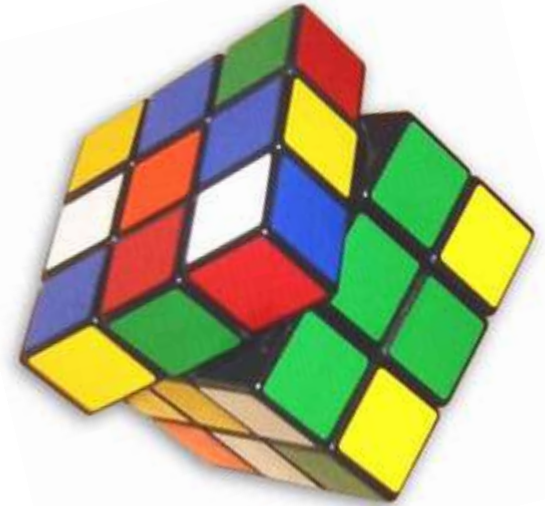


- **Regulations on the allowance for energy efficiency savings (National Energy Act, 2008):**
 - comment closed
 - provides for a tax break that could be earned by companies who are able to provide evidence of energy efficiency savings
 - M&V reports to be undertaken by a professional person accredited by the South African National Accreditation System and registered with SANEDI
 - applicability to buildings is questioned

An Emerging Strategy

An Emerging Strategy

- **Stakeholder;**
 - public
 - private
- **Sector;**
 - non-residential
 - commercial, education, health,
 - residential
 - non-subsidy, subsidy
- **Stock;**
 - new (design)
 - existing (operation)



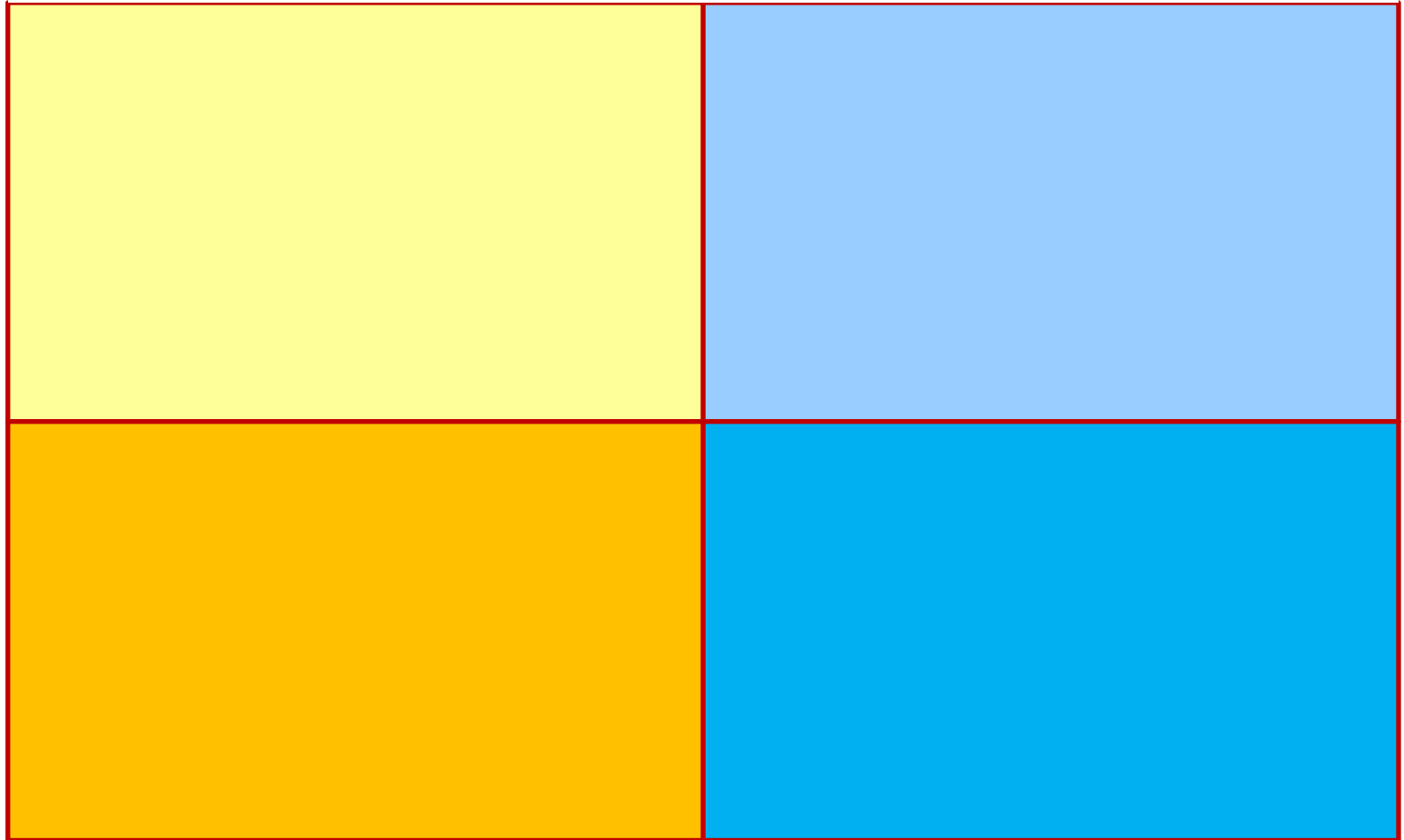
Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

Existing



Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

•Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing



Emerging Strategy; Non-residential Buildings

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Emerging Strategy; Non-residential Buildings

Public Sector

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New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing



Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- GreenStar Accreditation

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing



Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Leadership

Existing

Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

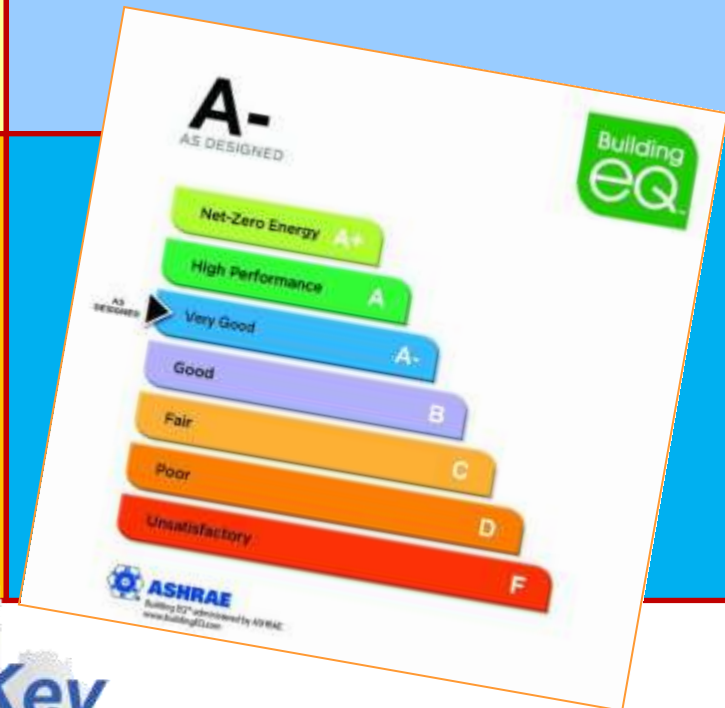
New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing

- Energy Performance Certificates



Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

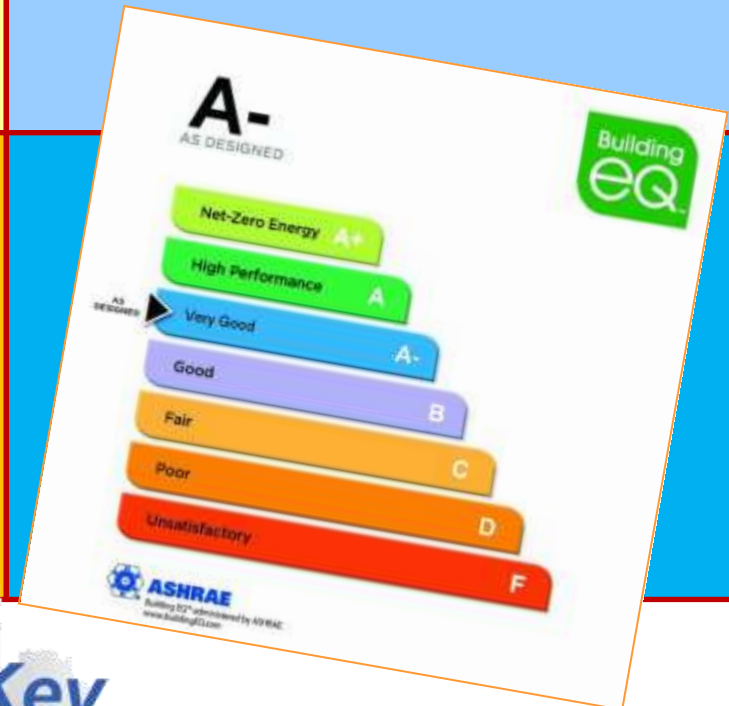
New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing

- Energy Performance Certificates
 - Mandatory retrofitting below thresholds?



Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard
- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Existing

- Energy Performance Certificates
 - Mandatory retrofitting below thresholds?

- Energy Performance Certificates on sale or change of ownership / tenants?

Emerging Strategy; Non-residential Buildings

Public Sector

Private Sector

New

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Existing

- Energy Performance Certificates
 - Mandatory retrofitting below thresholds?

- Energy Performance Certificates on sale or change of ownership / tenants?
 - Minimum requirements?

Emerging Strategy; Non-residential Buildings

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- Green Building Framework

- Energy Efficiency Regulations SANS 10400XA; Minimum Standard

Leadership

Existing

- Energy Performance Certificates
 - Mandatory retrofitting below thresholds?

- Energy Performance Certificates on sale or change of ownership / tenants
 - Minimum requirements?

Emerging Strategy; Residential Sector

	Low-Income	Middle- & High-Income
New	<ul style="list-style-type: none">•Energy Efficiency Regulations SANS 10400XA; Minimum Standard?	<ul style="list-style-type: none">•Energy Efficiency Regulations SANS 10400XA; Minimum Standard;•Solar Water Heaters
Existing	<ul style="list-style-type: none">•?	<ul style="list-style-type: none">•Minimum requirements on change of ownership and/or major retrofitting?

Concluding Comments

Concluding Comments?

- **Legislation, regulation, etc must be a key driver**
- **Strategy must recognise;**
 - existing / new buildings
 - public / private sector
- **Portfolio of tools required;**
 - SANS 10400XA
 - EPCs
 - certification & labelling
 - Green leases
 -
- **Avoid lock-in**
- **Time for implementation**

Thank You