

South Africa

Building Code Implementation - Country Summary

Prepared for the IPEEC Building Energy Efficiency Taskgroup – Project 3: International Collaboration for Building Energy Code Implementation

Section I: Code Development

History

Start year

2008

Timeline/ road map

- SANS 0204: Energy Efficiency in Buildings was published in 2011, after several years of development.
- SANS 10400XA: The application of the National Building Regulations; Part X: Environmental Sustainability; Part XA: Energy Usage in Buildings was published in 2011. SANS 10400XA is mandatory for all new buildings within the scope of the National Building regulations, and references certain clauses in SANS 0204. Updating of SANS 10400XA was initiated in 2008.
- The National Building Regulations and Building Standards Act (No. 103 of 1977) was amended in 2011 to incorporate Energy Use in Buildings within the National Building Regulations. Such energy efficiency applies to occupancy class A1, A2, A3, A4, C1, C2, E1, E2, E3, E4, F1, F2, F3, G1, H1, H2, H3, H4 and H5 as per Table 1 of the National Building Regulations (excluding garages and storage areas).
- SANS 1544: Energy Performance Certificates for Buildings will be published in 2015, after development was formally initiated in 2012.

Structural coverage

	Scale (National, regional, local, etc.)	Building size threshold
Residential buildings¹		
New buildings	National: SANS 10400XA: Energy	Occupancy classes: H2 dormitories, H3 domestic residencies, H4

	Usage in Buildings	<p>dwelling houses and H5 hospitality buildings.</p> <p>Requirements for orientation and shading, external walls, fenestration, roof assembly, in-slab heating, and services.</p> <p>Or</p> <p>Has a theoretical annual energy consumption and demand less than or equal to a reference building that complies with the requirements of 10400XA.</p>
Existing buildings for retrofits	National: SANS 10400XA: Energy Usage in Buildings	Applies to any building that requires building plan approval – which usually is defined in terms of requirements for structural design.
Commercial buildings-		
New buildings	National: SANS 10400XA: Energy Usage in Buildings	<p>All Occupancy Classes: Requirements for orientation and shading, external walls, fenestration, roof assembly, in-slab heating, and services.</p> <p>Occupancy Classes including A1 entertainment and public assemblies, A2 theatrical and indoor sport buildings, A3 places of instruction, A4 worship buildings, F1 large shops (floor area exceeds 250 m²), G1 offices or</p> <p>H1 hotels: Has a theoretical annual energy consumption and demand as specified in 10400XA</p> <p>Or</p> <p>Has a theoretical annual energy consumption and demand less than or equal to a reference building that complies with the requirements of 10400XA.</p>
Existing buildings for	National: SANS 10400XA: Energy	Applies to any building that requires building plan approval – which usually is defined in terms of requirements for structural

retrofits	Usage in Buildings	design.
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The National Building Regulations and Building Standards Act (No. 103 of 1977) incorporated Energy Use in Buildings in 2011. The national standard SANS 10400XA is mandatory for all new buildings within the scope of the National Building regulations, and references the voluntary national standard, SANS 0204. In terms of compliance with SANS 10400XA, buildings can choose between the prescriptive route and the reference building or performance route. The reference building route is similar to the performance route, except that it uses the energy performance of a reference building (with strict application of the prescriptive route) as the basis of compliance. Provincial and local governments are the major authorities who take the responsibility of code implementation and enforcement, with some support from third parties.

Measures covered

- Envelope
- HVAC
- Service water heating
- Lighting
- Electric power: not operational power. Restrictions on lighting for example 5w/sqm depending on building type
- Renewable energy

Compliance can be demonstrated in 3 ways:

- The Performance Route as in paragraph 4.2.1 (a).
- The Prescriptive Route as in paragraph 4.2.1 (b).
- The Reference Building Route as in paragraph 4.2.1 (c).

Correction /new codes

Motivation/policies for improving existing building energy codes

- SANS 10400XA and 0204 (Energy Efficiency) are currently under review to remove any overlaps and contradictions between the two Standards.
- Annual energy consumption and maximum demand values specified in SANS 10400XA are currently being reviewed.
- Initiatives are being put in place for SABS to develop a clear trajectory for ramping up annual energy consumption and maximum demand values.
- SANS 1944 (Energy Performance Certificates) is to be issued shortly as a national Standard. Consideration is being given to make EPCs be mandatory for public sector buildings which have

been in operation to meet a particular need associated with the use of the building for a period of 2 years or longer, which have not been subject to a major renovation within the past 2 years of operation; and for buildings with a total nett floor area as defined in the national standard of over 1 000 m2.

Revision schedule

There is no key revision schedule.

Involvement of stakeholders in the development of codes

Stakeholders are involved extensively in the development of national Standards – being drawn from (amongst others) government departments, professional associations, industry associations and academia and research institutions.

Key methods used to engage stakeholders in the code development process

The development process for Standards is specified in SANS 1-1 Standards for Standards, including establishment of committees and working groups, submission of new work items, updating and maintenance of Standards, voting, etc. The procedure is aligned to the ISO processes.

Section II: Code Implementation

Administration

Administrative/enforcement structures

Government agency

Civil penalties

The roles of stakeholders (what do they do at each stage)

	Design	Construction	Pre-occupancy check
The role of federal/central government			

<p>The role of state/provincial and local government</p>	<p>No person shall without the prior approval in writing of the local authority in question, erect any building in respect of which plans and specifications are to be drawn and submitted in terms of the National Building Regulations and Building Standards Act. - Building Control Officers of Local Council.</p>	<p>Building Control Officers may inspect the erection of a building, and any activities or matters connected therewith, in respect of which approval referred to in section 4(1) of the Act was granted. They must report to the local authority in question, regarding non-compliance with any condition on which approval referred to in section 4(1) was granted.</p>	<p>In terms of 14.1 of the Act, a local authority shall within 14 days after the owner of a building of which the erection has been completed, issue a certificate of occupancy if it is of the opinion that such building has been erected in accordance with the provisions of this Act and the conditions on which approval was granted in terms of the Act.</p> <p>Note that there is no requirement to verify actual energy usage.</p>
<p>Involvement of third parties and their role</p>	<p>The submission of requests for the approval of building plans by local authorities provides for such plans to be signed by a competent person – which may then be deemed to be in compliance with SANS 10400XA by the local authority.</p> <p>The Act provides for a competent who is registered in an appropriate category with the relevant</p>		

	Professional Council to prepare and submit to the local authority a rational design or rational assessment in terms of SANS 10400XA.		
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Requirements for commissioning before occupancy

See above.

Requirements for energy audits after occupancy

No mandatory audits are required. For rational route the consultant is required to confirm that what was modelled was built but in practice this does not happen.

Tools used for compliance checking

Software used for compliance checking

“In terms of XA3C of the Act, compliance with SANS 10400XA can be undertaken by demonstrating that the building has a theoretical energy usage performance determined using certified thermal calculation software, less than or equal to that of a reference building in accordance with SANS 10400 Part XA. The certified software must comply with the Protocol for the Certification of Energy Simulation Software: Second edition, September 2011.

www.agreement.co.za/uploads/cms/documents/Software_assessment_protocol_Sep_2011.pdf

Designbuilder is the main tool used..”

Other tools used to check compliance

No other formal tools required, although designers have a wide range of guides and other tools.

Capacity building and education

Education and capacity building programs that support code implementation

The South African Institute of Architectural Technicians (SAIAT), in partnership with the Swiss Development Corporation (SDC) and the National Regulator for Compulsory Standards (NRCS) are

providing courses and workshops on SANS 10400XA Energy Efficiency, targeting designers and building control officers.

Target groups for programs

Designers and building control officers.

Best-practice example of capacity building

Section III: Compliance & Enforcement

Penalties, incentives and other mechanisms for improving compliance

Penalties for non-compliance with energy provisions in codes

- Refusal of permission to construct
- Refusal of permission to occupy

Incentives/rewards to go beyond minimum required performance level

In 2013 the National Treasury published Section 12L putting into operation deductions of energy efficiency savings in terms of the Income Tax Act. Section 12L provides a tax deduction for energy efficiency savings that is carrying on a trade during any year of assessment ending before 1 January 2020. Because of international tax agreements, these provisions cannot be accessed by Real Estate Investment Trusts (REITs) – although National Treasury is considering provisions for tax deduction for energy efficiency savings that would be applicable to REITs. The tax deductions have therefore had limited impact on energy efficiency in buildings.

Other mechanisms to encourage compliance

Green Star SA is a voluntary rating system for environmental performance in commercial buildings, retail centres, multi-unit residential, and public buildings. Green Star SA is based on the Australian Green Star rating scheme, and energy performance is one of the eight categories of the award for “as built”, “constructed”. Green Star SA rating tools cover “as built”, “as constructed” ratings. Green Star SA has also introduced the Existing Building Operational Performance Tool, which includes an assessment of energy performance.

As noted, SANS 1944 (Energy Performance Certificates) is to be issued shortly as a national Standard. Consideration is being given to make EPCs be mandatory for public sector buildings which have been in

operation to meet a particular need associated with the use of the building for a period of 2 years or longer, which have not been subject to a major renovation within the past 2 years of operation; and for buildings with a total net floor area as defined in the national standard of over 1 000 m².

Compliance assessment

Assessments on rate and effectiveness of compliance

There is currently no assessment. However, with the intended introduction of requirements for Energy Performance Certificates for public sector buildings, it is intended that a national Building Energy Performance Register will be established which will include particulars of all valid building Energy Performance Certificates by the South African National Energy Development Institute (SANEDI).

Publicly available information on compliance assessment

None – but the national Building Energy Performance Register will be accessible by the Department of Energy and the Department of Public Works. Accessibility to the general public will be investigated once the national Building Energy Performance Register has been established, but it is the clear intention that the Register will be accessible for maintaining SANS 10400XA.

Lessons learned from compliance studies

Number of code compliant permits issued per year

Airtightness testing required prior to compliance

No.

Section IV: Building Materials & Energy Performance Certificates

Building materials (e.g. windows, insulation, HVAC, lighting)

Building materials rating and labeling

There is currently no mandatory requirements for the use of rated materials in terms of compliance with SANS 10400XA.

However, EcoStandard South Africa is a voluntary third party labeling system that is available in South Africa, and the Department of Public Works is considering facilitating the establishment of a national rating system.

Tested by certified test labs

Providing samples for the tests

Labels showing the ratings for building materials

Energy Performance Certificates

Building codes and energy performance certificate

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Energy performance certificates do not replace codes.

Enforcement of codes and energy performance certificates

See above, consideration is being given to make EPCs be mandatory for public sector buildings.

Existence of registry database for energy performance certificates at the national level

See above. With the intended introduction of requirements for Energy Performance Certificates for public sector buildings, it is intended that a national Building Energy Performance Register will be established which will include particulars of all valid building Energy Performance Certificates by the South African National Energy Development Institute (SANEDI).

Number of certified buildings and the percentage

Not collected.