

Green Star – Interiors v1

Local Context Report: Nigeria



Project Team

Report Acknowledgement


Revision 1	
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Executive Summary

This report applies to the Green Star – Interiors (V1) tool and considers the applicability of the tool in Nigeria. Included in the report is a background analysis of Nigeria, as well as a credit by credit analysis. This considers the applicability of each credit to the local context.

The Green Building Council South Africa (GBCSA) is currently licensed by the Green Building Council of Australia (GBCA) to allow certification using the Green Star rating tools only in South Africa, Ghana, Namibia, Uganda, Zimbabwe, Kenya and Rwanda. Through this local context assessment, the GBCSA, in collaboration with the prospective Nigeria Green Building Council will allow for certification in Nigeria using all the Green Star – Interiors (v1) tool – with some minor adaptations recommended in this report.

Through this local context assessment, the GBCSA aims to apply for approval from the GBCA to allow for certification in Nigeria using the Green Star v1 Interiors rating tool (with some minor adaptations recommended in this report). The GBCSA would manage and allow the certification through its existing established processes but call the certification Green Star - Nigeria. The GBCSA will then use the opportunity to allow capacity to grow in Nigeria through the prospective Green Building Council Nigeria, by allowing selected Nigeria professionals to be trained as Green Star - Nigeria Assessors who would join the GBCSA Assessor teams on Nigeria projects where the Green Building Council Nigeria has the capacity to organise and coordinate the Green Star - Nigeria Assessors-in-Training in the timelines required. In addition, the GBCSA would deliver the Green Star Accredited Professional – Interiors (v1) course in Nigeria, in collaboration with the prospective Green Building Council Nigeria, which would allow professionals in Nigeria to take the Green Star Accredited Professional online examination. The details would be agreed upon in a Green Star license agreement between the GBCSA and the prospective GBC Nigeria.



Recommendations

A summary of recommended credits requiring Credit Interpretation Requests (CIRs), Technical Clarifications (TCs) or adaptations can be found below (all other credits are proposed to remain unchanged, but where projects do want to propose changes these must be applied for through the TC/CIR process on the GBCSA website: www.gbcsa.org.za)

	CREDIT	REQUIREMENT
1	MAN-4: ENVIRONMENTAL MANAGEMENT	To be kept in its current form and no adjustments are to be made. References to be updated to include Nigerian environmental legislation.
2	MAN-5: CONSTRUCTION WASTE MANAGEMENT	To be kept in its current form and although recycling is informal in Nigeria a formal documentation process must be in place that verifies the donation and receipt of any donated materials – and may be a document countersigned by both parties. Project teams are to submit a CIR detailing the process.
3	IEQ-1: QUALITY OF INTERNAL AIR	To be kept in its current form and no adjustments are to be made. Note alternative compliance path optional – provision of outside air: where a professional team wishes to use an alternative standard, a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than SANS 10400-0:2011.
4	IEQ-3: LIGHTING COMFORT	To be kept in its current form and no adjustments are to be made. Note alternative compliance path optional. Alternative compliance path light levels: where a professional team wishes to use an alternative standard, a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than the standard/s given in the technical manual. Alternative compliance path glare: where a professional team wishes to use an alternative standard, a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than the standard/s given in the technical manual.
7	IEQ-9: INDOOR PLANTS	To be kept in its current form and no adjustments are to be made.
8	ENE-1: GREENHOUSE GAS EMISSIONS	It is recommended that ene-1 credit criteria for up to 12 points remains applicable to all projects in Nigeria seeking green star certification. Additionally, with due cognizance to section 3.2.1 and 3.2.3 of BEEC, innovation criteria is recommended to be added to ene-1, where projects will be awarded up to 2 innovation points if WWR <20%, and/or roof insulation R-value >1.25 m ² k/w. Should a project intend to use part e.2 energy modelling (HVAC only) compliance route, either by adopting SANS 204:2011 based modelling protocol or an alternative standard, the identified approach to establish notional building must be motivated by the registered project through a mandatory CIR.
9	WAT-1: POTABLE WATER	Compliance route 1: to be kept in its current form with a mandatory CIR to confirm applicability for compliance route 1 (update of regional rainfall values). Compliance route 2: to be kept in its current form and no adjustments are to be made.
10	MAT-2: FURNITURE	To be kept in its current form with additional alternative compliance paths. The GBCSA has a published list of third party certifications that are currently recognised within the materials calculator, but which exclude numerous third party European and US certifications and this that may have the same or similar standards but not been reviewed. Alternative compliance route 2: Under the product stewardship category: allow projects to complete a checklist for Environmentally Preferable Products (as per GSSA EBP MAT-1) and assign a 30% criterion score.

		Add a new stand-alone category: environmental product declaration and assign a criterion score of 30% for products that opt to use products with third party verified environmental product declaration.
11	MAT-3: ASSEMBLIES	"Same as above"
	MAT-4: FLOORING	"Same as above"
	MAT-5: WALL COVERINGS	"Same as above"
	ECO-1: SITE SELECTION	To be kept in its current form but to include buildings that are rated under other building rating systems including LEED, EDGE, BREEAM and any other rating system that has been developed by a full member of the WGBC.
12	INN-1: INNOVATIVE STRATEGIES AND TECHNOLOGIES	Inn-1 should remain as is, with reference to Nigeria instead of South Africa.
13	INN-2: EXCEEDING GREEN STAR BENCHMARKS	Inn-2 should remain as is. Project teams to send in a CIR to request a changing in the benchmark before.
14	INN-3: ENVIRONMENTAL INITIATIVES	Inn-3 should remain as is.

Acronyms

ACRONYM	TERM
ANGBC	African Network of Green Building Councils
AP	Accredited Professional
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning
CIBSE	Chartered Institute of Building Services Engineers
CIR	Credit Interpretation Request
ECO	Land Use and Ecology category
ECOWAS	Economic Community of West African States
EMI	Emissions category
EMP	Environmental Management Plan
ENE	Energy category
ETS	Environmental Tobacco Smoke
FSC	Forest Stewardship Council
GBCA	Green Building Council of Australia
GBCN	Green Building Council of Nigeria
GBCSA	Green Building Council South Africa
GS	Green Star
GWP	Global Warming Potential
HVAC&R	Heating, Ventilation, Air-Conditioning and Refrigeration
IEQ	Indoor Environmental Quality category
INN	Innovation category
MAN	Management category
MAT	Material category
NESREA	National Environmental Standards and Regulations Enforcement Agency
ODP	Ozone Depleting Potential
TC	Technical Clarification
TRA	Transport category
WAT	Water category
WMP	Waste Management Plan

1 Introduction

This report, which must be read in conjunction with the Green Star – Interiors v1 Technical Manual (January 2015) with Technical Clarifications and Errata, serves to provide the local Nigerian context to allow the certification of commercial interior projects in Nigeria using the Green Star Interiors v1 rating tool.

1.1 Green Star

Green Star is a voluntary environmental rating system that evaluates the environmental design and construction of buildings and their interiors. Green Star tools were developed to provide the property industry with an objective measurement for green buildings and to recognise and reward environmental leadership in the property industry.

The objectives of the Green Star Rating Tools are as follows:

- Establish a common language and standard of measurement for green buildings;
- Promote integrated, whole-building design;
- Raise awareness of green building benefits.
- Recognise environmental leadership;
- Reduce the environmental impacts of development.

Each Green Star tool consists of nine separate environmental impact categories under which specific key criteria are grouped and assessed. These nine categories are:

- Management
- Indoor Environmental Quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

The categories are divided into credits, each of which addresses an initiative that improves or has the potential to improve a design, project or building's environmental performance. Points are awarded in each credit for actions that demonstrate that the project has met the overall objectives of Green Star and the specific aims of the Green Star rating tool. Once all credits are assessed in each category in Green Star – Interiors, a score for the project is calculated to reach a single score.

1.2 Local Context Report - Green Star Interiors v1 for Nigeria

The Green Building Council South Africa (GBCSA) is currently licensed by the Green Building Council of Australia (GBCA) to allow certification using the Green Star v1 rating tools only in South Africa (Office v1.1, Retail Centre, Multi Unit Residential, Public & Education Building, Interiors and Existing Building Performance), Ghana (Office), Namibia (Office), Mauritius (Office), Kenya (Office), Rwanda (Office) and Nigeria (all Green Star Design and As Built rating tools for new buildings). Through this local context assessment, the GBCSA aims to apply for approval from the GBCA to allow for certification in Nigeria using all Green Star Interiors projects (with some minor adaptations recommended in this report).

At the time of compiling this report the Green Building Council Nigeria, which had been in formation in 2013, has to date not formally become a member of the World Green Building Council/not facilitated by the African Network of Green Building Councils (ANGBCs) and as such the administration of the certification process currently sits solely with the Green Building Council South Africa (GBCSA), which thus manages and allows the certification through its existing established processes until a time that a stand-alone Green Star – Nigeria Interiors tool has been developed.

As a member of the African Network of Green Building Councils (ANGBC), the Green Building Council South Africa (GBCSA) has therefore expressed a willingness to allow the rating of Nigerian commercial interiors under the Green Star rating system until such a time that a Green Building Council Nigeria (GBCN) is established and has

capacity to develop and operate its own rating tool. However, as intellectual property owners of the Green Star brand, consent from the Green Building Council of Australia (GBCA) must be obtained for the use of Green Star in Nigeria through contextualisation.

1.2.1 Stakeholders, Roles and Responsibility

Name	Organisation	Role
Praveen Sharma	Unilever	Client – pilot project
Oluwole Bamidele Oke	Profica	Project Manager – pilot project
Kingsley Ejimofor	KOA	MEP Engineers – pilot project
Mumin Abdulrafiu	KOA	MEP Engineers – pilot project
Olaniyi Oladokun	Mayssa	Contractor – pilot project
Julie Anderson	dna Design	Interior Architect – pilot project
Jutta Berns-Mumbi	Ecocentric	Green Star Accredited Professional, Interiors

1.2.2 Methodology

The Local Context Report was developed through an ongoing consultative process with the project team in Nigeria during the design and construction phase of the pilot project, which allowed for the contextualization of the LCR aligned to a live project.

1. **Draft 0 Development: September/October 2018:** Draft 0 developed by the project consultants on the basis of information available from the “Local Context Report: Green Star for Use in Nigeria”, issued by the GBCSA in 2014 and as applicable to the Interiors tool, and on the basis of further desktop research carried out by the project consultants and integrated into Draft v0.
2. **Draft 0 release: November 2018:** Together with the Green Star Interiors v1 Technical Manual the LCR v0 was issued to the project team (design and construction team), who were involved in the first Green Star Interiors project being pursued in Nigeria and who responded with initial comments.
3. **Remote Workshop: 30 January 2019:** The project consultants ran a 4-hour remote Green Star Interiors workshop with the project team, where both the Green Star Interiors tool as well as draft of the Local Context Report were discussed in detail and input and suggestions were further gathered.
4. **Draft v0.1: February 2019:** The LCR was updated to take into account updated comments and re-issued to the project team for further input.
5. **Draft v0.2: June 2019:** Drafted on the basis of further contextualization and consultation, where all comments were considered and – where applicable – included in this draft of the LCR.
6. **Draft v0.3:** October 2019: Review

2 Nigeria - context

The Federal Republic of Nigeria is a sovereign state in the Economic Community of West African States (ECOWAS) region spanning 923,768 square kilometres with a population of around 197m people, according to UN estimates in 2018. Nigeria (with geographic coordinates of 10 00 N, 8 00 E) shares land borders with the Republic of Benin in the West, Chad and Cameroon in the East, and Niger in the North (Figure 2). Its coast in the South lies on the Gulf of Guinea on the Atlantic Ocean.



Figure 1: Regional Context of Nigeria (BBC, 2013)



Figure 2: Nigeria (The World Factbook, 2014)

2.1 Geography

Nigeria's most expansive topographical region is that of the valleys of the Niger and Benue River valleys. Plains rise to the north of the valleys. To the southwest of the Niger there is highland, and to the southeast of the Benue hills and mountains are found all the way to the border with Cameroon. Coastal plains are found in both the southwest and the southeast.

The lowest point on Nigeria is at sea level on the Atlantic Ocean. The highest point on Nigeria is 2,419 meters above sea level at Chappal Waddi.

2.2 Climate

The climate in Nigeria is significantly impacted by the annual migration of the inter-tropical belt of cloud and associated heavy rain, high humidity, and relatively low temperature.

Drier and sunnier weather, with higher temperatures, prevails on the northern side of this belt of cloud and rain. The belt of cloud and rain lies on the southern side of the point where the south-westerly to westerly winds of the Guinea monsoon give way to the northeast trade winds, or harmattan, which are dry and bring higher temperatures. The discontinuity between these winds, often called the inter-tropical convergence, lies over or near the coast in December and January and moves north to about 20°N by July and August. It then returns southwards rather more rapidly between September and December.

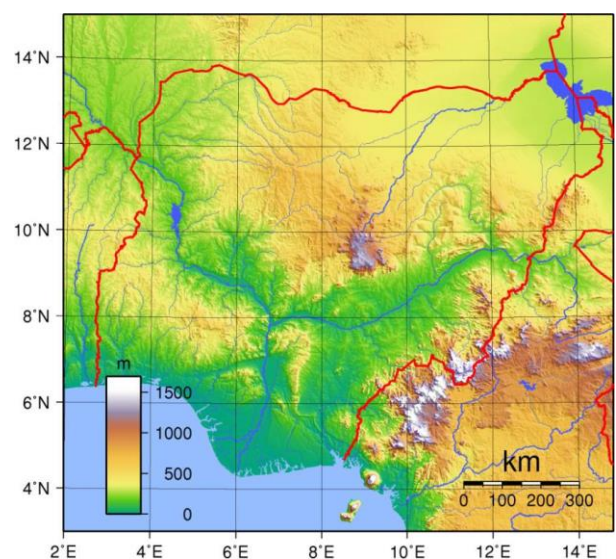


Figure 3: Topographical map of Nigeria

Therefore, much of Nigeria and the region to the west experiences two rainy periods as the intertropical convergence moves north or south; but in the north the two rainy seasons merge to give a single wet season between July and September.

2.2.1 Northern Nigeria climatic zone

In northern Nigeria, including Kano, there is a single rainy season just after the time of high sun.

Between October and April, there is a single long dry season. At this time there is very little rain in the north and temperatures are warm to hot with a very low relative humidity. During this season the harmattan, which is often dust-laden, blows from the northeast day after day.

2.2.2 Inland climatic zone

During the period December to February the harmattan penetrates south so that the whole region, except a strip along the coast, is affected by it. Inland, and particularly towards the north, the time of arrival of the rains and the amount of rain may vary from year to year.

2.2.3 Coastal region climatic zone

On the other hand, places on or near the coast have two rainy seasons with maximum rainfall in May or June and again in October. Although in the south near the coast no month is completely dry, there are two relatively drier periods between December and February and between July and September. The period from December to February is least likely to experience rainy days, and this dry period is more clearly recognisable than the 'little dry season' between July and September.

The wettest parts of Nigeria are the coastal region of the Niger delta and the mountainous border with Cameroon in the southeast. Here the annual rainfall exceeds 2,500 mm, as compared with 1,250-1,500 mm in much of the west and centre of Nigeria.

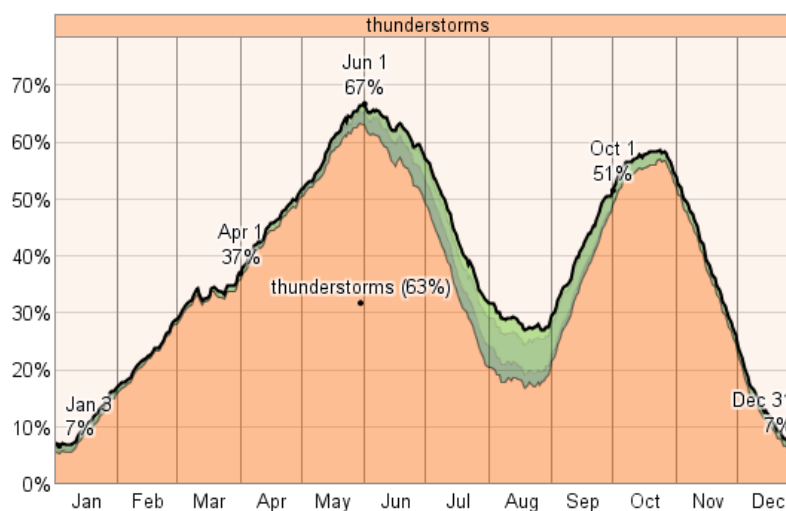


Figure 4: Coastal region: probability of thunderstorms

On the coast high humidity and constant high temperatures with very little relief make the weather rather uncomfortable throughout the year.

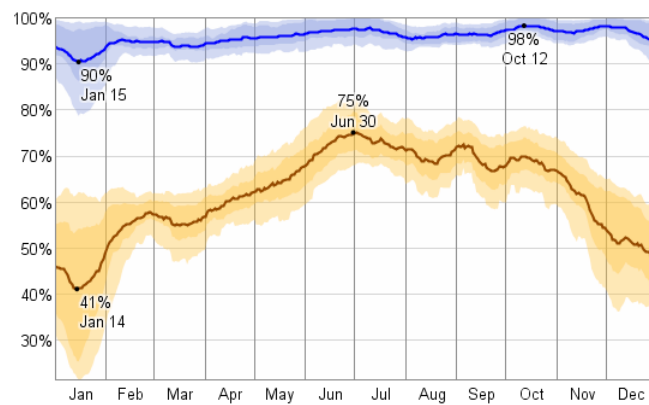


Figure 5: Coastal Region: Probability of Precipitation

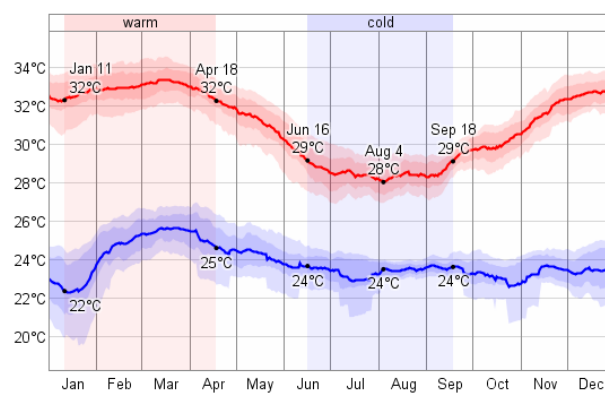


Figure 6: Coastal region: Daily high and low temperatures

Hours of sunshine average from six hours a day during the rainy season to as many as ten in the dry season in the north of the country. Near the coast they average about three hours a day in the wettest months to six or seven hours during the driest period of the year.

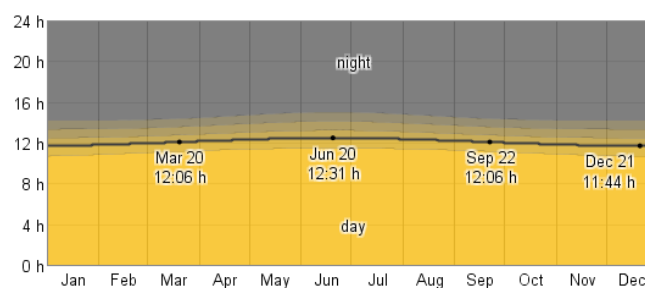


Figure 7: Coastal Region: Daylight hours of sunlight and twilight

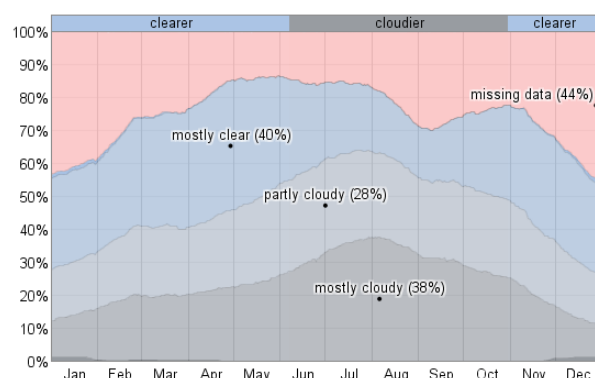


Figure 8: Coastal region: Cloud cover types

2.3 Environmental Concerns in Nigeria

The most prominent environmental concerns in Nigeria include soil degradation; rapid deforestation; urban air and water pollution; desertification; oil pollution - water, air, and soil; damage from oil spills; loss of arable land; and rapid urbanization

Table 1: Environmental statistics (UN Statistics, 2017)

Environment and infrastructure indicators	2005	2010	2017
Threatened species (number)	232 (2004)	297	361
Forested area (estimate) (% of land area)	12.2	9.9	8.1 (2014)
CO2 emission estimates (million tons/tons per capita)	106.1 / 0.8	91.5 / 0.6	96.3 / 0.6 (2014)
Energy production, primary (Petajoules)	9 734	10 595	10 851 (2014)
Energy supply per capita (Gigajoules)	31	31	32h
Important sites for terrestrial biodiversity protected (%)	76.0	79.6	79.6
Pop. using improved drinking water (urban/rural, %)	79.0 / 44.2	79.9 / 50.7	80.8 / 57.3 (2015)
Pop. using improved sanitation facilities (urban/rural, %)	34.8 / 30.6	33.8 / 28.0	32.8 / 25.4 (2015)

Extract from <http://data.un.org/en/iso/ng.html>, accessed 20 September 2018

Total renewable water sources in Nigeria span 286.2 cubic kilometres.

67.1% of total installed electrical capacity is generated from fossil fuels; 32.8% of total installed electrical capacity is generated from hydroelectric plants and 0.1% of total installed electrical capacity is generated from other renewable sources.

The international environmental agreements that Nigeria has signed and ratified include those related to biodiversity, climate change through the Kyoto Protocol, desertification, endangered species, hazardous wastes, law of the sea, marine dumping, marine life conservation, ozone layer protection, ship pollution and wetlands.

3 Applying Green Star Interiors Credit by Credit

The Green Star Interiors v1 rating tool has been assessed for relevance on a credit by credit basis. Each credit's applicability to the Nigerian context is discussed and recommendations are made as to proposed changes or where a project team will be required to submit a Credit Interpretation Request (CIR) or a Technical Clarification (TC) to the GBCSA where an alternative standard may be better suited.

Credit by credit review:

For each credit reviewed as part of this report, the credits are colour-coded in accordance with the changes required for applicability to the local context:

	The credit should be kept in its current form and no adjustments need to be made.
	The credit requires a mandatory CIR or TC or adaptation to ensure relevance to the Nigerian context.
	The credit should be omitted and made 'not applicable' for the Nigerian application of the tool.

Each credit is reviewed as follows:

AIM OF CREDIT	NOTES	RECOMMENDATION
Credit Number and Name and a definition of the aim of each credit	Discussion notes relating to the suitability of a credit to the Nigerian context as well as notes regarding relevant legislation or standards as applicable	Recommendations to keep credit unchanged or change (minor changes), where applicable and for the purpose of the application to the Nigerian context of the Green Star Interiors v1 tool.

Projects in Nigeria will also be required to use the latest Green Star TCs, CIRs and Errata relevant to the Interiors rating tool, published on the GBCSA's website, which represent the current version of the tool.

Eligibility criteria:

No adaptations shall be made to the Spatial Differentiation, Space Use and Timing of Certification eligibility criteria of the Green Star rating tool.

3.1 Management

The credits within the Management Category encourage and reward the adoption of features and attributes that enable and support good environmental management practices throughout the different phases of a project's development and its on-going operation.

The intention throughout the category is to improve the environmental performance of projects by influencing areas where decision-making is critical. It rewards the implementation of processes and strategies that minimise negative environmental impacts during fitout construction. The category also promotes practices that ensure a fitout project will be used to its maximum operational potential.

AIM OF CREDIT	NOTES	RECOMMENDATION
INT-MAN-1: Green Star Accredited Professional To encourage and recognise the engagement of professionals who can assist the project team with the integration of Green Star aims and processes throughout all stages of a fitout's design and construction phases.	Until such a time that there is an established GBCN with the requisite rating tools and associated course delivery systems, it is recommended that professionals be trained under the current South African system. As such, the credit in its current form is equally relevant and applicable in Nigeria as it is in South Africa.	INT-MAN-1 to be kept in its current form and no adjustments are to be made.
INT-MAN-2: Commissioning and Tuning To recognise effective commissioning and tuning processes during a project's design and construction phase that ensure all services and installations can operate to their optimal design potential.	As commissioning procedures are not legislated in Nigeria (as in South Africa) CIBSE or ASHRAE commissioning codes are suitable standards for the commissioning of energy consuming systems and are in line with Green Star's aim of best practice.	INT-MAN-2 to be kept in its current form and no adjustments are to be made.
INT-MAN-3: Occupant Users' Guide To encourage and recognise the provision of information to fitout owners and users that helps them understand a project's systems, environmental attributes, and maintenance requirements.		INT-MAN-3 to be kept in its current form and no adjustments are to be made.
INT-MAN-4: Environmental Management To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.	Environmental Management Plan Environmental management in construction is legislated in Nigeria through the Environmental Impact Assessment (EIA) Decree 86 (1992). However, as current Nigerian legislation is less stringent than legislation referenced in Green Star Interiors v1 and as institutional enforcement of environmental regulation in Nigeria appears to be lacking, project teams are to develop project specific environmental management plans in line with Green Star requirements. Environmental Management System (EMS) To remain as is. Monitoring construction impacts To remain as is Referenced Legislation (Nigeria) NESREA Reg 2010 S.I No. 19 NESREA Reg 2009 S.I No. 29. Environmental Impact Assessment (EIA) Decree 86 (1992)	INT-MAN-4 to be kept in its current form and no adjustments are to be made. References to be updated to include Nigerian environmental legislation.

INT-MAN-5: Construction Waste Management To recognise and encourage management practises that minimise the amount of demolition and construction waste going to disposal	Waste management is regulated by waste management regulation S.1.9 of 1991 and the Environmental Impact Assessment (EIA) Decree No. 86 of 1992. There are no formal recycling or resource recovery programmes and recovery/recycling operations are carried out mostly by the voluntary sector. Stakeholder Comment: There are very few formal recycling systems that exist in Nigeria, and most recycling and sorting is done informally by private individuals. Generally, the majority of waste generated during construction is usually donated to private individuals for building purposes. This may include damaged or broken items. Rubble is collected for use in road works and filling potholes.	INT-MAN-5 to be kept in its current form and although recycling is informal in Nigeria a formal documentation process must be in place that verifies the donation and receipt of any donated materials – and may be a document countersigned by both parties. Project teams are to submit a CIR detailing the process
INT-MAN-6: Work Space Efficiency To recognise the design of workspaces that provide spatial efficiency and improve productivity and occupant performance.		INT-MAN-6 to be kept in its current form and no adjustments are to be made.
INT-MAN-7: Green Lease To recognise and encourage collaboration between the building owner and tenants in order to manage and operate the building along environmentally sustainable principles whilst realising mutual benefit.		INT-MAN-7 to be kept in its current form and no adjustments are to be made.
INT-MAN-8: Learning Resources To encourage and recognise sustainability initiatives implemented in the development as learning resources for building users and visitors		INT-MAN-8 to be kept in its current form and no adjustments are to be made.

3.2 Indoor Environmental Quality

The Indoor Environment Quality (IEQ) category aims to encourage and reward initiatives that enhance the comfort and well-being of fitout for occupants. The credits within the category address issues including air quality, pollutants and occupant comfort and rewards project teams that achieve increased comfort and well-being and provide comfortable and healthy spaces for their occupants.

Through the IEQ category, Green Star - Interiors aims to achieve environmental performance improvements in a manner that also improves occupants' experience of the space. For example, reductions in energy consumption could easily be achieved by avoiding the installation of heating and/or cooling systems, but this would potentially be at the expense of the occupant comfort and wellbeing. The IEQ category recognises that buildings are designed for people and as such improvements to sustainability should never be made at the expense of occupant health and wellbeing. By rewarding both energy efficiency and indoor environment quality, the Green Star rating system promotes and rewards a holistic approach to sustainability that results in multiple benefits.

	AIM OF CREDIT	NOTES	RECOMMENDATION
	INT-IEQ-1: Quality of Internal Air To encourage and recognise projects that provide high quality air to occupants.	Entry of outdoor pollutants Unchanged Provision of outside air Unchanged or alternative compliance path Use of CO2 control Unchanged Exhaust of pollutants Unchanged	INT-IEQ-1 to be kept in its current form and no adjustments are to be made. Note alternative compliance path option Alternative Compliance Path Provision of outside air Where a professional team wishes to use an alternative standard (e.g. CIBSE Guide B2 to determine ventilation rates) a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than SANS 10400-O:2011.
	INT-IEQ-2: Thermal Comfort To encourage and recognise fitouts that achieve a high level of thermal comfort	Compliance Route 1 – Modelling Unchanged Compliance Route 2 – Deemed-to-Satisfy (DTS) Criteria Unchanged	INT-IEQ-2 to be kept in its current form and no adjustments are to be made.
	INT-IEQ-3: Lighting Comfort To encourage, recognise and reward well-lit spaces that provide appropriate levels of lighting comfort to occupants.	Minimum Compliance Unchanged Light levels Unchanged or alternative compliance path Individual controls Unchanged Glare Unchanged or alternative compliance path	INT-IEQ-3 to be kept in its current form and no adjustments are to be made. Note alternative compliance path option Alternative Compliance Path Light Levels Where a professional team wishes to use an alternative standard, a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than the standard/s given in the Technical Manual. Alternative Compliance Path Glare Where a professional team wishes to use an alternative standard, a CIR is to be submitted to the GBCSA provided the alternative standard is equally or more stringent than the standard/s given in the Technical Manual.
	INT-IEQ-4: Visual Comfort To recognise the delivery of well daylight spaces that provide high levels of visual comfort and views to fit-out occupants	Daylight Unchanged Daylight Glare Control Unchanged	INT-IEQ-4 to be kept in its current form and no adjustments are to be made.

		Views Unchanged	
	INT-IEQ-5: Acoustic Quality To encourage and recognise buildings that are designed to provide appropriate acoustic qualities to enable the functionality of the space.	Internal Noise Levels Unchanged Reverberation Unchanged Interference Unchanged Speech Privacy Unchanged	INT-IEQ-5 to be kept in its current form and no adjustments are to be made.
	INT-IEQ-6: Reduced Exposure to Pollutants To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	Paints Unchanged Adhesives and Sealants Requirements Unchanged – but projects to obtain additional 0.5 points for achieving this part of the credit Carpets and Flooring Unchanged Engineered wood products Unchanged	INT-IEQ-6 to be kept in its current form and no adjustments are to be made.
	IEQ-7: Mould Prevention To encourage and recognise the design of services that eliminates the risk of mould growth and its associated detrimental impact on occupant health.	The inclusion of dehumidifiers is standard practice as part of the indoor air quality control due to the climate.	INT-IEQ-7 to be kept in its current form and no adjustments are to be made
	IEQ-8: Ergonomics To recognise the choice of equipment and design of spaces that promotes wellbeing, efficiency and effectiveness	Furniture and Design Assessment Unchanged Workstation Assessment Unchanged	INT-IEQ-8 to be kept in its current form and no adjustments are to be made.
	IEQ-9: Indoor Plants To encourage and recognise the installation of indoor plants that improve indoor environment quality and also provides occupants with a connection to nature.		INT-IEQ-9 to be kept in its current form and no adjustments are to be made.

3.3 Energy

The Energy category aims to reward fitouts that can reduce their overall operational energy consumption below that of a comparable standard practice fitout. Such reductions help to reduce greenhouse gas (and other related) emissions, lower overall energy demand as well as maximise fitouts' operational efficiency and reduce operating costs for building owners and users.

The category aims to facilitate reductions in operational energy consumption by facilitating efficient energy usage and encouraging the utilisation of energy generated by low-emission sources. It also seeks to encourage further maximisation of efficiencies through the selection of low-energy appliances and equipment, and the implementation of good lighting design.

AIM OF CREDIT	NOTES	RECOMMENDATION
INT-ENE-1: Greenhouse Gas Emissions To encourage and recognise designs that minimise the greenhouse gas emissions associated with operational energy consumption, and maximise potential operational energy efficiency of the base building.	<p>The Federal Ministry of Power, Works and Housing (Housing Sector) in Nigeria, published the first edition of National Building Energy Efficiency Code (BEEC) in August 2017. The document stipulates minimum efficiency requirements for new buildings towards energy consumption and greenhouse gas emissions reduction. This code is intended as a complementary guideline to the National Building Code (NBC) of Nigeria. As per 2.1.3.3 of BEEC, affected buildings include following classifications as per the NBC:</p> <ul style="list-style-type: none"> • Class B – Business and Professional (Spaces used primarily for office work) • Group R – Residential Buildings (minimum eligible GFA of 85m² applies in case of stand-alone buildings) <p>Overall, the Green Star Interiors v1 tool requirements prescribed under ENE-1 Part A to G are either more stringent or equal to the minimum efficiency requirements stipulated for Prescriptive Route under BEEC.</p>	<p>It is recommended that ENE-1 Credit Criteria for up to 12 points remains applicable to all projects in Nigeria seeking Green Star-Nigeria certification.</p> <p>Additionally, with due cognizance to section 3.2.1 and 3.2.3 of BEEC, innovation criteria is recommended to be added to ENE-1, where projects will be awarded up to 2 innovation points if – WWR is ≤20%, And/or Roof Insulation R-value>1.25 m²K/W</p> <p>Should a project intend to use Part E.2 Energy Modelling (HVAC Only) compliance route, either by adopting SANS204:2011 based modelling protocol or an alternative standard, the identified approach to establish notional building must be motivated by the registered project through a mandatory CIR.</p>
ENE-2: Energy Sub-metering To encourage and recognise the installation of energy sub-metering that facilitates on-going management of energy consumption.		INT-ENE-2 to be kept in its current form and no adjustments are to be made.

3.4 Transport

The Transport category aims to reward projects that can facilitate a reduction of the dependency of occupants on private car use as an important means of reducing overall greenhouse gas emissions.

Motor vehicles in general and private cars in particular, are responsible for many forms of pollution. Climate change is impacted by motor vehicle use indirectly due to the high amounts of energy (and therefore emissions) required to manufacture cars and build supporting infrastructure and services, as well directly as the transport fuels combusted lead to greenhouse gas emissions within exhaust fumes. Car exhaust fumes also increase the levels of polluting particles in the air, which are a contributing cause of asthma and other respiratory illnesses.

If reliance on motor vehicle transportation is to be reduced, it is necessary to maximise alternative options. Rather than limiting access to private fossil fuel vehicles, the Transport category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage and make possible the use of mass transport like trains, buses and minibus taxis, as well as pedestrian and cycling opportunities. Of all of these alternatives, walking is the most 'sustainable', with no associated embodied energy or pollutants; cycling similarly does not pollute the environment.

AIM OF CREDIT	NOTES	RECOMMENDATION
TRA-1: Commuting Mass Transport To encourage and recognise the selection of sites/premises that are near public transport and facilitate the use of public transport		INT-TRA-1 to be kept in its current form and no adjustments are to be made.
TRA-2: Local Connectivity To encourage and recognise tenants that choose to locate their premises within walking distance of high quality amenities such as shops and parks, thus reducing private vehicle use and the associated negative environmental impacts.		INT-TRA-2 to be kept in its current form and no adjustments are to be made.
TRA-3: Alternative Transport To encourage and recognise developments that promote and facilitate the use of alternative modes of transport in lieu of the use of private cars.	Cyclist Facilities Stakeholder Comment: Due to unsuitable road infrastructure, this is not considered a viable option for transportation purposes. Alternative Transportation Parking Unchanged Reduced use of private fossil fuel vehicles Unchanged	INT-TRA-3 to be kept in its current form and no adjustments are to be made.

3.5 Water

The Water category aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and wastewater re-use.

Reductions in operational water consumption may be achieved through maximisation of water efficiency within a project, as well as through the utilisation of reclaimed water sources. In the case of fitouts, further water efficiencies can be gained through the selection of efficient appliances and equipment and the selection of base buildings that have already implemented efficient fixtures, fittings and systems.

	AIM OF CREDIT	NOTES	RECOMMENDATION
	WAT-1: Potable Water To encourage and recognise interior fitouts that minimise potable water consumption.	Compliance Route 1: Simulation Method: The potable water calculator takes into account South African rainfall per region only and as such must be updated to reflect regional rainfall values in Nigeria. Compliance Route 2: Deemed to satisfy methodology Unchanged	Compliance Route 1: INT-WAT-1 to be kept in its current form with a mandatory CIR to confirm applicability for Compliance Route 1 (update of regional rainfall values). Compliance Route 2: INT-WAT-1 to be kept in its current form and no adjustments are to be made.
	WAT-2: Water Sub-Metering To encourage and recognise the design of systems that both monitor and manage water consumption..	Metering Unchanged Metering Strategy Unchanged	INT-WAT-2 to be kept in its current form and no adjustments are to be made.

3.6 Materials

The credits within the Materials Category target the consumption of resources through selection and reuse of materials, and efficient management practices. The basic concepts of the category are to reduce the amount of natural resources used, reuse whatever materials can be reused, and recycle whenever possible.

The credits are intended to reduce the environmental impacts associated with the use of materials. This is done through credits that reward improvements across the range of fundamental considerations: responsible sourcing; embodied impacts, resource efficient design and health and safety.

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
INT-MAT-1: Operational Waste Management To encourage and recognise developments which provide a spatial allocation for recycling and an operational waste management plan to facilitate the recovery of resources used within the tenancy to reduce waste going to disposal.	Recycling Waste Storage Unchanged Operational Waste & Recycling Management Plan Unchanged	INT-MAT-1 to be kept in its current form and no adjustments are to be made.
INT-MAT-2: Furniture To encourage and recognise the selection of furniture that has a reduced environmental impact compared to available alternatives	Stakeholder Comments: Currently the Nigerian furniture market/industry is limited and almost none of them hold third party certifications. Majority of furniture is supplied to them internationally. Finding furniture that holds the correct certifications is difficult and may result in many fitouts being forced to forfeit the Furniture points.	INT-MAT-2 to be kept in its current with additional alternative compliance paths. The GBCSA has a published list of third-party certifications that are currently recognised within the materials calculator, but which exclude numerous third party European and US certifications and thus that may have the same or similar standards but have not been reviewed. Alternative Compliance Route 2: 1. Under the Product Stewardship category: allow projects to complete the GSSA Environmentally Preferable Products Scorecard, v1 (see Annexure 1) and assign a 30% criterion score. 2. Add a new stand-alone Category: Environmental Product Declaration and assign a criterion score of 30% for products with 3rd party verified EPDs. <i>*Project Teams to highlight the 3rd Party Verification Body in the Product Declaration Sheet for easy assessment.</i>
INT-MAT-3: Assemblies To encourage and recognise the selection of assemblies that has a reduced environmental impact compared to available alternatives.	Currently materials used for partitions and joinery is imported. This creates the same limitations with certifications and market availability.	INT-MAT-3 to be kept in its current with additional alternative compliance paths. The GBCSA has a published list of third-party certifications that are currently recognised within the materials calculator, but which exclude numerous third party European and US certifications and thus that may have the same or similar standards but have not been reviewed. Alternative Compliance Route 2: 1. Under the Product Stewardship category: allow projects to complete the GSSA Environmentally Preferable Products Scorecard, v1 (see Annexure 1) and assign a 30% criterion score. 2. Add a new stand-alone Category: Environmental Product Declaration and assign a criterion score of 30% for products with 3rd party verified EPDs. <i>*Project Teams to highlight the 3rd Party Verification Body in the Product Declaration Sheet for easy assessment.</i>

<p>INT-MAT-4: Flooring To encourage and recognise the selection of flooring that has a reduced environmental impact compared to available alternatives.</p>	<p>(i) Most flooring is imported like furniture and assemblies. The few in country suppliers have few or no certifications.</p> <p>This creates the same limitations with certifications and market availability.</p>	<p>INT-MAT-4 to be kept in its current form with additional alternative compliance paths.</p> <p>The GBCSA has a published list of third-party certifications that are currently recognised within the materials calculator, but which exclude numerous third party European and US certifications and thus that may have the same or similar standards but have not been reviewed.</p> <p>Alternative Compliance Route 2: 1. Under the Product Stewardship category: allow projects to complete the GSSA Environmentally Preferable Products Scorecard, v1 (see Annexure 1) and assign a 30% criterion score. 2. Add a new stand-alone Category: Environmental Product Declaration and assign a criterion score of 30% for products with 3rd party verified EPDs. <i>*Project Teams to highlight the 3rd Party Verification Body in the Product Declaration Sheet for easy assessment.</i></p>
<p>INT-MAT-5: Wall Coverings To encourage and recognise the selection of wall coverings that have a reduced environmental impact compared to available alternatives</p>	<p>(ii) Most wall coverings is imported like furniture and assemblies. The few in country suppliers have few or no certifications.</p> <p>This creates the same limitations with certifications and market availability.</p>	<p>INT-MAT-5 to be kept in its current form with additional alternative compliance paths.</p> <p>The GBCSA has a published list of third-party certifications that are currently recognised within the materials calculator, but which exclude numerous third party European and US certifications and thus that may have the same or similar standards but have not been reviewed.</p> <p>Alternative Compliance Route 2: 1. Under the Product Stewardship category: allow projects to complete the GSSA Environmentally Preferable Products Scorecard, v1 (see Annexure 1) and assign a 30% criterion score for compliant products. 2. Add a new stand-alone Category: Environmental Product Declaration and assign a criterion score of 30% for products with 3rd party verified EPDs. <i>*Project Teams to highlight the 3rd Party Verification Body in the Product Declaration Sheet for easy assessment.</i></p>
<p>INT-MAT-6: Local Sourcing To encourage and recognise the reduction of transport emissions, by using materials and products sourced within close proximity to the site.</p>		<p>INT-MAT-6 to be kept in its current form and no adjustments are to be made.</p>
<p>INT_MAT-7: Sundries Material and Sourcing To encourage and recognise the selection of fitout finishes that have a reduced environmental impact when compared to available alternatives through responsible manufacturing, product stewardship and resource efficient design.</p>		<p>INT-MAT-7 to be kept in its current form and no adjustments are to be made.</p>

3.7 Land Use and Ecology

The Land Use & Ecology category aims to reduce the negative impacts on sites' ecological value as a result of urban development and rewards projects that minimise harm and enhance the quality of local ecologies.

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
INT-ECO-1: Site Selection To encourage and recognise tenants that choose to occupy building/sites that have inherent credentials that support sustainability	<p>The Nigerian construction and built environment is new to green building rating systems and sustainable building initiatives as a whole.</p> <p>There is only one existing building with a LEED rating in Nigeria.</p> <p>As a result, the requirements for eco sites to be Green Star rated are limiting.</p> <p>Environmental attributes of base building Unchanged</p> <p>Environmental performance of the base building Unchanged</p>	INT-ECO-1 to be kept in its current form but to include buildings that are rated under other building rating systems including LEED, EDGE, BREEAM and any other rating system that has been developed by a full member of the WGBC.

3.8 Emissions

The Emissions Category aims to assess the environmental impacts of emissions generated by fitouts. Negative impacts commonly associated with fitout emissions include damage to the ozone layer through refrigerant leaks or disturbances to native animals and their migratory patterns as a result of light pollution.

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	INT-EMI-1: Impacts from refrigerants and insulants To encourage and recognise the avoidance of substances that contribute to the deterioration and long-term alteration of the Earth's atmosphere.	insert any other comments as may be required Ozone Depletion Potential (ODP) Refrigerants Unchanged Insulants Stakeholder Comment: A very limited variety of insulation options are easily available in Nigeria and of those that are available, none are tested for ODP or GWP levels. Global Warming Potential (GWP) Unchanged Refrigerant Fugitive Emission Management Unchanged	INT-EMI-1 to be kept in its current form and no adjustments are to be made.
	EMI-2: Light Pollution To encourage and recognize interior fitouts that minimise light pollution into the night sky.	Internal light sources Unchanged External light sources Unchanged	INT-EMI-2 to be kept in its current form and no adjustments are to be made.

3.9 Innovation

The Innovation category is included within Green Star – Interiors rating tool as a way of encouraging, recognising, and rewarding the spread of innovative practices, processes and strategies that promote sustainable communities and cities.

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	INT-INN-1: Innovative Strategies and Technologies To encourage and recognise pioneering initiatives, processes or strategies in sustainable building management and operations.	Reference Nigerian rather than South African context	INT-INN-1 to be kept in its current form but reference to made instead to the Nigerian context, rather than the South African context.
	INT-INN-2: Exceeding Green Star SA Benchmarks To encourage and recognise projects that achieve environmental benefits in excess of the current Green Star SA – Nigeria benchmarks.		INT-INN-2 to be kept in its current form. Projects Teams are to submit a CIR to request a changing in the benchmark.
	INT-INN-3: Environmental Design Initiatives To encourage and recognise sustainable building initiatives that are currently outside of the scope of this Green Star SA-Nigeria rating tool but which have a substantial or significant environmental benefit.		INT-INN-3 to be kept in its current form and no adjustments are to be made.

4 References

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Annexure 1: Product Stewardship: Environmentally Preferable Products

For the Materials Category there is an alternative Compliance Route for the following credits:

INT-MAT-2: Furniture, MAT-3: Assemblies, MAT-4: Flooring & MAT-5: Wall Coverings.

Alternative Compliance Route 2:

Under the Product Stewardship category: allow projects to complete the GSSA Environmentally Preferable Products Scorecard, v1 and assign a 30% criterion score.

The Calculator: Product Stewardship: [<https://gbcsa.zendesk.com/hc/en-us>] Look under each credit for process and to download the Environmentally Preferable Products Scorecard for alternative route for Product Stewardship (Compliance Route 2).

Product Material Sourcing and Manufacturing		Maximum Points	Assessment Notes	Points awarded	Guidance for completion of supporting documentation:
a	Does the product contain or has been manufactured from refurbished/ reused components and/or reused timber, post consumer recycled timber and/or FSC Certified Timber?	3			3 points for content by mass >75%, 2 points for content by mass >50%, 1 point for content by mass >25%. Please provide evidence
b	Does the product contain recycled materials?	2			2 points for >50% mix of post and pre-consumer recycled content by mass; 1 point for >25% mix of post and pre-consumer recycled content by mass. Please provide evidence recycled content to be provided
c	Has the manufacturer taken steps to avoid/minimise waste generation during manufacturing?	1			List actions and provide evidence
d	Has the manufacturer taken steps to minimise energy use during manufacturing?	1			List actions and provide evidence
e	Has the manufacturer taken steps to minimise emissions of air pollutants during manufacturing?	1			List actions and provide evidence
f	Product Disclosure: Does the product contain hazardous materials, which are fully disclosed in the product documentation?	2			For products containing hazardous materials: Please provide full disclosure of any hazardous materials by means of an MSDS or similar. For products not containing hazardous materials: Please provide evidence by means of an MSDS or similar. Full points will then be awarded.
		10		0	
Use Phase		Maximum Points			
a	Does the product have any Type 1 Ecolabels?	6			provide a copy of the valid Ecolabel.
b	Product Disclosure: Does the product have an emissions certificate?	3			Please provide the emissions certificate. Where a product is inert, please provide the technical data sheet. Please note list of qualifying inert products in the Environmentally Preferable Products Questionnaire and Guidance document.
c	Does the product come with a minimum 5-Year Supplier guarantee?	1			provide a copy of the guarantee
		10		0	
Disposal Phase		Maximum Points			
a	Can the product be recycled? In parts or in its entirety?	2.5			100% recyclable: 2.5 points; >50% recyclable: 1.5 points; >25% recyclable: 1 point; please provide the necessary supporting documentation
b	Does the supplier provide a disposal plan for end of life use?	1			plan to be provided as supporting documentation, listing disposal options
c	Where the supplier has provided a disposal plan for end of life use, are environmentally friendly options considered for disposal?	2			plan to be provided as supporting documentation, listing disposal options
d	Where the product contains hazardous materials, has the supplier provided a comprehensive disposal plan?	1.5			plan to be provided as supporting documentation, listing disposal options; full points where product does not contain hazardous materials
		7		0	
Packaging & Distribution		Maximum Points			
a	Is product packaging recyclable and/or contains recycled content (either post industrial or post consumer)?	2			recyclable with post consumer content: 2 points; recyclable with pre-consumer content: 1 point; no recycled content but readily recycled throughout South Africa: 0.5 points. Please provide documentation to support the
b	Does the supplier offer a take-back of any type of resulting (bulk) packaging or product waste?	1			provide supporting documentation, eg written supplier commitment.
		3		0	
Total		30		0	

Example of Environmentally Preferable Products Scorecard