

GREEN BUILDINGS POLICY IMPLEMENTATION PLAN



MIDVAAL LOCAL MUNICIPALITY - GREEN BUILDING POLICY IMPLEMENTATION PLAN

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1. Glossary, Definitions, Abbreviations and Acronyms

ACEEE - American Council for an Energy-Efficient Economy

CFL Light Bulbs: compact fluorescent light bulbs (CFL) offer comfortable, soft light for an inviting atmosphere. CFL bulbs provide high- performance, energy saving and long-lasting light.

CSR - corporate social responsibility

Energy STAR – ENERGY STAR® is the government-backed symbol for energy efficiency, providing simple, credible, and unbiased information that consumers and businesses rely on to make well-informed decisions

Eco-System – An **ecosystem** is a community of living organisms in conjunction with the nonliving components of their environment, interacting as a **system**. These biotic and abiotic components are linked together through nutrient cycles and energy flows.

E-Commerce – also known as electronic **commerce** or internet **commerce**, refers to the buying and selling of goods or services using the internet, and the transfer of money and data to execute these transactions.

Eco-Plum – **EcoPlum** is an online boutique that makes it fun, easy and rewarding to go green. We curate stylish and unique eco-friendly products including organic clothing,

Eco-Chipz – **Eco Chipz** is on Facebook. Join Facebook to connect with **Eco Chipz** and others you may know. Facebook gives people the power to share and makes the world ...

Eco-Friendly - **Eco-friendly** literally means **earth-friendly** or not harmful to the environment

HVAC – Heating, Ventilating and Air Conditioning

LED – Light-Emitting Diode

MLM – Midvaal Local Municipality

Non-GMO - means **non-genetically modified** organisms.

Recycle - convert (waste) into reusable material.

SALGA – The **South African Local Government Association (SALGA)** is the constitutionally mandated organisation responsible for local government oversight.

SACN – **South Africa Cities Network**

SANS – **South African National Standard** refers to a standard that specifies the performance requirements of a specific product. A **SANS** standard may be either locally written or created by adopting an international (usually ISO) standard,”

SheKnows - **SHE Knows** Ltd is an independent organisation

Utility Bills - usually refers to your water, electricity and gas **bills**. It can also include **bills** for essential services such as those provided by the council, like sewer services

Definition of benchmark: a level of quality that can be used as a standard when comparing other things and secondly used as a standard when comparing other things:

Definition of Certification: refers to the confirmation of certain characteristics of an object, person, or organization. This confirmation is often, but not always, provided by some form of external review, education, assessment, or audit. Accreditation is a specific organization's process of **certification**.

Definition of Efficient energy: use, sometimes simply called energy efficiency, is the goal to reduce the amount of energy required to provide products and services. For example, insulating a home allows a building to use less heating and cooling energy to achieve and maintain a comfortable temperature.

Definition of Greenhouse gas: Is a gas that absorbs infrared radiation (IR) and radiates heat in all directions. ... This increase in heat is called the greenhouse effect. Common examples of greenhouse gases, listed in order of abundance, include: water vapor, carbon dioxide, methane, nitrous oxide, ozone, and any fluorocarbons.

Definition of Implementation Plan: is the carrying out, execution, or practice of a plan, a method, or any design, idea, model, specification, standard or policy for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen

Definition of A 'green' building is a **building** that, in its design, construction or operation, reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. **Green buildings** preserve precious natural resources and improve our quality of life.

Definition of objective: Refers to the specific steps a company will take to achieve a desired result. The result is the goal.

Definition of project: Planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations.

Definition of program: A plan of action aimed at accomplishing a clear business objective, with details on what work is to be done, by whom, when, and what means or resources will be used.

Definition of strategy: A method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem. 2. The art and science of planning and marshalling resources for their most efficient and effective use

2 Introduction

Midvaal Local Municipality Council as per Council Resolution (C 1889/08/2018) resolved to adopt a Green Building Policy during its 8th ordinary meeting held 30 August 2018. As part of the policy realisation, the department was tasked with developing an implementation plan outlining how the policy will be applied. Thus the Implementation Plan outlines the Processes, Programmes and projects that should be investigated and implemented over the next 5 years.

3. Objective of the Green Building Policy

Midvaal Local Municipality has developed Green Building Policy in order to promote resource-efficient building practices, which reduces impact of buildings on the built environment as well as the operational cost of managing these buildings. Green building practices benefit not only building professionals but also homeowners, communities and the environment. They afford everyone the opportunity to take the first step towards a more sustainable future. These guidelines are intended as a resource for Midvaal residents to make informed decisions about their buildings methodologies, conservation and protection of the environment.

The implementation plan and guidelines are intended to investigate and provide practical information on energy-efficient technologies, design criteria, appropriate materials and solutions that will result in addressing 'whole green building design'. It presents broad design guidelines that cover all building types with a series of checklists for ease of reference to the interested property owners or developers.

To realize the policy aims, all Directorates within the Municipality must, within their functional areas, adopt a developmental approach to matters relating to Green Buildings. Thus, 'Green building design' requires a holistic approach to resource-efficient building design and construction informed by a vision for sustainable development and buildings. Effective and integrated design solutions leverage synergies among building components which result in a reduced project life-cycle costs. The economic life-cycle performance of integrated sustainable design is a critical element to green buildings design and construction.

4. Benefits of the Green Building Policy

It is estimated that buildings are responsible for between 40% and 60% of greenhouse gas emissions in a municipality, and are thus a major contributor towards global climate change. The urgency to reducing greenhouse gas emissions is therefore driving the change to a more sustainable built environment. However, green buildings offer a range of other benefits as well, including:

- reduced operational costs;
- reduced resource consumption;
- improved employee health, well-being and productivity;
- reduced exposure to new environmental regulations (e.g. carbon tax);
- reduced exposure to utility price increases;
- building environmentally aware businesses and households; and
- Improving future assets value.

It is Midvaal Municipality's wish to accelerate resource-efficient developments. The municipality will drive change through sharing information about green practices and new standards. The Green Building Policy provides broad guidance on green design issues as well as a list of resources for detailed green building design.

5. What do we want to achieve by implementing the Green Buildings Guideline?

The Policy provides guidance and information to achieve resource-efficient buildings and a sustainable built environment through the following ways:

- Acknowledging that all stakeholders have a responsibility towards Green Buildings
- Ensuring environmental conservation for the benefit of future generations
- Acknowledging humans are social beings with needs
- Create Awareness amongst all stakeholders
- Sharing of information on various platforms
- Communicating recommendations to developers
- Participation in Programmes and Projects
- Educating the youth and communities
- Possible Business Opportunities
- Saving and creating income
- Adapt to a creative mind set of innovation
- Respond to the fourth industrial revolution built environment requirements

6. Limitations of the Green Building Guidelines

The implementation of the Green Building Guidelines does not provide or replace statutory requirements or Municipal policies for buildings. Compliance with all relevant regulations, standards and bylaws is still required. The Green Building Policy does not apply equally to all conditions and locations.

It is not a substitute for proper calculations and modelling by design professionals. The actual performance of design strategies and systems presented in this implementation plan will depend on the detailed design, implementation and operation of the buildings.

7. Is Green Buildings more expensive?

Green buildings are perceived to be significantly more expensive than conventional buildings. This is not necessarily true. Some green building attributes bring capital cost savings to construction (such as natural ventilation), while others bring appreciable operational cost savings to buildings (energy efficiency in all its forms).

Further to these direct savings, there are a wide range of other benefits attached to green buildings, such as improved health, productivity, long-term asset value and reduced exposure to carbon emission regulations. Integrated design, consideration of sustainability from early on in the development process and life-cycle costing provide tools for making the most commercial sense of green buildings.

8. Stakeholder participation in the implementation of the Green Building Guidelines?

The Green Building Guidelines are developed for various stakeholders and individuals in order to take advantage and benefits of the green buildings interventions.

The stakeholders include the following two groups, but not limited to;

Group 1	Group 2
National Government	Private Property Owners
Provincial Government	Professionals (Architects)
Sedibeng District	Tenants
Midvaal Municipality	Contractors
Green Building Council of South Africa	Property Developers
Education Sector	Business Sector
Health Sector	Industrial Sector
Welfare Sector	

9. Strategies

The Implementation Plan for Green Building Guidelines consists of 5 main strategies. Each linked to a program and project. Thus, projects are to be identified, considered, implemented and monitored in accordance with the strategies.

The Strategies are as follow;

9.1 Marketing, Knowledge Sharing and Capacity Building

The following Programmes are linked to the above Strategy;

- Sharing of information on various platforms and education of the communities
- Communicating recommendations with Developers (New Developments)
- Energy Efficiency interventions associated with Buildings
- Changing your Mind-Set
- Create Awareness of sustainability

9.2 Economic Beneficiation

The following Programmes are linked to the above Strategy;

- Renewable Energy Interventions
- Lowering costs
- Long Term Cost Savings
- Benefits and Achievements

9.3 Reduce, Re-use and Recycle

The following Programmes are linked to the above Strategy;

- Watch your Utility Bills
- Purchase Energy Efficient Appliances
- Saving water and energy costs

9.4 Reduce Carbon Footprint

The following Programmes are linked to the above Strategy;

- Interventions to reduce the Municipality's own energy consumption
- Energy Efficiency Interventions

9.5 Certification and Benchmarking

The following Programmes are linked to the above Strategy;

- Support organizations dedicated to sustainability
- Green Building Rating Tool Training and Knowledge
- Review internal Building Plan Application Evaluation Criteria

10. Programmes linked to Strategies

10.1 Strategy 1 - (Marketing, Knowledge Sharing and Capacity Building) will consist of the following Programs;

10.1.1 Program 1 - Sharing of information on various platforms and educating the youth and local communities

There are various ways to increase knowledge sharing in our organization and community.

Whether we have an unorganized heap of knowledge or a knowledge hoarding problem, many organizations fall flat when it comes to knowledge management.

Making progress toward a more sustainable green environment will require education Programmes that foster informed, empowered, just societies and opportunities for lifelong learning. Non-formal community education is an important component of lifelong learning and is crucial to raising awareness, building partnerships, and influencing action to engage people in working for sustainability.

Realigning existing funding opportunities, building the capacity of facilitators and supporting more innovative and participatory approaches to community, education is needed to make a significant contribution to sustainable development practices.

Participation is also seen as a right, not just the means to achieve project goals. The process involves interdisciplinary methodologies that seek multiple perspectives and make use of systemic and structured learning processes.

As groups take control over local decisions and determine how available resources are used, so they have a stake in maintaining structures or practices.

All stakeholders will be encouraged to participate in the following two manners;

Functional participation (Cooperation):

Community participation is seen by external agencies as a means to achieve project goals. People participate by forming groups to meet predetermined project

objectives; they may be involved in decision making, but only after major decisions have already been made by external agents.

Interactive participation (Co-learning):

People participate in joint analysis, development of action plans and formation or strengthening of local institutions.

10.1.2 Program 2 - Communicating recommendations with Developers (New Developments)

The following Recommendations, questionnaire and checklists contained in the Green Building Policy will be communicated to all stakeholders in the event of new developments;

- Site selection
- Design Phase
- Construction Phase
- Energy Efficiency
- Water Efficiency
- Waste Reduction and Management
- Human Health and Comfort

10.1.3 Program 3 - Energy Efficiency interventions associated with Buildings

The buildings and facilities sector provides the greatest opportunity to reduce Municipal / Eskom electrical consumption as it is currently the largest source of demand for electricity. The energy efficiency interventions associated with buildings and facilities include building lighting, motion sensors, shading, insulation, water heating, ventilation and air-conditioning (HVAC). The buildings and facilities sector benefits from established regulations for new buildings and large scale renovations.

The SANS 10400-XA and SANS 204 regulate the energy efficiency of new buildings (SACN, 2014). Municipalities are required to comply with performance parameters which include maximum energy demand and the maximum annual energy consumption, measured in volt-amperes per square meter of floor space (VA/m²) depending on building type and climatic zone.

10.1.4 Program 4 - Changing your Mind-Set

The First No-Cost Step to High Performance Building: Changing Your Mind-set

Buildings consume approximately two-thirds of the energy supply and emit approximately 40 percent of the greenhouse gases. This is a staggering statistic when you consider that right now we have the technical capability to cut these numbers in half, cost effectively. But only by changing our approach to buildings will we be able to do this.

“Albert Einstein famously defined insanity as doing the same thing over and over again, but expecting different results.” It seems this is exactly what some in the commercial development industry intend to do.

Changing mindset- the need to go green

“Recognising the need to go green is one thing; but going green is a totally different matter. The ability of a business to embrace sustainability can vary significantly according to the industry sector, the organisation’s size, and its business objectives. It is not unexpected that, for many entrepreneurs, the principal objective of business is to make profit. Consequently, going green can seem very costly and time-consuming. As a result, being sustainable by playing a broader social role can be a rather frightening concept.”

Consensus on the perfect balance between self-interest and social responsibility is yet to be reached. Many companies wage an ongoing battle between what they wish to do and what they must do in order to financially survive. However, what is still underestimated is the fact that going green also brings many benefits for businesses, such as:

- the creation of new markets
- cutting costs (i.e. energy or waste)
- the attraction of new employee talent, and
- development of new relations with stakeholders.

The need to go green does not necessarily imply the creation of new management systems, but rather modifications of systems, practices and procedures within a new cultural and social orientation. There are many tools available to help businesses adapt and change the way they think and how they go about implementing changes to achieve greener practices.

10.1.5 Program 5 - Create Awareness of sustainability

It is imperative that sustainability awareness be created amongst all the stakeholders through consultations, workshops, social media platforms, newsletters, posters, leaflets, etc.

“Sustainability is not a choice but a necessity”

Once companies start making sustainable products and services available for customers, it will become a choice between existing products or services and sustainable options. For example, customers may then decide whether to buy a regular light bulb or an energy saving CFL light bulb. These lamps might not have been cheaper at first, but many customers will buy them because of the cost savings on electric bills. As technology improved, sustainable products in the market became more affordable and better. They started competing with products made by conventional methods. Many customers today prefer sustainable products over traditional products, even if the cost is higher. Businesses globally seem to have recognised this trend.

Sustainability is not only an idea supported in South Africa, but it has global popularity. Many companies lack the knowledge or technical abilities for researching new methods, or they might face difficulties adapting to new methods of production which may not be affordable in the short term. Companies may face additional costs

of purchasing new equipment, materials and other higher costs associated with shifting to sustainable products.

10.2 Strategy 2 - (Economic Beneficiation) will consist of the following Programs;

10.2.1 Program 6 - Renewable Energy Interventions

The focus of this program is based on operational interventions within municipal infrastructure functions. The renewable energy installations aim to replace or supplement grid electricity with the intention of reducing energy costs and increasing security of supply. Interventions that are therefore solely focused on electricity generation (for re-sale) are not covered here. Current types of energy used to generate electricity in municipal operations include solar energy, biomass, biogas or hydroelectricity (micro turbines).

Solar energy uses solar photovoltaic (PV) panels to generate electricity which can be used to power infrastructure such as street lights, water pumps, and municipal buildings.

10.2.2 Program 7 - Lowering costs

Though green buildings costs are currently approximately five percent more than traditional methods, research has shown that the costs are rapidly decreasing. The economy is investing more and more in green materials, which reduces the costs of manufacturing. Before long, it will be just as affordable to use green construction materials. The more people invest in the industry, the more affordable it will become. The more the people buy the materials, the more it will be cheaper to produce.

Source - gbcza.org.za/building-green-costs-on-average-only-5-more-than-conventional-building-study/

10.2.3 Program 8 - Long Term Cost Savings

The cost-saving benefits for sustainable Green Building methods are unparalleled in the long term. It raises property values, savings on living costs and reduction of carbon footprint emitted by buildings.

10.2.4 Program 9 - Benefits and Achievements

It is now evident that green buildings bring multiple benefits.

They provide effective means to achieve a range of global goals, such as addressing climate change, creating sustainable and thriving communities, and driving economic growth.

The benefits of green buildings can be grouped within three categories: environmental, economic and social.

Green Buildings reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life. According to a growing body of

research, the most important social benefits of green buildings are the enhanced health and wellbeing of those living and working in them.

Source - <http://www.koruarchitects.co.uk/social-benefits-of-green-buildings>

10.3 Strategy 3 - (Reduce, Re-use and Recycle) will consist of the following Programs;

10.3.1 Program 10 - Watch your Utility Bills

Conserving energy and minimizing water consumption and waste will assist in reducing utility bills as well as promoting sustainable developments. Cutting your utility bill doesn't necessarily require an upfront investment and there are really some easy lessons to it.

Communities should try to find out if they are wasting energy or water through faulty wiring or leaking pipes, insufficient insulation and old appliances. Consumers can save on energy bills significantly if they insulate their houses and replace all faulty appliances and fittings. Little things like unplugging appliances while not in use or closing windows when heat or air conditioning is on, makes a big difference in the long run to save energy, reduce carbon footprints and reduce municipal bills. On a larger scale and over a longer period of time, it will assist to reduce the global climate change impact and carbon footprints.

10.3.2 Program 11 - Purchase Energy Efficient Appliances

Consumers should replace all old home appliances with energy efficient ones when current appliances become redundant. The savings generated by efficiency of new appliances, will ensure effective functioning. Energy efficient appliances are better insulated and save energy, such as new water heaters, thermostats, heat pumps, air conditioning, washing machines, etc. It is recommended that consumers should only buy energy star ratings and other energy saving features for their home building materials (windows, doors, etc).

10.3.3 Program 12 - Saving water and energy costs

Green building means increased efficiency, which means lowered energy consumption. It's true that the cost of green buildings can be approximately five percent more than traditional forms of construction, but the additional cost will be compensated for by low municipal utility bills.

Source - http://www.cedar-rapids.org/residents/utilities/lowering_my_bill.php

On average, owners of green buildings save approximately 30 percent on their energy and water bills, including heating and cooling.

Source - www.moneycrashers.com/10-ways-to-reduce-your-utility-bill/

10.4 Strategy 4 - (Reduce Carbon Footprint) will consist of the following Programs;

10.4.1 Program 13 - Interventions to reduce the Municipality's own energy consumption

A Municipality's core function is to provide its community with basic services while also ensuring that it improves their socio-economic conditions. In fulfilling this function, municipalities should generate income from sale of water, electricity and property rates. It is therefore important that the revenue generated, should be used in an efficient manner. Energy conservation offers a way to do so without compromising service delivery.

Citizens expect their governments to act as environmental stewards. By lowering demand for energy, municipalities can do their part to help reduce greenhouse gas emissions and improve quality of life.

Local governments also can take advantage of cutting-edge city management technologies and practices that are part of the current 'Smart City' movement. Many of these technologies promote energy conservation and can cut costs.

The interventions Midvaal Local Municipality will embark on in terms of energy consumption are to be identified and contained in the projects.

10.4.2 Program 14 - Energy Efficiency Interventions

Set goals and measure our progress

Midvaal Municipality can present a complex energy picture, especially those with multiple buildings and water treatment facilities, vast networks of street lighting, and on-site generation facilities. So it's important to pursue energy conservation strategically. Identify where we'll focus first, set goals and measure performance and progress against a baseline over time.

10.5 Strategy 5 - (Certification and Benchmarking) will consist of the following Programs;

A Green Star SA rating tool, administered by the Green Building Council of South Africa (GBCSA) is readily available as a primary benchmarking strategy for green buildings.

The performance of all new and improved buildings should be investigated in order to be categorised in one of various categories as contained in the Green Building Policy in order to be ranked on a six star rating scale.

10.5.1 Program 15 - Support organizations dedicated to sustainability

There are non-profit organizations both locally and internationally that promote sustainable development. MLM can partner with these organizations to promote sustainability. Partnership will make a big difference in public awareness and information sharing with local communities, society and environment.

10.5.2 Program 16 – Green Building Rating Tool Training and Knowledge

GBCSA offers a variety of training courses both face to face and online. Their Accredited Professional programmes show you how to use and apply their rating tools while their workshops and talks offer insight into broader green building and sustainability aspects.

GBCSA uses a blended learning model for education to bring the very best training for the use and application of the Green Star SA rating tools for professionals working in the built environment and property industries.

Blended learning models are a combination of the physical and the virtual classroom allowing students to learn as individuals in their own time and apply their learning to scenarios based.

GBCSA also offers custom and in-house training for groups of 20 or more professionals.

10.5.3 Program 17 – Review internal Building Plan Application Evaluation Criteria

The SANS 10400 regulations document was amended during 2014, including energy efficiency as Part XA and 204.

The sections are defined as follow;

Part X	-	Environmental Sustainability
Part XA	-	Energy Usage in Buildings
Part 204	-	Energy Efficiency in Buildings

These sections are already enforced, but its evaluation criteria should be reviewed and benchmarked with the criteria utilized by GBCSA and neighbouring Municipalities, eg; Ekurhuleni, City Of Johannesburg and City of Tshwane.

11. Future Programmes

11.1 Program 1 - Make informed choices by choosing sustainable goods and services

You can make a shift in your purchasing practices by choosing sustainable goods and services. Gather information and make an informed purchase. Before you buy something, make sure you really need it.

For example, you could have food in your refrigerator that you haven't used yet. This is the first step in avoiding food waste. If you do not need a product, you could make use of some of the products you already have at home.

Also, read the ingredients and make sure the food was made with sustainable methods. Some products detail how the product was made. Was it made in a sustainable way?

Does the product support the environment and eco-system? Many products, especially cleaning products, are labelled eco-friendly. Compare different products and make sure you choose the right brand that promotes sustainability. Avoid

products that use excessive packaging because it is going to increase waste. Buying in bulk will also reduce packaging waste.

11.2 Program 2 - Inclusiveness of the youth

“We can’t solve problems by using the same kind of thinking we used when we created them”. -Albert Einstein

Today’s societies need to create new opportunities for discussion to co-develop solutions to address development challenges.

Youth involvement on sustainable development goals is very crucial. Young people are the leaders of tomorrow and pivotal players in tackling global development issues and playing a key role in the decision making processes, at all levels of society.

It is imperative that youth from across the Municipality participate actively in all relevant levels of decision-making processes because it affects their lives today and has implications for their future. In addition to their knowledgeable contribution and their ability to mobilize support, youth bring unique perspectives that need to be taken into account.

Young people have a stronger voice and they could be better served by local and national institutions, with more robust and youth friendly policies. They also should have access to economic and social opportunities in order for them to share economic growth, live healthy lives, and contribute to household, community and national wellbeing.

The Midvaal Youth Council should be required to contribute actively. They should be able to encourage and help youth to acquire knowledge and skills needed to promote sustainable development and tackle youth issues. They should also encourage youth involvement in conservation, restoration and sustainable use of terrestrial ecosystems and support them to recycle and avoid unsustainable consumptions, including overconsumption. They should educate young people with the right skills to implement resilient agricultural practices to eradicate hunger in our communities.

The Youth Council should promote development-oriented policies that support productive activities, decent job creation and entrepreneurship, apprenticeship, creativity and innovation. In partnership with all stakeholders, they should organise programmes that can equip young people with the right skills and knowledge to eradicate poverty at our communities and society in order to achieve the sustainable development goals.

The Midvaal Youth (Junior) Council should;

- form partnership,
- share resources and knowledge
- tackling youth issues
- take action on the inputs and ideas brought forward
- promote the participation of young people in community service and

- Encourages voluntary work in the community development.
- developing and revising youth strategies and policies,
- youth and relevant stakeholders to collaborate together
- fully participate in democratic and development processes
- play active roles in peace building and community development
- Young people should explicitly be part of the “Leave No One Behind” inclusive development agenda and well-intended consultation.
- Youth voice matters

11.3 Program 3 - Less Maintenance

A major part of sustainable building is maintenance, repairs, and upkeep. Most green building supplies come with reduced maintenance. For example, by choosing bamboo flooring – which is easily renewable, highly popular, and sustainable – instead of hardwood, you can maintain the style and functionality of beautiful wood flooring without worrying about upkeep.

11.4 Program 4 - Business Opportunities for everybody

The business sector and its customers are just as interested in corporate social responsibility (CSR) as they are in a company's products and services. This is especially good news for eco-minded entrepreneurs.

Eco-friendly business ideas for making money and saving the planet at the same time, is the message that should be communicated with all stakeholders.

Today, consumers are just as interested in corporate social responsibility (CSR) as they are in a company's products and services. This is especially good news for eco-minded entrepreneurs.

We've outlined 15 eco-friendly business ideas for making money and saving the planet at the same time.

11.5 Program 5 - Saving and creating income

There are various basic Ways that Green Buildings can Save Big Money

One of the most popular trends of the 21st century is green construction. Sustainable building is typically characterized by using environmentally responsible and resource-efficient materials throughout the entire process. It also covers the processes before and after the actual construction, including operation, maintenance, renovation, demolition, siting, and design.

Sustainable construction is extremely important because of the hefty impact it has on the environment.

Consumers are realizing how their actions affect the environment, and demanding a change in the way things are done. This has spurred a movement that calls for

greener building processes and a more sustainable lifestyle. But there's a lot more to this eco-friendly movement than just saving the earth. You can also save a lot of money, too.

11.6 Program 6 - Carpool or use public transport more often

Carpooling or using public transportation more often will reduce your transportation costs as well as reduce carbon emissions from your car. If we all took the bus to work once in a while, it would have a great impact on the air quality of our environment.

11.7 Program 7 - Recycle to promote sustainability

Recycling is one the best things you can do to promote sustainability. Recycling and buying products made with recycled materials has many far reaching benefits. By cleaning up your house and recycling your old household trash, you instantly get a cleaner house and some extra cash. Buying products with recycled materials completes the loop. Recycling reduces pressure on raw materials, reduces mining, and the fuel and other costs associated with extracting, transporting and processing minerals. You also save valuable landfill space.

11.8 Program 8 - Grow your own food in your backyard

The food you purchase from the market goes through a process where food is grown, transported, and stored before it can reach the shelves of a supermarket. The food that reaches the shelves of a grocery store is not always grown through sustainable methods. You can help reduce your carbon footprint and reduce negative environmental impacts by growing your own food in your backyard.

Planting vegetables in your backyard garden has many benefits. You can grow without using any chemicals or pesticides, recycle your kitchen waste as fertilizer, and enjoy freshly grown vegetables from your own backyard. It's a great way to enjoy the outdoors, get some exercise, and also bring your family together.

11.9 Program 9 - Minimize waste

When it comes to food, about 50% of the food produced globally never reaches the tables of the consumers. It is wasted in the process of transportation, packaging, and marketing. Some of the food is also wasted by consumers after they purchase it, and then they throw it away. Think about the energy and resources wasted in producing, distributing, and storing food.

Thousands of litres of water are used for irrigation and thousands of litres of fuel and energy is wasted in transportation and storage. Reducing food waste can significantly help the environment as well as save you on your grocery bills.

Efficient waste management is an important factor in reducing environmental impact and promoting sustainability. The three keywords are reduce, reuse, and recycle which can significantly reduce global impact and conserve natural resources, reduce pollution, and reduce our carbon footprint.

The first step to minimizing waste is to buy only the products that you need. Avoid excessive packaging and recycle everything that you can. Also separate your household trash into stuff that can be reused, before you throw anything into the bin. A lot of your kitchen waste can be used in your vegetable garden and many of your furniture, electrical appliances or old clothes can be rebuilt or recycled. If you do not need something, you can donate it to a recycling group in your area.

11.10 Program 10 - Compost Kitchen Waste

Try to use as much food from your kitchen as possible and employ many of the clever left-over cooking ideas given by popular cookbooks. Any unusable raw waste can make great compost fertilizer for your garden. Avoid using chemical fertilizers to reduce negative impacts on the environment.

11.11 Program 11 - Plant more indigenous trees

Planting more indigenous trees and plants has many environmental, economic, and social benefits. Trees improve the air quality of the place we live in by absorbing carbon dioxide and releasing oxygen, and give us food and shade. It is estimated that a regular sized tree can clean approximately 150 kilograms of carbon dioxide while producing oxygen for the whole community every year. Trees also combat greenhouse effects, reduce the pressure on heating and cooling and therefore save energy. Trees can also save us from climatic changes, natural disasters, and catastrophes.

11.12 Program 12 – LED High Mast Street and Traffic Lighting

LED lights are now considered a standard retrofit option for traffic lighting whereas for street light municipalities are experimenting with several different technologies (or luminaires) such as high pressure sodium, compact fluorescent lighting (CFL), induction, and LED

(SALGA, 2015) It is important to note that the Department of Energy now recommends that only LED lighting is installed. High mast lights can require up to 6000 Watt per mast (for 6 lights on a 40m high mast). Using LED lamps instead of High Pressure Sodium or Mercury Vapour lights can lead to savings of up to 60%, for a final installed demand of sometimes as low as 2400 Watts on a 40m high mast. As a result, besides saving electricity, energy efficient high mast lighting can also ensure timely energisation in areas where the grid capacity is constrained.

12. Future Projects

The municipal departments should adopt the following projects and incorporate them in their planning, design and implementation of their programmes and projects.

12.1 Project 1 - Set goals and measure progress

Midvaal Municipality can present a complex energy picture, especially those with multiple buildings and water treatment facilities, vast networks of street lighting, and

on-site generation facilities. So it's important to pursue energy conservation strategically. Identify where we'll focus first, set goals and measure our progress against a baseline over time.

12.2 Project 2 - Seal air leaks

Examine windows, doors, walls, roofs and the foundations of buildings; these serve as crucial thermal barriers. When leaks in the barriers exist, buildings need more energy for heating and cooling.

Windows are especially important, since they are common sources of air leaks and also help reduce the need for electric light. Window improvements can cut lighting and HVAC costs by 10 percent to 40 percent, according to the National Institute of Building Sciences, so we'll consider treating them to improve their efficiency.

Add coatings, glazing and insulation to reduce the loss of heat in the winter and cool air in the summer. We might also consider window replacement, but have an energy efficiency expert help us determine if and where new, high-efficiency windows offer a return on investment.

12.3 Project 3 - Improve water system performance

Water systems can account for up to one-third of a municipality's electricity bill, according to the American Council for an Energy-Efficient Economy (ACEEE). So it's important that plant engineers maintain motors and systems for optimal performance. Improvements to pumping systems can reduce plant energy use by as much as 20 percent, according to ACEEE.

We'll pay attention to the water delivery system, too. It takes more energy to get water to homes and businesses if pipes are leaking.

12.4 Project 4 - Replace light bulbs within government facilities

Lighting is often described as the 'low-hanging fruit' of energy conservation because installing high-efficiency lighting is a relatively simple, often cost-effective way to conserve energy. Swapping out incandescent bulbs with compact fluorescent lights (CFLs) can cut lighting costs by as much as 50 percent, according to the Department of Energy. Some light emitting diodes (LEDs) offer even greater energy savings, as much as 75 percent, according to ENERGY STAR.

12.5 Project 5 - Harness the power of human nature

We will encourage municipal workers to embrace good, old-fashioned energy conservation efforts like shutting off unneeded lights and computers. Remind workers to save energy with simple signage. Even better, consider installing digital energy displays in high-traffic areas. These give passers-by a quick glimpse of the building's energy use in real time and drives home the importance of their efforts.

We'll also send regular newsletters or emails offering reminders such as:

- Are you using overhead lighting when a lamp focused on your desk will do?
- If the hot sun is blazing down on your work space, take the time to adjust blinds to naturally cool the room.
- Unplug equipment like printers, coffee makers and fans when they're not in use. They drain electricity even when they're not in operation.

12.6 Project 6 - Install sensors to avert waste

- Trying to change human behaviour only goes so far. Fortunately, technology may help take up the slack.
- Include sensors and motion detectors as part of our automated building; management system to detect and automatically shut down equipment and lights that aren't in use. Smart energy management systems even learn the flow of people in and out of a room and adjust lighting, heating and cooling pre-emptively.

12.7 Project 7 - Adopt Smart City practices

Smart City tools and practices use cutting-edge technology to run cities more efficiently and include many energy-saving measures. Forward-thinking municipalities are already installing some of these technologies.

For example, some municipalities use adaptive LED traffic lights that automatically adjust their timing based on traffic flow, cutting electricity use, not to mention driver frustration.

Becoming an energy-saving municipality doesn't have to be a complex task, especially if we work with an experienced supplier that offers diverse, customized supply- and demand-side energy solutions. Direct Energy Business can help us buy less of what we sell, offering a Total Energy Management approach to lowering energy costs with data and analytics, energy efficiency and alternative energy solutions, including:

- Panoramic Power
- Efficiency Edge
- Solar Power
- Demand Response

12.8 Project 8 - Water and Waste water treatment

Opportunities for interventions in water and wastewater treatment depend on the equipment used within the water lifecycle, particularly the water pumps and water treatment systems. Interventions associated with water treatment include:

- improving existing pumps;
- upgrading pumping technology;
- matching pumps to their uses (SACN, 2014);
- optimising waste water treatment processes
- optimising aeration of waste water
- aligning control parameters with the discharge standard on aerobic wastewater systems.

Green building business opportunities

The department has identified;

Today, consumers are just as interested in corporate social responsibility (CSR) as they are in a company's products and services. This is especially good news for eco-minded entrepreneurs.

We've outlined 15 eco-friendly business ideas for making money and saving the planet at the same time.

Project: Ink Refill Business

Starting an ink-refill business can not only be a highly profitable decision, it can be an environmentally conscious one, too. You might question whether refilling ink cartridges really help the environment, considering the amount of paper that is wasted each year. However, by reusing old ink cartridges, there is less non-biodegradable waste accumulating in landfills. Paper is still relevant and necessary in the business world, but empty ink containers are not.

Project: Environmental Publications

If you love to write, start your own environmentally minded publication. Your actions can make a big difference in the world. By debunking popular myths and sharing the truth about the world we live in, you can help consumers be more accountable for their actions.

Project: Eco-friendly retail

Consumer rewards Programmes are popular among retailers, and e-commerce site Eco-Plum is no exception. With every purchase, customers earn Eco-Chipz, which are redeemable for either rewards or a donation to various environmental causes. Each product sold, also carries a third-party green certification or an equivalent eco-label.

Besides selling sustainably sourced products, Eco-Plum produces educational content, such as monthly columns by industry experts, local green business listings, recycling information, eco-tips, and book and video recommendations. If you're considering opening a retail store, consider partnering with a company that has similar motives and values as you and your customers.

Project: Sustainable Construction Materials

You might not think of construction as very sustainable, but some companies now provide recycled materials for use in projects like infrastructure repair.

Axion, for example, with its eco-friendly products, hopes to change the way companies think about rebuilding America's infrastructure. The company's railroad ties and pilings are made from recycled plastic from consumer and industrial uses rather than non-sustainable materials like steel and concrete. Axion is currently working with major partners like Long Island Rail Road to improve infrastructure safely and sustainably in the United States.

Project: Organic Catering

A great way for eco-friendly foodies to share their passion for both food and the environment is to start an organic catering company. By catering local events and business lunches with foods containing organic and locally grown ingredients, free-range meats, and vegan, gluten-free, and paleo meal options, you'll appeal to nature lovers and health and wellness enthusiasts alike.

Be sure, though, to minimize the impact to the environment by avoiding plastic and paper goods as much as possible and composting food waste.

Project: Eco-friendly Beauty Salon

If cosmetology is your passion, start a beauty business that's Mother Nature-approved. Organic and vegan hair and beauty products are popping up everywhere. A way to make this trend work for you is to open an eco-friendly beauty salon. You can open a hair salon that uses all-natural shampoos and conditioners or a nail salon that uses environmentally friendly and vegan polishes and spa treatments.

Project: Eco-friendly Landscaping

Professional landscaping may make your lawn and garden look nice, but all of that maintenance isn't necessarily great for the environment. With some eco-friendly advice and know-how, you can help homeowners make their yards literally and figuratively greener. [SheKnows](#) recommends synthetic turf, drought-resistant plants and strategically placed trees for a lawn that saves water, energy and money.

Project: Sustainable Event Planning

Whether they're big or small, meetings and events can generate large amounts of waste and consume valuable resources. Green event planners use their expertise and event-planning skills to find eco-friendly venues, materials and accommodations.

Sustainable event management benefits more than just the planet. According to the United Nations Environment Programme's Sustainable Event Guide, there are financial advantages, plus it generates a positive image for event organizers, vendors, and stakeholders while raising awareness and inspiring change in the community.

Project: Bicycle Repair and Refurbishing

Biking short distances instead of driving is better for both the environment and your health. Like most modes of transportation, bicycles occasionally need a tune-up.

You could be the expert; cyclists come to you when their bikes need repairing or maintenance. If you have some extra space, you could purchase inexpensive older bikes, fix them up and then sell them for a profit.

Project: Handmade All-Natural / Organic Products

Soaps, cosmetics and cleaning products are just a few of the household products that can be made using common organic materials.

Sure, anyone can find a recipe for a sugar scrub or vinegar-based cleaning solution and do it themselves, but if you package and sell them in sets, your customers conveniently have those all-natural products at their fingertips. Local markets and events are a good place to sell, or you could start an online store.

Project: Eco-Consulting

Are you an expert on green living? Start an eco-consulting service. Consultants evaluate homes and offices, and offer solutions to make them more environmentally friendly.

You could advise clients on switching their home appliances to more energy efficient machines or implement a recycling program. To further boost your credibility, become a certified eco-consultant.

Project: Farmers Market Vendor

Thanks to the ongoing organic movement, those with a green thumb have a golden opportunity to earn money by selling non-GMO, pesticide-free produce at their local farmers market.

Selling naturally grown fruits and vegetables gives you a distinct advantage over competing growers who use conventional methods. You may have to be approved and/or get certified by your local board of health first before you can begin selling.

Project: Green Housekeeping Services

For working parents with long hours, cleaning the house can quickly fall to the bottom of the to-do list. Market yourself as the green solution to their housekeeping needs by offering services that range from light dusting to heavy-duty chores like cleaning the kitchen and bathroom, using only approved all-natural and eco-friendly cleaning products.

Charge an hourly rate or create your own service packages for a flat fee. Remember, your clients are giving you access to their homes. Build a trustworthy reputation with people you know first before advertising to strangers.

Project: 'Upcycled' Furniture

Don't throw out your old, broken furniture. With basic templates and access to power tools, you can break down and reassemble chairs, tables and dressers into new pieces that you can paint and sell. Shelving and storage units are easy to make from wood scraps, and depending on the item, you might even be able to fully restore a unique and valuable piece of furniture.

Alternatively, you could reupholster old chairs and couches, giving them a new life. Buying second-hand doesn't just save money, it also helps the environment.

13. Implementation Plan, Projects, Programmes and Timelines

IMPLEMENTATION PLAN WITH TIMELINES								
No	Strategy	Program	Project	Description	Allocated Budget	Responsible Department	Allocated Timeline	Term / Comment
1	Marketing and Capacity Building	Sharing of information on various platforms and education of the communities on Green Building	Public Participation	Sharing information with various stakeholders via; <ul style="list-style-type: none"> • Consultation • E-Mail • Facebook • Brochure 	Budget Required	Development & Planning	Year 1	Short Term
			Ward Committee Engagement	Conduct workshops with Ward Councillors and Ward Committee members	Not Applicable	Development & Planning	Year 1	Short Term
		Communicating recommendations with Developers (New Developments)	Establish a planning committee	This planning committee will consist of Assistant Directors representing all internal departments. The committee is tasked to evaluate applications and communicate Green Building recommendations to the developer / property owner	Not Applicable	Development & Planning	Year 1	Short Term
			Stakeholder Engagement	Engaging with Developers and investors in order to share Green Building requirements	Not Applicable	Development & Planning	Ongoing	Ongoing
		Energy Efficiency interventions associated with Buildings	Conduct a Seminar	Arrange for an occasion where an expert presents and share workable interventions with the community	Budget Required	Development & Planning	Year 2	Short Term
		Changing your Mind-Set	Conduct a Seminar	Arrange for an occasion where an expert addresses the community on how to adapt to change	Budget Required	Development & Planning	Year 2	Short Term

		Create Awareness of sustainability	Launch a competition amongst various sectors in the Municipality eg; Businesses Schools Churches Factories Etc.	Many companies lack the knowledge or technical abilities for researching new methods, or they might face difficulties adapting to new methods of production which may not be affordable in the short term. Companies may face additional costs of purchasing new equipment, materials and other higher costs associated with shifting to sustainable products.	Budget Required	Development & Planning	Year 3	Medium Term Projects will be identified and budget allocation will be sourced over the first 2 years
2	Economic Beneficiation	Renewable Energy Interventions	Investigate and identify interventions for the relevant services	The focus of this program is based on operational interventions within municipal infrastructure functions. The renewable energy installations aim to replace or supplement grid electricity with the intention of reducing energy costs and increasing security of supply. Interventions that are therefore solely focused on electricity generation (for re-sale) are not covered here. Current types of energy used to generate electricity in municipal operations include solar energy, biomass, biogas or hydroelectricity (micro turbines).	Budget Required	Engineering Department (Electrical, Water, Sanitation and Waste Management)	Year 3	Medium Term Interventions will be investigated and budget allocation will be sourced over the first 2 years.

		Lowering costs	Public Participation	The economy is investing more and more in green materials, which reduces the costs of manufacturing. Before long, it will be just as affordable to use green construction materials. The more people invest in the industry, the more affordable it will become. The more the people buy the materials, the more it will be cheaper to produce.	Not Applicable	Engineering and Development & Planning Departments	Year 3	Medium Term The affordability of materials will be monitored over the first 2 years.
		Long Term Cost Savings	Public Participation	The cost-saving benefits for sustainable Green Building methods are unparalleled in the long term. It raises property values, savings on living costs and reduction of carbon footprint emitted by buildings.	Not Applicable	Engineering and Finance Departments	Year 3	Medium Term The cost saving benefits are to be identified over the first 2 years.
		Benefits and Achievements	Launch competitions amongst various sectors in the Municipality eg; Businesses Schools Churches Factories And link a reward to any achievement	The benefits of green buildings can be grouped within three categories: environmental, economic and social. Green Buildings reduces or eliminates negative impacts, and can create positive impacts, on our climate and natural environment. Green buildings preserve precious natural resources and improve our quality of life. According to a growing body of research, the most important social	Budget Required	Development & Planning	Year 3	Medium Term Projects and the required budget are to be identified during the first 2 years.

				benefits of green buildings are the enhanced health and wellbeing of those living and working in them.				
3	Reduce, Re-use and Recycle	Watch your Utility Bills	Public Participation	Communities should try to find out if they are wasting energy or water through faulty wiring or leaking pipes, insufficient insulation and old appliances. Consumers can save on energy bills significantly if they insulate their houses and replace all faulty appliances and fittings	Not Applicable	Development & Planning	Ongoing	Ongoing Communication via applicable Media sources.
		Purchase Energy Efficient Appliances	MLM to investigate and partner with appliance providers	Consumers should replace all old home appliances with energy efficient ones when current appliances become redundant	Budget Required	Development & Planning	Year 2	Long Term Appliances providers and possible partnerships and budget allocation to be done over the first 3 years.
		Saving water and energy costs	Public Participation through <ul style="list-style-type: none"> • News Letters • Brochures • E-Mails etc. 	Green building means increased efficiency, which means lowered energy consumption. It's true that the cost of green buildings can be approximately five percent more than traditional forms of construction, but the additional cost will be compensated for by low municipal utility bills.	Budget Required	Development & Planning	Ongoing	Ongoing Communication via available Media

4	Reduce Carbon Footprint	Interventions to reduce the Municipality's own energy consumption	Set goals and measure progress	Midvaal Municipality can present a complex energy picture, especially those with multiple buildings and water treatment facilities, vast networks of street and traffic lighting, and on-site generation facilities. So it's important to pursue energy conservation strategically. Identify where we'll focus first, set goals and measure our progress against a baseline over time.	Not Applicable	All Departments	Year 1	Short Term
			Seal Air leaks	Examine windows, doors, walls, roofs and the foundations of buildings; these serve as crucial thermal barriers. When leaks in the barriers exist, buildings need more energy for heating and cooling. Windows are especially important, since they are common sources of air leaks and also help reduce the need for electric light. Window improvements can cut lighting and HVAC costs by 10 percent to 40 percent, according to the National Institute of Building Sciences, so we'll consider treating them to	Budget Required	Engineering Department (Building Maintenance)	Year 2	Short Term The necessary survey will be conducted and budget will be allocated during the first year.

				<p>improve their efficiency.</p> <p>Add coatings, glazing and insulation to reduce the loss of heat in the winter and cool air in the summer. We might also consider window replacement, but have an energy efficiency expert help us determine if and where new, high-efficiency windows offer a return on investment.</p>				
			<p>Improve water system performance</p>	<p>Water systems can account for up to one-third of a municipality's electricity bill, according to the American Council for an Energy-Efficient Economy (ACEEE). So it's important that plant engineers maintain motors and systems for optimal performance. Improvements to pumping systems can reduce plant energy use by as much as 20 percent, according to ACEEE.</p> <p>We'll pay attention to the water delivery system, too. It takes more energy to get water to homes and businesses if pipes are leaking.</p>	<p>Budget Required</p>	<p>Engineering Department (Building Maintenance)</p>	<p>Year 5</p>	<p>Long Term</p> <p>The existing water system are to be investigated and budget to be allocated over the first 4 years.</p>
			<p>Replace light bulbs within government</p>	<p>Lighting is often described as the 'low-hanging fruit' of energy conservation because installing high-efficiency</p>	<p>Budget Required</p>	<p>Engineering Department (Building Maintenance)</p>	<p>Year 2</p>	<p>Short Term</p> <p>A light replacement</p>

			facilities	lighting is a relatively simple, often cost-effective way to conserve energy. Swapping out incandescent bulbs with compact fluorescent lights (CFLs) can cut lighting costs by as much as 50 percent, according to the <u>Department of Energy</u> . Some light emitting diodes (LEDs) offer even greater energy savings, as much as 75 percent, according to <u>ENERGY STAR</u> .				survey and budget allocation will be done during the first year
			Harness the power of human nature	Encourage municipal workers to embrace good, old-fashioned energy conservation efforts like shutting off unneeded lights and computers. Remind workers to save energy with simple signage. Even better, consider installing digital energy displays in high-traffic areas. These give passers-by a quick glimpse of the building's energy use in real time and drives home the importance of their efforts. We'll also send regular newsletters or emails offering reminders such as: <ul style="list-style-type: none"> • Are you using overhead lighting when 	Budget Required	Corporate Services (Marketing Section)	From the 2 nd year onwards	Long Term From the 2 nd year onwards All necessary means of communication to staff will be utilized to encourage Green Building practices.

				<p>a lamp focused on your desk will do?</p> <ul style="list-style-type: none"> • If the hot sun is blazing down on your work space, take the time to adjust blinds to naturally cool the room. • Unplug equipment like printers, coffee makers and fans when they're not in use. They drain electricity even when they're not in operation. 				
			Install sensors to avert waste	<ul style="list-style-type: none"> • Trying to change human behaviour only goes so far. Fortunately, technology can help take up the slack. • Include sensors and motion detectors as part of our automated building management system to detect and automatically shut down equipment and lights that aren't in use. Smart energy management systems even learn the flow of people in and out of a room and adjust lighting, heating and 	Budget Required	Engineering Department (Building Maintenance)	Year 4	<p>Medium Term</p> <p>All required measures will be investigated, identified and budget will be sourced during the first 2 years.</p>

				cooling pre-emptively.				
			Adopt Smart City practices	<p>Smart City tools and practices use cutting-edge technology to run cities more efficiently and include many energy-saving measures. Forward-thinking municipalities are already installing some of these technologies.</p> <p>For example, some municipalities use adaptive LED traffic lights that automatically adjust their timing based on traffic flow, cutting electricity use, not to mention driver frustration.</p> <p>Becoming an energy-saving municipality doesn't have to be a complex task, especially if we work with an experienced supplier that offers diverse, customized supply- and demand-side energy solutions. Direct Energy Business can help us buy less of what we sell, offering a Total Energy Management approach to lowering energy costs with data and analytics, energy efficiency and alternative energy solutions, including:</p> <ul style="list-style-type: none"> • Panoramic Power 	Budget Required	All Departments	Year 4	Long Term
								All possible smart practices and required budget will be investigated and sourced over the first 3 years.

				<ul style="list-style-type: none"> • Efficiency Edge • Solar Power • Demand Response 					
		Water and Waste water treatment	<p>Opportunities for interventions in water and wastewater treatment depend on the equipment used within the water lifecycle, particularly the water pumps and water treatment systems. Interventions associated with water treatment include:</p> <ul style="list-style-type: none"> • improving existing pumps; • upgrading pumping technology; • matching pumps to their uses (SACN, 2014); • optimising waste water treatment processes • optimising aeration of waste water • aligning control parameters with the discharge standard on aerobic wastewater systems. 	Budget Required	Engineering Department (Water and Sanitation)	Year 5	Long Term	All possible interventions and the required budget will be investigated and sourced over the first 4 years.	
		Energy Efficiency Interventions	Introduction of various business opportunities	<p>Today, consumers are just as interested in corporate social responsibility (CSR) as they are in a company's products and services. This is especially good news for eco-minded entrepreneurs. We've outlined 15 eco-friendly business ideas for making</p>	Budget Required	Development & Planning Department	Year 3	Medium Term	Business Opportunities and required budget will be investigated and sourced during the first 2 years.

				money and saving the planet at the same time.				
5	Certification and benchmarking	Support organizations dedicated to sustainability	Identify organizations to partner with	There are non-profit organizations both locally and internationally that promote sustainable development. MLM can partner with these organizations to promote sustainability. Partnership will make a big difference in public awareness and information sharing with local communities, society and environment.	Budget Required	Development & Planning Department	Year 2 Onwards	Long Term Long Term Year 2 Onwards Organizations and partnerships and the required budget will be investigated during Year 1
		Green Building Rating Tool Training and Knowledge	Participate in training Courses	GBCSA offers a variety of training courses both face to face and online. Their Accredited Professional programmes show you how to use and apply their rating tools while their workshops and talks offer insight into broader green building and sustainability aspects. GBCSA uses a blended learning model for education to bring the very best training for the use and application of the Green Star SA rating tools for professionals working in the built environment and property industries.	Budget Required	Development & Planning Department	Year 2	Short Term More information with regard to the training courses and required budget will be obtained during Year 1.

				GBCSA also offers custom and in-house training for groups of 20 or more professionals.				
		Review internal Building Plan Application Evaluation Criteria	Conduct Workshops	<p>The SANS 10400 regulations document was amended during 2014, including energy efficiency as Part XA and 204.</p> <p>The sections are defined as follow; Part X - Environmental Sustainability Part XA - Energy Usage in Buildings Part 204 - Energy Efficiency in Buildings</p> <p>These sections are already enforced, but its evaluation criteria should be reviewed and benchmarked with the criteria utilized by GBCSA and neighbouring Municipalities, eg; Ekurhuleni, City Of Johannesburg and City of Tshwane.</p>	Not Applicable	Development & Planning Department	Year 1	Short Term

14. Monitoring and Evaluation

14.1 Quarterly Reports

Progress made on the implementation of the Green Building Policy within the jurisdiction of Midvaal Municipality will be included in the quarterly reports to Mayoral Committee.

14.2 Projects identified

All Directorates within the Municipality must, within their functional areas, adopt a developmental approach to matters relating to the implementation of the Green Building Policy.

Various projects will involve stakeholder engagements. These engagements must be reported on quarterly.

15. Resources

Internet resources for green building

- Building and Fire Research Portal. ...
- Ebuild Directory of building products and manufacturers. ...
- Energy and Environmental Building Association. ...
- Green Building Alliance. ...
- National Association of Homebuilders Green Program. ...
- Quartz Common Products Database. ...
- SPOT....
- Sustainable by Design.
- [Green building resources | Stanford Libraries](#)
- library.stanford.edu/guides/green-building-resources
- koruarchitects.co.uk/social-benefits-of-green-buildings
- gbcsa.org.za/building-green-costs-on-average-only-5-more-than-conventional-building-study/
- www.cedar-rapids.org/residents/utilities/lowering_my_bill.php
- www.moneycrashers.com/10-ways-to-reduce-your-utility-bill/

The Draft Green Building Policy Implementation Plan is supported.

Mr. D. Chamboko
Executive Director
Development & Planning

Date