



GreenMatter^{ZA}



Imvelisi Ideation Programme

Potential Market Opportunities for Entrepreneurs in the Water & Biodiversity Sector

Summary market intelligence report

This document has been developed by GreenCape for the purposes of providing background information for interested applicants to the 2017 Imvelisi Programme.

Intake 1: Application call closes on 11 April 2017

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



KoiStrategy



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Introduction

The Green Economy is young of age, but growth is incredibly vital to fast-track Sustainable Development Goals (SDGs) and entrepreneurs are key players. The Green Economy is defined as an economy that aims at reducing environmental risks and ecological scarcities, also aiming for sustainable development without degrading the environment.

This research report was prepared to inform entrepreneurs of a wide range of business opportunities that currently exists in the Green Economy. The market intelligence produced will guide applicants to well researched business opportunities that can be further explored through the Imvelisi Ideation Programme. (Note that there are opportunities beyond those listed in this document. If an idea is not aligned to a specific category listed in this report, please don't be discouraged. The programme is open to consider all solutions that have potential within the Green Economy.)

Many entrepreneurs spend a significant amount of time and money to determine if there would be a potential market for their product or service offering. The aim of market research is to shorten the route to discovery and ultimately cut down on the cost of market entry.

Imvelisi was designed as an ideation programme to provide the entrepreneur with the opportunity to identify the type of businesses that are relevant to meet the needs of the Green Economy.

A group of Green Economy specialists was appointed to research Green Economy market opportunities. A total of 39 business opportunities have been earmarked and are categorised under 11 different markets, namely:

- Market A: Smart technology and monitoring
- Market B: Resource recovery
- Market C: Water harvesting
- Market D: (Advanced) water treatment
- Market E: Water use efficiency
- Market F: Energy services specific to the water sector
- Market G: Water sensitive design
- Market H: Invasive alien vegetation
- Market I: Bioprospecting
- Market J: Primary agriculture
- Market K: Ecotourism and training

Applications who speak to proven market opportunities outside of those outlined above will also be considered.

For further resources, please refer to [the GreenCape 2017 Water Market Intelligence Report](#) and information on [bioprospecting industries in South Africa](#).

How business opportunities are described in this document

Business opportunity

Name of the business opportunity

Market

Broader category of business opportunity

Description

Outline of the business opportunity, model or technology

Client typology

Target clients for the first products or services, especially the beachhead or market entry clients (first clients)

Skills requirements

Technical requirement that the business typically requires for success (can be outsourced or recruited onto a team); Low = basic education; Medium = Certificate/Diploma/Bachelors; High = post-graduate and/or industry experience.

Start-up capital

Start-up capital required for the first 1-3 years of operations. Low = <R100k; Medium = R100k-R1m; High = R1m+

Market readiness

Stage of development of the technology and market demand; Low = recently commercialised; Medium = gaining traction; High = standard technology and readily adopted

Market A: Smart technology and monitoring

Water use audits and smart technologies play an important role in the effective and efficient management, distribution and use of water resources. Measuring, monitoring, metering and controlling water infrastructure can be done with great precision using these technologies. Included in a number of these opportunities is the emerging field of big data, as water management starts to integrate a variety of data sources and intelligence.

1. Business opportunity A1: Smart home water metering and data logging

Market	Smart technology and monitoring
Description	The monitoring of water consumption using standard meters and phone apps, or submeters and smart meters, the Internet of Things (IoT) and telemetry systems with data logging. This allows consumers greater access to consumption data and can inform decision making.
Client typology	Households, body corporates, residential estates, holiday/rental owners, farms, property developers
Skills requirements	M
Start-up capital	L
Market readiness	L

2. Business opportunity A2: Smart industrial water metering and data logging

Market	Smart technology and monitoring
Description	The monitoring of industrial water consumption using standard meters and web-based tools, or sub-meters and smart meters, the Internet of Things (IoT) and telemetry systems with data logging. This allows managers greater access to consumption data and can inform decision making.
Client typology	Industrial water managers, water efficiency consultants
Skills requirements	M
Start-up capital	M-H
Market readiness	M

3. Business opportunity A3: Leakage detection and consumption control

Market	Smart technology and monitoring
Description	Systems and technologies that detect certain water use behaviour or patterns and either regulate or eliminate flow if there is a leak or excessive consumption. Often a component of smart metering but also increased demand for unique standalone solutions. An example would be the remote tripping of a valve if a leakage is detected.
Client typology	Households, body corporates, residential estates, holiday/rental owners, farms, property developers, industrial water managers, water efficiency consultants
Skills requirements	M
Start-up capital	M
Market readiness	L

4. Business opportunity A4: Bulk infrastructure leakage detection and repair

Market Description	Smart technology and monitoring Various business models, technology typologies and solution scales to monitor bulk infrastructure or distributed systems (e.g. utilities). Pipe repair or replacement services (traditional or novel) and products are often incorporated as value-adds or additional offerings but can also be delivered separately.
Client typology	Government (municipal utilities, national infrastructure managers), irrigation schemes, farmers
Skills requirements	H
Start-up capital	M
Market readiness	H

5. Business opportunity A5: Smart irrigation monitoring and management systems

Market Description	Smart technology and monitoring Precision agriculture approaches (using imagery, remote sensing, and drones in situ monitoring) have developed in technologies and demand in recent years. The improved understanding and management of irrigation also leads to opportunities for water distribution and application (pumps, pipes, sprinklers, etc.) enhancements.
Client typology	Commercial farmers, irrigation schemes
Skills requirements	H
Start-up capital	M-H
Market readiness	L

6. Business opportunity A6: Water quality monitoring

Market Description	Smart technology and monitoring Low to high technology products, services and applications for water quality monitoring are experiencing increased demand and innovation. These are for a variety of applications which can access the components of industrial effluent or access the water quality on a farm.
Client typology	Households, farmers, industrial water managers, mine water managers, government regulators (municipal utility wastewater departments or environmental/pollution control), NGOs
Skills requirements	M-H
Start-up capital	M
Market readiness	M

Market B: Resource recovery

There are several resources that can be recovered and converted to marketable products from either municipal sludge or industrial wastewater. Business models and technological complexities vary depending on the resource and target market.

7. Business opportunity B1: Biogas production from domestic wastewater and sludge

Market Description	Resource recovery Biogas, a mixture of different gases, can be produced by the breakdown
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Client typology	of organic matter in the absence of oxygen. Domestic wastewater and sludge often contain biodegradable matter hence are capable of producing biogas under the right conditions. Households (especially rural or peri-urban), industrial water managers with high organic discharges, municipal wastewater treatment managers, schools and universities
Skills requirements	L-H
Start-up capital	L-H
Market readiness	M

8. Business opportunity B2: Metal or mineral recovery from inorganic sludge and mining wastewater

Market Description	Resource recovery Mining or metal processing wastewater can contain a significant amount of dissolved metals which can be recovered and processed further. Opportunities therefore exist where valuable metals can be beneficiated and sold to the metal industry.
Client typology	Mining companies, metal or minerals processing companies
Skills requirements	H
Start-up capital	H
Market readiness	L

9. Business opportunity B3: Compost production from food and beverage wastewater

Market Description	Resource recovery The organic components of the solid waste from the food and beverage wastewater can be utilized for compost production. Due to the high agricultural activity in South Africa, compost production is a lucrative space to be in.
Client typology	Farmers, NGOs, food and beverage manufacturers
Skills requirements	L-M
Start-up capital	L-H
Market readiness	M

10. Business opportunity B4: Phosphorus (fertiliser) production from municipal sludge

Market Description	Resource recovery Using a series of steps, phosphorus, the main component in most fertilisers, can be recovered from municipal sludge. This is an area that is still new and being explored by academia locally but is in production in international markets and shows huge promise due to the decline of phosphorus as a resource.
Client typology	Municipal wastewater managers, sanitation technology manufacturers
Skills requirements	H
Start-up capital	H
Market readiness	L

Market C: Water harvesting

With many municipalities starting to feel the strain on supplying potable water and hence implementing restrictions, many households and businesses are looking towards alternative water sources which involve some form of water harvesting.

11. Business opportunity C1: Home, estate or commercial property rainwater harvesting

Market Description	Water harvesting The construction/design/distribution of simple systems (which can comprise of tanks, pipes and basic filtration units) that effectively catch and store rainwater. This type of technology is relevant to South Africa due to long stretches of very little or no rainfall.
Client typology	Households, body corporates, residential estates, holiday/rental owners, property developers, green building consultants, architects, schools and universities
Skills requirements	L-M
Start-up capital	L
Market readiness	H

12. Business opportunity C2: Home, estate or commercial property groundwater development

Market Description	Water harvesting The construction/design/distribution of systems or technologies such as boreholes, wells and efficient pumps that allow and promote groundwater use. The products are mostly applicable to farmers or industry looking to use less municipal water.
Client typology	Households, body corporates, residential estates, holiday/rental owners, property developers, farmers, green building consultants, architects
Skills requirements	M
Start-up capital	M-H
Market readiness	H

13. Business opportunity C3: Estate or commercial stormwater harvesting

Market Description	Water harvesting The collection, accumulation, treatment or purification, and storing of stormwater. Stormwater differs from rainwater harvesting in that the runoff is collected from drains or creeks, rather than roofs and that it is often in larger volumes. Storage of the water is a key constraint, so can be combined with artificial aquifer recharge schemes once the stormwater is treated to appropriate level.
Client typology	Body corporates, residential estates, property developers, municipal town planners, green building consultants, architects, municipalities
Skills requirements	M
Start-up capital	H
Market readiness	M

Market D: (Advanced) water treatment

Advanced treatment technologies are developing rapidly, while increased competition and demand are providing more solutions that make business sense. There are opportunities for the manufacture, assembly and supply of treatment and reuse components and systems; and in services and products related to industrial symbiosis.

14. Business opportunity D1: Small scale, on site, advanced industrial water treatment

Market	(Advanced) water treatment
Description	The treatment/purification of industrial effluent for reuse or to comply with municipal standards for effluent discharge. Technologies vary from a series of filtration units to more complex reactor and separation processes.
Client typology	Industrial water managers
Skills requirements	M-H
Start-up capital	H
Market readiness	M

15. Business opportunity D2: Compact rural water treatment technologies

Market	(Advanced) water treatment
Description	Treatment/purification packages for upgrading river water to potable water. Since the products/technologies are mainly applicable to rural communities, the technologies are often very simple and inexpensive to manufacture.
Client typology	Households, body corporates, residential estates, holiday/rental owners, property developers, farmers, green building consultants, architects
Skills requirements	L-M
Start-up capital	M
Market readiness	M

16. Business opportunity D3: Greywater collection and recycling home systems

Market	(Advanced) water treatment
Description	The setup and design of systems that enable the reuse of greywater in households (wastewater from baths, sinks, washing machines, and other kitchen appliances). Most systems convert the greywater so that it can be reused for gardening or sanitation.
Client typology	Households, body corporates, residential estates, holiday/rental owners, property developers
Skills requirements	L-M
Start-up capital	M
Market readiness	L

17. Business opportunity D4: Compact decentralised domestic wastewater treatment

Market	(Advanced) water treatment
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Description	The treatment/purification of domestic wastewater for reuse by using compact, relatively small package plants that require less capital investment than traditional wastewater treatment plants. This is applicable to new developments or remote areas.
Client typology	Households, body corporates, residential estates, holiday/rental owners, property developers, farms
Skills requirements	M-H
Start-up capital	H
Market readiness	M

18. Business opportunity D5: Decentralised potable water consumer goods

Market Description	(Advanced) water treatment The treatment, bottling and packaging of water for portable (drinking water) standards using various technologies. Some of the technologies include filtration, distillation, ion exchange, mineralisation and atmospheric water generation.
Client typology	General public, body corporates, holiday resorts, NGOs, rural municipalities
Skills requirements	M
Start-up capital	M
Market readiness	H

Market E: Water use efficiency

With growing water scarcity, many businesses are exploring technologies and innovations that reduce consumption of water and promote water use efficiency. The market varies from small households to larger corporations or municipalities.

19. Business opportunity E1: Water efficient sanitation devices

Market Description	Water use efficiency Products or technologies that significantly reduce the water consumption associated with various forms of sanitation. Examples include waterless urinals, low flush toilets, sensor taps and low volume shower heads.
Client typology	Households, body corporates, residential estates, property developers, green building consultants, architects
Skills requirements	M
Start-up capital	L-M
Market readiness	M

20. Business opportunity E2: Point of use water efficient devices

Market Description	Water use efficiency Products or technologies that promote efficient water consumption by exploiting or redesigning point of use water points such as taps, low volume shower heads, fittings, etc. This area is particularly lucrative for new developments.
Client typology	Households, body corporates, residential estates, property developers, green building consultants, architects
Skills requirements	L-M
Start-up capital	L-M

Market readiness | M

21. Business opportunity E3: Reservoir evaporation control

Market Description	Water use efficiency The control of evaporation from water reservoirs by incorporating barriers such as floating balls, covers, etc. These products are particularly relevant for dry regions that have little to no rainfall in some seasons, where there is a high reliance on dam reserves.
Client typology	Farmers, municipalities, national government
Skills requirements	L
Start-up capital	L
Market readiness	L

22. Business opportunity E4: Controlled environment agriculture

Market Description	Water use efficiency Achieving a constant/controlled temperature or humidity in agriculture which in turn promotes water use efficiency as there is no need to constantly water the plants. The technology complexity varies from case to case depending on the precision required. Sophistication spectrum exists from shade cloth to hydroponics.
Client typology	Farmers, horticulture specialists, retailers, NGOs
Skills requirements	L-H
Start-up capital	M
Market readiness	M

Market F: Energy services specific to the water sector

Water and energy are closely linked and their interdependencies are strong. Water is needed to generate energy with different uses along the energy value chain, while energy is needed to convey or treat water across the water value chain. The water-energy nexus has started to attract greater attention, primarily due to increased energy and water scarcity along with the recognition of their interdependence.

23. Business opportunity F1: Micro-hydro power generation

Market Description	Energy services specific to the water sector The use of very small turbines to harvest excess energy in water distribution systems or streams. These typically power pumps or charge batteries, but can also be used to provide power to in-situ systems such as monitoring or dosing stations.
Client typology	Farmers, municipalities
Skills requirements	H
Start-up capital	H
Market readiness	L

24. Business opportunity F2: Solar powered irrigation systems

Market Description	Energy services specific to the water sector Solar electricity generation can be used to power water pumping
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	systems, especially where pumping is not time-sensitive and can occur during daylight (e.g. farms). Systems are usually sold as a panel/pump kit, but can also be extended to micro-grids.
Client typology	Farmers, cooperatives
Skills requirements	M
Start-up capital	M
Market readiness	L

25. Business opportunity F3: Heat recovery from wastewater

Market	Energy services specific to the water sector
Description	Many wastewater treatment processes produce excess heat. Heat pumps and heat exchangers can be used to recover energy that can be used for other processes on site hence minimizing the amount of electricity consumed.
Client typology	Industrial water managers
Skills requirements	M-H
Start-up capital	H
Market readiness	M

Market G: Water Sensitive Design

Most of the present day infrastructure and landscaping was designed without the prioritisation of sustainable water use. Water sensitive urban design therefore involves rectifying this to a certain extent through the design or layout of structures or vegetation in urban areas that promote water sustainability.

26. Business opportunity G1: Water sensitive designing and planning

Market	Water sensitive design
Description	The design of property developments, neighbourhoods/precincts or infrastructure projects taking water into account is becoming increasingly expected and appreciated. This consulting and technical design business model mostly applies to urban systems.
Client typology	Architects, green building consultants, municipalities, town planners, property developers
Skills requirements	M
Start-up capital	L
Market readiness	M

27. Business opportunity G2: Water-wise gardening

Market	Water sensitive design
Description	Landscaping, planting design and garden maintenance using appropriate species and hard infrastructure suitable to a region. This would typically be for low to no irrigation requirement landscaping, as well as incorporating water systems into the design.
Client typology	Households, body corporates, residential estates, property developers, green building consultants, architects
Skills requirements	L
Start-up capital	L
Market readiness	H

28. Business opportunity G3: Infiltration systems

Market Description	Water sensitive design Using low to medium technology designs and systems to slow and treat water on-site, primarily with biological elements therein (e.g. swales, geotextiles, permeable paving, green roofs, etc.). These types of technologies are specified in the water sensitive design stage, and business models allow for manufacturing, installation and maintenance.
Client typology	Architects, green building consultants, municipalities, town planners, property developers
Skills requirements	L-H
Start-up capital	M
Market readiness	L

Market H: Invasive alien vegetation

The term 'invasive alien vegetation' refers to plants that are non-native to an ecosystem, and that may cause economic or environmental harm or adversely affect human health. In particular, they impact adversely upon biodiversity, including decline or elimination of native vegetation through competition and the disruption of local ecosystems. Business opportunities in this area exist around the clearing and beneficiation of this vegetation.

29. Business opportunity H1: Alien invasive clearing

Market Description	Invasive alien vegetation The clearing of plants that are non-native to an ecosystem and that may negatively impact agricultural produce, cause environmental harm or adversely affect human health. Business model focused on service and logistics delivery.
Client typology	Rural landowners, waterway managers, national and local government, environmental protection agencies and state reserves
Skills requirements	L
Start-up capital	M
Market readiness	H

30. Business opportunity H2: Alien invasive waste product beneficiation

Market Description	Invasive alien vegetation Involves adding value to alien invasive waste through the creation of products from the waste cuttings. The beneficiation processes vary in complexity; examples include using the waste as firewood or manufacturing furniture.
Client typology	Rural landowners, economic development agencies, waste management companies
Skills requirements	L-H
Start-up capital	M
Market readiness	L

Market I: Bioprospecting

South Africa is the third most biologically diverse country in the world in terms of species richness and endemism. Conservation and sustainable utilisation of South Africa's biological diversity is thus, of strategic importance in terms of provision of ecosystem goods and services, now and in the future and offers lucrative business opportunities.

31. Business opportunity 11: Alternative and complementary medicines from indigenous plants

Market	Bioprospecting
Description	Identifying, procuring, extracting and adding value to specialised components of indigenous flora to supply the alternative medicine market. Growth areas include weight-loss, mood enhancers, etc. Export oriented.
Client typology	General public, medical practitioners, health and nutrition consultants
Skills requirements	L-H
Start-up capital	M
Market readiness	M

32. Business opportunity 12: Indigenous plants in skincare and beauty products

Market	Bioprospecting
Description	Indigenous flora extracted for use in the cosmetics market. Growth areas are indicated as "super food" and seaweed extracts. Key consideration is branding, packaging and marketing of products.
Client typology	General public, medical practitioners, health and nutrition consultants, cosmetics manufacturers
Skills requirements	M
Start-up capital	M
Market readiness	L

33. Business opportunity 13: Pharmaceutical products from indigenous plants

Market	Bioprospecting
Description	Identifying, extracting base compounds of indigenous flora for pharmaceutical production to supply the local and international market (from R&D to production) market.
Client typology	Pharmaceutical manufacturers, health practitioners and researchers
Skills requirements	H
Start-up capital	H
Market readiness	M

34. Business opportunity 14: Food additives and food flavourings

Market	Bioprospecting
Description	Identifying, procuring, extracting and adding value to specialised components of indigenous flora to supply the food & beverage manufacturing market as well as the catering, food preparation and hospitality markets.
Client typology	Food and beverage manufacturers, caterers, hospitality
Skills requirements	L
Start-up capital	L

Market J: Primary agriculture

This involves the sustainable growing or cultivating of indigenous crops or species. With growing interest in indigenous plants and the need for more sustainable farming practices, the market is expected to grow with a portion of it being the international market.

35. Business opportunity J1: Farming of indigenous plants

Market	Primary agriculture
Description	Growing or wild-harvesting of indigenous crops for food, beverage, flower and bioprospecting markets. Markets in the built environment or textiles sectors also exist for certain primary produce.
Client typology	General public, retailers, food and beverage manufacturers
Skills requirements	L-M
Start-up capital	L
Market readiness	H

36. Business opportunity J2: Aquaculture (freshwater and marine)

Market	Primary agriculture
Description	Growing of aquatic species (in a controlled or semi-controlled environment) for the primary consumption or further processing.
Client typology	General public, retailers, food and beverage manufacturers
Skills requirements	L-M
Start-up capital	M
Market readiness	M

Market K: Ecotourism and training

In the past few years, with dwindling natural resources and increased concern over climate change, there has been growing interest in issues surrounding sustainability and environmental awareness. This offers opportunities for businesses in the tourist industry that uphold sustainability or offer services to the public on environmental conservation and awareness.

37. Business opportunity K1: Eco-training for learners

Market	Ecotourism and training
Description	Providing training on biodiversity, bioprospecting, conservation and ecosystem services to learners (from basic to advanced). Target markets are school camps, corporate training programs, and specialist training for students and interest groups.
Client typology	Education organisations, NGOs, national and provincial government, environmental protection agencies
Skills requirements	M
Start-up capital	L
Market readiness	M

38. Business opportunity K2: Digital and remote eco-training tools

Market	Ecotourism and training
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Description	Providing digital and remote eco-training products or tools to learners (from basic to advanced). Examples include digital identification and tracking tools of native species, and environmental programmes for remote learnership and qualification. Target markets are schools, corporate training programs, tour guides, and environmental awareness groups.
Client typology	Education organisations, NGOs, national and provincial government, environmental protection agencies, nature reserves.
Skills requirements	M
Start-up capital	L-M
Market readiness	M

39. Business opportunity K3: Sustainability themed eco-lodges

Market Description	Ecotourism and training Providing guidance, certification and construction services to accommodation and recreational facilities that embrace sustainability (for example water efficiency, clean energy and sustainable building materials) as the core of their business model and branding.
Client typology	Lodges, nature reserves, or other accommodation options
Skills requirements	H
Start-up capital	L-M
Market readiness	H