# From Crisis to Triumph:

# Mirai Biome's Green Revolution

## Digester - MBGC toward SDGs/UN 15.1

(Target 15.1: By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements)

# Summary

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## Introduction

Tucked away on the alluring beaches of Japan's archipelago, the charming village of Mirai Biome Green Community (MBGC) becomes the evocative setting for an engaging story intricately linked to the shared will to accomplish Sustainable Development Goal 15.1. In the calm backdrop of calm waters, hardy fisherman from MBGC set out on their daily activities, led by the soft rays of dawn and the soothing tones of a far-off Shinto prayer.

This vibrant town, surrounded by cherry blossoms and the calming sounds of the sea, is a live example of how innovation and tradition are harmoniously woven together in Japan's rich cultural tapestry. The core of SDG 15.1 is pulsating through MBGC, where lively laughter reverberates through busy marketplaces. This town's citizens work tirelessly to guarantee that every home has access to clean, healthy water, as well as innovative

methods for harvesting it and a strong feeling of community.

I would like to present to you Target X, a group that is passionate about making sure that by 2030, every person in Japan, regardless of background, has access to sustainable land management techniques. It goes beyond environmental conservation to promote a deep feeling of community, light the spark of empowerment, and offer doors to a wide range of career opportunities.

Gazing upon the charming alleys of MBGC, a transformation takes place right before your eyes. All ages of men and women work together harmoniously to execute sustainable land management techniques with precision, as well as to build strong, connected communities. Children no longer bear the weight of long walks in search of water; instead, they embrace their inalienable right to a sustainable environment and look forward to a brighter future.

Join us for this interesting tour of MBGC, where Japan's unyielding energy and unlimited goals blend with the urgent need for sustainable land management. Collectively, they craft a story of harmony, progress, and a mutual dedication to a sustainable future for this idyllic coastal location as well as the country it represents. This narrative honors the transformative potential of

communities by demonstrating their amazing capacity to bring audacious concepts to life while promoting harmony in the service of a common objective.

## Characters

**Yuki, the Community's Soul:** Profoundly devoted to her community, Yuki is a kind leader at the front of the push to provide access to sustainable land management.

**Hiroshi the Artisan:** A master carpenter who is proud to continue his family's legacy of traditional Japanese woodworking, Hiroshi anticipates environmentally responsible land management techniques that complement the town's charming surroundings.

**Sensei Kaede, the Guiding Teacher:** An enthusiastic teacher who is certain that education holds the key to a better future, she became an enthusiastic supporter of MBGC's land sustainability effort after seeing firsthand the positive impacts that sustainable land management has on the welfare of her students.

**The Earth Guardian, Takashi:** Takashi is familiar with the complex dance that exists between human activities and the environment because he comes from a long line of farmers who are incredibly rooted in the soil. A well-liked member of the community, he is essential to maintaining the harmony between local ecology and sustainable land management.

**The Environmental Advocate, Aiko:** After studying environmental science in Tokyo, Aiko returned to MBGC

with the goal of protecting her nation's natural beauty. She is an accomplished environmentalist with a plethora of information. Aiko offers local initiatives a complete perspective by virtue of her sophisticated awareness of sustainable practises and her network within the environmental community.

**Haruka, the Visionary Young One:** A vibrant and forward-thinking young leader, she exudes enthusiasm for MBGC and has a clear vision for the future. Engaging in multiple youth-led initiatives, Haruka is adamant that the next generation's energy and dedication are the only ways to attain SDG 15.1. Her capacity to motivate her peers makes her a powerful force for change.

## Story

Within the tranquil embrace of Mirai Biome Green Community (MBGC) a story takes shape in which aquatic and land life come together to perform a magnificent dance. A refreshing and peaceful ambiance is created by the sea air that is fragrant with cherry blossoms. A tribute to the community's deep respect for the environment is the town's blend of traditional and modern architectural styles.

Beneath the canvas of pounding seas and sandy beaches, the rhythms of life echo the heartbeat of MBGC. The mangrove roots entwined in a lively communal tapestry, and seagulls soar across the air. Hikaru and his fellow farmers work the land that feeds them in an age-old ballet with the ground, stewards of ancient customs.

This seaside sanctuary is filled with the sounds of many voices singing together; the lively market, laughter, and a variety of accents all add to the vibrant tapestry of life. Beneath the ancient sakura trees, the market is decked with colourful fruits, fresh veggies, and handmade goods from the area. Youngsters frolic by the water's edge, their laughter entwined with the elders' stories.

Residents of MBGC come together with a common goal for a sustainable future as the sun sets. Characters such as

Takashi, Aiko, Haruka, Sensei Kaede, Hiroshi, and Yuki become the threads of a tapestry that represents tenacity, inventiveness, and unflinching hope.

As a committed leader in the community, Yuki notices the increasing gap in access to sustainable land management. Gathering a varied group, among them the skilled carpenter Hiroshi, they use the wealth of nature to create symbols of progress and hope.

Through her presentations and efforts, Sensei Kaede, an eco-friendly practises advocate, instills in the youth a sense of responsibility and empowers them to become ambassadors for sustainability in their communities and families.

By imparting ancient knowledge, Takashi, the Earth Guardian, makes sure that land preservation respects the fragile ecological balance. He takes the lead in putting green practises into effect and balancing sustainable land management with the local ecology.

As an environmentalist who studied in Tokyo, Aiko uses her contacts and skills to improve sustainability and land accessibility, turning MBGC into a model coastal community on a worldwide scale.

The youthful, visionary leader Haruka inspires the zeal and commitment of the following generation, propelling efforts towards the accomplishment of SDG 15.1. Together, the characters collaborate while bringing their distinct skills and viewpoints to the table.

As MBGC becomes a global model, difficulties appear. The once peaceful relationship between the land and the sea is under jeopardy due to rising sea levels and climate change jeopardising freshwater resources. Contaminated wells threaten the survival of the community.

Lia, Hiroshi, Lani, and Bayu—four new characters—come forward to defend the neighborhood. The salinity resistance of water collecting apparatus is improved by Hiroshi's inventive ideas. Ismail offers traditional techniques to preserve the fragile natural equilibrium, while Lani presents cutting-edge conservation strategies.

Sensei Kaede oversees a dual enrollment program that informs the public about the value of safeguarding land resources and the risks associated with environmental imbalance.The community must band together and become more determined as it confronts issues caused by environmental imbalance.

Notwithstanding the challenges, the characters deal with problems, carry out directives, and protect the land supply

of MBGC. Setbacks fortify their determination, and MBGC emerges as a shining example of tenacity in the face of difficulty.

The tale of Mirai Biome Green Community is ultimately one of group perseverance, compassion, and unwavering dedication. It demonstrates that when a community pulls together in the face of hardship, a sustainable future is achievable.

However, there is an unmentioned issue pertaining to the handling of organic waste in this inspirational story. Because of its passion for the environment, MBGC understands that organic waste from residential, commercial, industrial, and territorial sources requires a holistic strategy.

Yuki leads the community's efforts to handle organic waste effectively as it moves closer to sustainability. Master carpenter Hiroshi cleverly creates composting structures out of repurposed materials, converting trash into useful resources for the farming industry.

As part of her dedication to teaching, Sensei Kaede presents programmes that inform the public about the significance of disposing of waste properly. Earth Guardian Takashi highlights the ancient wisdom of composting, making sure that organic waste contributes to

the delicate ecological balance rather than detracting from it.

The environmental activist Aiko uses her expertise of Tokyo to put cutting-edge garbage processing technologies into practise. The visionary Haruka encourages young people to get involved in waste reduction initiatives so that future generations can live in a sustainable environment.

The MBGC characters take on the obstacles of waste management head-on, despite their challenges. By working together to create recycling facilities, Lia, Hiroshi, Lani, and Bayu convert industrial waste into raw materials for regional inventions and crafts.

As MBGC overcomes obstacles related to trash management, the neighborhood emerges as a model of how efficient recycling and waste reduction improve the environment as a whole.

Not only is Mirai Biome Green Community a shining example of resiliency, but its journey also serves as a reminder of how critical it is to eliminate organic waste if we are to have a sustainable and successful future.

The residents of MBGC celebrate not just the achievement of SDG 15.1 but also their victory over the challenges of

waste management in the glow of the setting sun over their beach resort. Their narrative serves as an inspirational example for communities across the globe, demonstrating that a sustainable future is achievable with creativity, tenacity, and creative waste management techniques.

## JWT Green Patent Appeal

We invite you to reflect on the meaningful message of Mirai Biome Green Community (MBGC) as its vibrant narrative unfolds. It is a tale of hope, camaraderie, and the seemingly limitless opportunities that present themselves when individuals come together to support sustainable land management.

Japan, known for its breathtaking scenery and rich cultural heritage, is poised to enter a new chapter in environmental care. The personalities of MBGC demonstrate that sustainable land management is a route rather than merely an objective, as evidenced by their unwavering commitment to Sustainable Development Goal 15.1.

## Word of Encouragement

These characters serve as a central theme in the story, highlighting the power of cooperation and a common goal. Their efforts to preserve, revitalize, and advance sustainable land use are indicative of the goals shared by communities throughout Japan.

Let this tale serve as a beacon to direct us towards moral behaviour that strikes a balance between human activity and the fragile balance of nature. Whether it's through cutting-edge technologies, educational programs, or the

preservation of conventional wisdom, each of us has a part to play.

Allow the spirit of MBGC to reverberate throughout you as you read this story. With open hearts and focused minds, embrace the demand for sustainable land management. Recall that hope is what propels revolutionary change and that our greatest power in the face of hardship is our solidarity.

## Benefits After Implementing Sustainable Land Management in Japan

## Environmental Renaissance: MBGC and SDG 15.1 for a Bright Future for Japan

The adoption of Sustainable Development Goal 15.1 in the Mirai Biome Green Community (MBGC) represents a significant advancement in Japan's environmental balance. The Environmental Impact Assessment (EIA) weaves together the goals of SDG 15.1, providing a striking picture of transformation in which formerly difficult landscapes now stand as monuments to the effectiveness of sustainable land management.

## Thriving ecosystems: the foundation of a successful environment

The thriving ecosystems that have developed since Mini Bio Gas Continuous (MBGC) was implemented are at the centre of this environmental success story, and they perfectly correspond with the goals of SDG 15.1. The introduction of MBGC has brought about a delicate

balance in Japan's ecosystems, which is a noteworthy achievement in the field of environmental conservation. Two particularly striking examples of nature's renaissance are the entrancing beauty of cherry blossoms and the presence of the secretive Japanese macaque. These indicate the comeback of biodiversity.

The revitalization of ecosystems has been greatly aided by the implementation of MBGC, which places a strong emphasis on continuous and sustainable biogas production. The system's continuous and compact design guarantees a consistent flow of bio-gas, reducing its negative effects on the environment and optimizing energy production.

Since native plants and animals have reclaimed their habitats, the once-diminished landscapes are now teeming with life. The famous cherry blossoms, which are known for their transient beauty, are now more than simply a passing sight. They now stand as strong representations of nature's comeback, creating an amazing spectacle throughout the restored landscapes.

The shy Japanese macaque is visible at the centre of these flourishing ecosystems. These clever monkeys, who before faced difficulties as a result of habitat destruction, now have new environments to explore and flourish in. Their recovery is evidence of the beneficial effects of

MBGC on biodiversity and the complex balance that exists throughout the ecosystems.

The success of MBGC reaches far beyond the apparent resurgence of nature, to the complex web of interconnections among species. The revival of pollinators, such as bees and butterflies, has catalyzed a chain reaction, benefiting not only the flora but also the entire ecosystem. This ripple effect underscores the interconnectedness of species and emphasizes the pivotal role of MBGC in fostering a holistic and sustainable environment.

**Safe Freshwater Resources: An Uninterruptible Lifeline**

One major achievement, according to the Environmental Impact Assessment, is the protection of freshwater resources. Freshwater ecosystems have recovered as a result of MBGC's dedication to sustainable land management, guaranteeing a steady and secure water supply. This accomplishment not only satisfies SDG 15.1's goals but also offers hope to areas facing a shortage of water. Japan's commitment to environmental stewardship has created a model for the rest of the world, turning possible disasters into success stories.

## Coastal Rejuvenation: Exceeding Expectations in Every Way

Coastal regions, which were formerly threatened by environmental imbalance, have recovered more than anticipated. Coastal ecosystems have become more robust and lively as a result of the MBGC practices integration with SDG 15.1's tenets.

The meticulous equilibrium achieved by sustainable land management has not only restored marine habitats but also strengthened coastal regions against the effects of climate change, demonstrating the extensive consequences of Japan's dedication to environmental sustainability.

The Environmental Impact Assessment essentially attests to the Mirai Biome Green Community's transformational potential and its compliance with SDG 15.1. Once in danger, Japan's landscapes are now a living example of how sustainable land management can lead to an environmental renaissance and promote peaceful cohabitation between humans and the natural world.

## Economic Benefits of Adopting Sustainable Land Management Practices

### Various Income Sources: Mutually Beneficial Success in Mirai Biome Green Community

In line with the goals of SDG 15.1, the application of sustainable land management techniques in Mirai Biome Green Community (MBGC) has revived the ecosystem and fostered a variety of income streams.

### Ecotourism: Protecting the Environment, Making Money

A noteworthy result of sustainable land management in MBGC is the thriving eco-tourism industry. The beautiful landscapes, vibrant ecosystems, and peaceful coexistence of sustainable human practises with nature enthral visitors. Eco-aware tourists are drawn to the area by its dedication to protecting biodiversity and enacting eco-friendly policies. Local establishments including lodging, dining, and tour companies profit from the flood of tourists.

### Customary Artisanry as a Cultural Resource

Symbolic of traditional craftsmanship, Hiroshi's woodworking has become a sought-after item. In addition

to preserving traditional skills, the community's commitment to sustainable land management techniques has elevated them into priceless cultural assets. Locally made wooden goods that draw inspiration from the abundant natural environment are becoming more and more well-liked by both locals and tourists. The desire for these genuine works of art supports a sustainable way of life that is entwined with environmental preservation, adding to the region's economic prosperity as well as its cultural legacy.

**Community Cohesion: Financial and Cultural Benefits**

The adoption of sustainable land management techniques has established a mutually beneficial relationship between economic growth and environmental health. The money received from eco-tourism and traditional handicrafts is put back into the community, promoting a sense of shared responsibility and supporting neighborhood projects. This interdependence serves as an example of the close relationship between MBGC's financial performance and the sustainable practises that serve as the cornerstone of SDG 15.1. The revenue streams raise awareness of the value of protecting biodiversity and caring for the land for future generations in addition to enhancing the community's economic well-being. By demonstrating the peaceful coexistence of economic development and

environmental management, Mirai Biome Green Community establishes a sustainable example that other areas might follow.

## Reducing Waste and Saving Money

The implementation of sustainable land management practises in Mirai Biome Green Community (MBGC) has ushered in a revolutionary period characterized by significant cost savings and an impressive reduction in waste. One particularly noteworthy example is Hiroshi's creative anti-saline defences for water-harvesting systems, which exemplify the community's dedication to sustainable solutions in line with SDG 15.1.

### Creative Anti-Saline Defences: An Affordable Barrier

Saline intrusion into freshwater supplies is a major problem that many coastal cities must deal with, and Hiroshi has solved it with his ground-breaking invention. Conventional approaches frequently include high infrastructure and maintenance expenses, adding to the financial strain on communities already facing environmental risks. On the other hand, Hiroshi's anti-saline defences offer an affordable fix.

### Maintaining Freshwater Resources: A Twofold Benefit

In addition to offering an affordable option, anti-saline defences are essential for protecting freshwater resources. Climate change increases the likelihood of salt incursion, especially in coastal regions, yet MBGC's creative solution acts as a buffer. This reduces the need for expensive desalination procedures or infrastructure repairs brought on by saline damage, in addition to guaranteeing the community's access to a sustainable and safe supply of freshwater.

**Reducing Environmental Effects: Going Beyond Saving Money**

Beyond only saving money, Hiroshi's invention is significant. By selecting locally sourced and sustainable resources, the community lessens its environmental impact. This is in line with SDG 15.1, which has more general objectives and emphasizes sustainable land management techniques that strike a balance between environmental preservation and human needs. The anti-saline defences are an example of how human activity and the natural world may coexist peacefully, demonstrating how well-considered, community-driven solutions can concurrently solve economic and environmental problems.

**Community-Based Waste Management: An All-Inclusive Strategy**

In addition to the particular invention, waste reduction is facilitated by MBGC's wider embrace of sustainable land management techniques. The community's dedication to using environmentally friendly building supplies and methods reduces the amount of garbage produced during development. This all-encompassing strategy is consistent with SDG 15.1, which emphasizes minimizing the adverse environmental effects of land use and management.

## Japan's Sustainable Land Management Expertise: Market Potential and Industry Integration

Japan's steadfast dedication to Sustainable Development Goal 15.1 (SDG 15.1) has changed the country's environmental landscape and established it as a leader in sustainable land management. This dedication has created a domino effect that has opened up significant business opportunities and encouraged the adoption of sustainable practises by a range of industries. Cutting-edge technologies—such as those made possible by the JWT Green Patent—are essential to advancing the industry's transition to more environmentally conscious practises.

### Japan's Trailblazing Position in Ecological Land Management

Japan is now seen as a global pioneer in sustainable land management thanks to its proactive approach to SDG 15.1. International acclaim has been accorded to the country's comprehensive measures, which include afforestation programs, biodiversity protection projects, and state-of-the-art technologies. Japan has become known as a role model for creative and successful approaches to environmental sustainability as a result of the attention this leadership has received from investors, businesses, and partners around the globe.

**Getting Partnerships and Investments**

The prosperous land management endeavours in Japan have yielded a favourable investment environment. International and domestic investors are becoming more interested in opportunities that are in line with SDG 15.1. Ensuring environmentally friendly practises is a commitment to long-term sustainability and coincides with ethical investment values. Interactions between the public and commercial sectors, enabled by Japan's strong regulatory environment, have significantly advanced the adoption of sustainable practises across a range of industries.

**Realizing Market Possibilities**

Japan has created new markets for environmentally friendly goods and services by emphasizing sustainable land management. The need for ecologically friendly solutions has given companies the chance to be creative and serve a market niche that is expanding. Green building materials and eco-tourism businesses are examples of thriving enterprises that follow SDG 15.1's ideals. In addition to being advantageous economically, this market expansion helps achieve the larger objective of creating a society that is more robust and sustainable.

## Cutting-edge Technologies Advancing Industry Development

The JWT Green Patent serves as an example of how the advent of novel technology has accelerated industry transformation. These cutting-edge technologies are reshaping a number of industries with their ability to maximize resource efficiency, reduce environmental impact, and encourage sustainable practises. Incorporating these technologies is not just a business obligation, but also a calculated decision that satisfies consumer demands for goods and services that are ecologically friendly.

## Environmental Responsibility of Companies: A Revolution in Thinking

Corporate environmental responsibility has undergone a paradigm shift as a result of Japan's transition to sustainable land management. Businesses are realizing more and more how important it is to integrate sustainable practises into their basic principles. A clear framework for enterprises to support global biodiversity conservation efforts and profit from improved market positioning and customer trust is provided by the alignment with SDG 15.1.

## Jobs and Economic Development: Prosperous Prospects in MBGC's Sustainable Land Management

In addition to revitalizing the environment, Mirai Biome Green Community's (MBGC) success in putting sustainable land management strategies into practise has acted as a driver for job development and steady economic growth. With the help of people like Hiroshi and Sensei Kaede's educational programs, MBGC has developed into a thriving center for sustainable practises that support both new opportunities and the preservation of traditional livelihoods.

### Maintaining Customary Employment via Handicraftsmanship

The synergistic relationship between ancient practises and sustainable land management is demonstrated by Hiroshi's

expert craftsmanship. By implementing environmentally friendly woodworking techniques and adhering to SDG 15.1, traditional Japanese craftsmanship has not only been preserved but has reached new heights. Traditional industries have been revitalized by the desire for ethically sourced and made items, giving artists like Hiroshi a platform to demonstrate their expertise.

**Initiatives for Education and Skill Development**

The teaching efforts of Sensei Kaede have been essential in moulding the future of MBGC. These initiatives, which have focused on sustainable land management techniques, have increased community members' understanding and given them the tools they need to engage with and support the expanding sustainable economy. This educational component plays a critical role in developing a workforce that is devoted to and informed about environmental stewardship.

**Fresh Prospects and Enterprising**

Due to the accomplishments of MBGC's sustainable land management activities, the area around it is now a thriving center that draws creative people and encourages business. The emphasis on sustainable practises has given people the chance to investigate creative solutions, which has resulted in the establishment of new enterprises in the

neighborhood. Inspired by SDG 15.1, entrepreneurs are creating and executing sustainable business models that support MBGC's economic expansion.

**Creating and Diversifying Jobs**

Initiatives by MBGC have produced a variety of career opportunities in a number of industries. The community's job prospects have diversified, ranging from eco-tourism operations that leverage the pristine landscapes to firms that specialize in sustainable agriculture and locally produced eco-products. This diversification promotes a more robust and balanced local economy in addition to ensuring resilience in the face of financial difficulties.

## MBGC Technology for Clean Energy and Environmental Sustainability Unlocking Opportunities

The advent of MBGC (Mini Bio Gas Continuous) technology signals a new era for experts, managers, and decision-makers in sectors related to clean energy and environmental sustainability in a time when these goals are of utmost importance. This innovative technology offers a plethora of advantages that not only address urgent environmental issues but also create opportunities for creativity, financial success, and a better future.

- Promotion of Environmental Stewardship

  The use of MBGC technology makes it easier to turn organic waste into useful resources, thereby decreasing its negative effects on the environment and promoting a more sustainable future.

  Professionals and managers can proudly promote their businesses as being good stewards of the environment by coordinating their operations with international sustainability objectives.

- Technological Innovation that Is Pioneering:

  Organizations that use MBGC technology are at the forefront of technical development. Leaders in the industry demonstrate their dedication to advancement and innovation by embracing and modifying this cutting-edge solution.

- Increasing the variety of revenue sources:

  The extraction of priceless resources like methane, carbon dioxide, and NPK salts is made possible using MBGC technology. These can be sold or repurposed to generate new income streams and increase financial resiliency.

- Effective Waste Management at Low Cost

The MBGC technology provides experts and managers in charge of waste-intensive activities with an effective and affordable waste management solution. It maximizes resource recovery while reducing disposal expenses.

- Compliance with regulations and risk mitigation

  Industries prioritize staying ahead of changing environmental rules. Organizations that use MBGC technology exhibit a proactive approach to compliance, reducing any risks brought on by non-compliance.

- Building up corporate social responsibility (CSR):

  Adopting MBGC technology supports and strengthens an organization's CSR initiatives. It demonstrates a dedication to sustainable practises, which is well received by stakeholders, clients, and the general public.

- Building Resilience in a Changing Climate:

  Organizations must protect their operations against environmental volatility as climate change accelerates. By lowering greenhouse gas emissions and conserving resources, MBGC technology increases adaptability to climate-related problems.

- Strengthening Market Differentiation and Competition

Businesses that invest in MBGC technology have an advantage over rivals in the marketplace. They stand out as progressive, environmentally conscientious businesses, possibly luring eco-aware clients and business partners.

- Driving the development of knowledge and skills:

  MBGC technology adoption needs personnel training and skill development. By increasing employee knowledge, this investment in human capital promotes a culture of learning and creativity within the company.

**Drawing Talent and Establishing a Long-Term Community**

Because of the community's successful sustainable land management activities, MBGC is now a sought-after location for talented individuals. MBGC attracts people who are passionate about environmental sustainability and want to have a positive impact in the community. This adds to the community's diversity of skills and knowledge. This talent inflow strengthens the community's general vibrancy and resilience, generating a constructive feedback loop for long-term, sustainable growth.

**Ensuring Compliance and Reducing Risks through Preventive Environmental Management**

Sustainable land management reduces the dangers brought on by ecological challenges and climate change while also guaranteeing compliance with environmental requirements. Because of its proactive response to environmental issues, MBGC is regarded as a resilient role model for other Japanese coastal cities. Through minimizing susceptibilities and augmenting enduring viability, the community exhibits the fiscal acumen that is intrinsic to ecological management.

**Research and Development (R&D) Investment: An Innovation Catalyst**

Japan's investment in research and development has been stimulated by its commitment to SDG 15.1. Innovative approaches to addressing environmental concerns have been produced via partnerships between the public and private sectors, as well as academia. By maintaining this commitment, Japan will continue to lead the world in sustainable land management technology, which will have a positive knock-on effect for environmental stewardship worldwide.

## Conclusion

The story of the Mirai Biome Green Community (MBGC) is one of inspiration, illustrating the deep and transforming

advantages that result from the application of sustainable land management techniques that are in line with Japan's Sustainable Development Goal 15.1. The MBGC's peaceful coexistence of economic growth and environmental recovery is an example of the extraordinary power of neighborhood-based projects, providing the groundwork for a resilient and sustainable future.

## Peaceful Coexistence of Economic Growth and Environmental Renewal

The achievement of MBGC serves as an example of how economic expansion and environmental restoration can coexist together. Because of the community's dedication to responsible land management, which is based on SDG 15.1, ecosystems have flourished, biodiversity has returned, and a thriving and sustainable economy has been established. The careful balancing act struck between economic growth and environmental preservation serves as an example for other cities looking to follow in the footsteps of sustainable development.

## The Changing Potential of Community-Led Projects

The experience of MBGC serves as a testament to the transformative potential of community-driven projects. Through proactive community engagement, cultivation of environmental stewardship, and alignment of actions with

the overarching objectives of SDG 15.1, MBGC has emerged as a model community for how small communities may lead positive change. The community's combined efforts and common goal demonstrate how grassroots projects have the power to have significant and long-lasting effects on the environment and society.

**Japan's Future: Resilient and Sustainable**

As the tale of MBGC's triumphant growth unfolds, Japan stands out as a leader in the quest for a resilient and sustainable future. The knowledge gained from MBGC's experience is invaluable for other areas dealing with comparable difficulties. In addition to guaranteeing the welfare of its present population, Japan's dedication to sustainable land management creates the foundation for a legacy of sustainability that will last for many years.

**Creating the Foundation for Ethical Land Management**

Because of MBGC's success, people and countries around the world can be inspired to practise responsible land management, which not only benefits the environment but also can lead to prosperity. Japan's pledge to abide by SDG 15.1 establishes a standard for international collaboration in tackling the intertwined issues of

economic development, sustainable land use, and biodiversity conservation.

In summary, Mirai Biome Green Community's path embodies the transformative potential found in the thoughtful application of sustainable land management techniques. Future generations will benefit from responsible land management far beyond the confines of MBGC, creating a resilient and sustainable world. This can be attributed to the peaceful coexistence of environmental resurgence and economic prosperity, the empowering force of community-driven initiatives, and Japan's leadership in forging a sustainable path.

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http://www.expotv1.com/ESCP_NUT_Team.pdf
*Offers extensive support on* ***Energy*** *and* ***Water Cycle,*** *verse* ***IP_S DGs /UN***

## Bibliography/Conclusion

Any reference to people and things is purely coincidental, as well as creative/imaginative and aimed at the common good (both in fiction and non-fiction/disclosable texts). The Owners/Inventors of the Editorial rights on the source

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## Digester from MBGC (source) :

Patent:

**MBGC** , **https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016092582** (organic waste to biogas, for urban and periurban); view1, MBGC_Plan, Hello;

Italy: GRANT

http://www.expotv1.com/LIC/MISE_0001427413_MBGC.pdf, ...mean "INDUSTRY (useful), NEW (no make before), INVENTIVE (teach some things)"

**Abstract/Description -** Patent:

**MBGC , https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016092582**

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## Summary – Applications (to SDGs)

**MBGC**

**https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2016092582**

**Biogas - generate high purity raw materials from organic matrices. MBGC** is dedicated to the disposal and reconversion of organic waste , both from excrement (human and animal) and from manufacturing processes (agri-food industry), as well as in many agro-zootechnical activities. Very compact system that uses only renewable energy, with high energy recovery indices and production of high quality by-products (CH4, CO2, NPKx , H2O). Excellent solution for urban areas for contrast to the disposal of wastewater and containment of interventions on its infrastructures ( sewerage transport networks and purifiers ), acting in a distributive /pervasive manner where the problem arises. It offers significant contrast to the load Organic contributing to the performance on " **Water cycle** ".

**Project:** MBGC – Mini Bio Gas Continuous

**Objective :** Launch a pre- assembly and testing site (procedures and manuals) for the production of MBGC tanks

**Target:** Prefabricated (CLS) companies, hydromechanics , financial investors, operators in the BioGas / BioMethane sector

The project aims to activate a production site, from design to assembly (pro delivery and rapid assembly), with the development of production-oriented procedures agreed with the client (based on the products available for supply) and destinations of the outputs produced. The solutions rely on standard products from the water management and prefabricated market, assembled and tested with a view to optimize linear anaerobic digestion, with selective and corrective extraction. In collaboration with internal and external laboratories, it will act as remote support for the installations in charge (EPC - Engineering , Procurement and Construction ).

**Summary:** This is a method for anaerobic digestion and a device for its implementation. Anaerobic digestion is a biological process that breaks down organic matter in the absence of oxygen, producing biogas, fertilizer and water. Biogas is a mixture of methane, carbon dioxide and other gases that can be used as a renewable energy source. The fertilizer is composed of nitrogen, phosphorus and

potassium salts ( NPKx salts ) which can be used to enrich the soil or supplement supplies from specific industries. Water is the liquid fraction that can be reused or discharged after treatment.

A device to implement this method consists of a tank divided into different areas, where different phases of anaerobic digestion take place. The tank is equipped with bulkheads, pipes, pumps, heating means and gas separation means. The organic matter enters the tank through a vertical inlet pipe ( in homogeneous diffusion mode) and undergoes the following phases:

1) Hydrolysis: organic matter is divided into smaller molecules by means of water and enzymes;

2) Acidogenesis : the hydrolyzed products are transformed into volatile fatty acids and other compounds by acidogenic bacteria .;

3) Acetogenesis : volatile fatty acids and other compounds are further transformed into acetic acid, hydrogen and carbon dioxide by acetogenic bacteria;

4) Methanogenesis : acetic acid, hydrogen and carbon dioxide are transformed into methane and carbon dioxide by methane genic bacteria;

The liquid mixture flows through the tank from one area to another, following a path defined by the bulkheads and pipes. Along the way, some pumps recycle some of the liquid mixture to optimize the process. In the last zone, the liquid mixture separates into different components by gravity:
a) Oleic phase: the lighter fraction which mainly contains fats and oils , is drained and brought back to the beginning;

b) Protein phase: the heavier fraction which mainly contains proteins and amino acids, not yet treated, is taken and brought to the beginning;

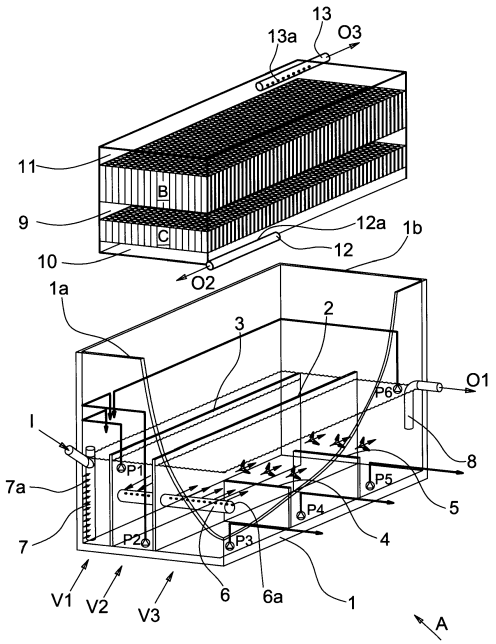
c) NPK salts: the solid fraction that precipitates at different levels according to their solubility and specific weight;

d) Clarified water: the clear fraction that remains after the separation of the other components is expelled by gravity and thermally pre-treated in the last part of the tank at half level;

The gases produced during the process (methane and carbon dioxide) rise towards the top of the tank, where

they separate by density and start non-specific functions. Carbon dioxide, being heavier, remains in the lower part of the space above the liquid surface, while methane, being lighter, moves towards the upper part of the space. Gases are extracted through pipes with holes that are connected to gas storage or utilization systems. The device also includes a lighting and cooling system to prevent the formation of hydrogen sulfide, a toxic gas that can result in anaerobic digestion, damaging it. Lighting stimulates photosynthesis in some bacteria that consume hydrogen sulfide in the absence of oxygen. Cooling condenses water vapor in the gas phase and returns it to the liquid phase .

1/2


13
13a
O3
11
B
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12a
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O2
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7a
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6a
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A

Fig. 1

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(54) Title (EN): METHOD FOR ANAEROBIC DIGESTION AND DEVICE FOR IMPLEMENTING SAID METHOD

(54) Title (FR): PROCÉDÉ DE DIGESTION ANAÉROBIE ET DISPOSITIF POUR LA MISE EN ŒUVRE DUDIT PROCÉDÉ

(57) Abstract:

(EN): This invention relates to a method and to a device for the implementation of said method, to decompose and to selectively extract methane, carbon dioxide, NPK salts (nitrogen, phosphorus and potassium salts) of various titre and clarified water, from an organic matrix; said components will be the raw material for further industrial processes. The method is characterized in that it includes the following phases: • implementation of a hydrolytic phase, constituted by the fission action by means of the water, by hydration; • implementation of a acidogenesis phase generated by means of specific bacteria; •

implementation of a acetogenesis phase generated by means of specific bacteria; • implementation of a methanogenesis phase by means of specific bacteria, with a simultaneous gravimetric separation of a mainly oleic phase, lighter and of a predominantly protein phase, heavier; • gravimetric separation of solutions of said NPK salts of different titres • taking of clarified water. The device is characterized in that it comprises a basin (1) divided into various zones (V1), (V2), (V3), in each of which biological reactions occur, in accordance with the claimed method, said zones being all communicating and identified by suitable separation baffles, in particular: • a first baffle (2) extended from a first end (1a) of the basin to a second end (1b) of said basin (1), dividing it into two parts; • a second baffle (3), of height equal to said first baffle that divides one of said parts in a first zone (V1) and in a second zone (V2) extending from said first end (1a) of the basin (1) until it reaches the vicinity of said second end of the basin (1), so that said two zones (V1) and (V2) are communicating through an opening, of substantially vertical development, between the end of said second baffle (3) and the second end (1b) of the basin (1); • a plurality of baffles (4) and (5) transversely arranged to said first baffle (2) and inside a third zone (V3), delimited by said first baffle (2), said third zone (V3) being placed in communication with said second zone (V2) through a

transfer pipe (6), positioned at about half height of said first baffle (2); • two blocks (B) and (C), placed in the upper part of said basin (1) and provided by taking means (12, 12a, 13, 13a), each of said blocks (B) and (C) including a plurality of vertical pipes and being fitted to carry out a gravimetric separation of the gases that are generated during the treatment of said mixture; said baffles (2) and (3) and said transfer pipe (6), by identifying a path crossed by the liquid mixture to be treated, that runs into the beginning of said first zone (1) where it is placed an inlet pipe (7) of the liquid mixture to be treated and comes out from various points of said third zone (V3).

(FR): La présente invention concerne un procédé et un dispositif pour la mise en œuvre dudit procédé, pour décomposer et extraire sélectivement du méthane, du dioxyde de carbone, des sels de NPK (sels d'azote, de phosphore et de potassium) de titres divers et de l'eau clarifiée, à partir d'une matrice organique; lesdits composants constituant la matière première pour d'autres procédés industriels. Le procédé est caractérisé en ce qu'il comprend les phases suivantes : mise en œuvre d'une phase hydrolytique, constituée par l'action de fission au moyen de l'eau, par hydratation; mise en œuvre d'une phase d'acidogénèse au moyen de bactéries spécifiques; mise en œuvre d'une phase d'acétogénèse au moyen de

bactéries spécifiques; mise en œuvre d'une phase de méthanogénèse, au moyen de bactéries spécifiques, avec séparation gravimétrique simultanée d'une phase principalement oléique, plus légère, et d'une phase principalement protéique, plus lourde; séparation gravimétrique de solutions desdits sels de NPK de titres différents; prélèvement de l'eau clarifiée. Le dispositif se caractérise en ce qu'il comprend un bassin (1) divisé en différentes zones (V1) (V2), (V3), dans chacune desquelles ont lieu des réactions biologiques, conformément au procédé de l'invention, lesdites zones étant toutes communicantes et identifiées par des chicanes de séparation appropriées, en particulier : une première chicane (2) s'étendant d'une première extrémité (1a) du bassin jusqu'à une deuxième extrémité (1b) dudit bassin (1), le divisant en deux parties; une deuxième chicane (3), de hauteur égale à celles de ladite première chicane qui divise l'une desdites parties en une première zone (V1) et en une deuxième zone (V2) s'étendant entre ladite première extrémité (1a) du bassin (1) et le voisinage de ladite seconde extrémité du bassin (1), de sorte que lesdites deux zones (V1) et (V2) communiquent par une ouverture, de développement sensiblement vertical, entre l'extrémité de ladite deuxième chicane (3) et la seconde extrémité (1b) du bassin (1); une pluralité de chicanes (4) et (5) placées transversalement par rapport à ladite

première chicane (2) et à l'intérieur d'une troisième zone (V3), délimitée par ladite première chicane (2), ladite troisième zone (V3) étant mise en communication avec ladite deuxième zone (V2) par un tuyau de transfert (6), placé à environ la moitié de la hauteur de ladite première chicane (2); deux blocs (B) et (C), placés dans la partie supérieure dudit bassin (1) et munis de moyens de prélèvement (12, 12a, 13, 13a), chacun desdits blocs (B) et (C) comprenant une pluralité de tuyaux verticaux et étant conçu pour effectuer une séparation gravimétrique des gaz qui se dégagent pendant le traitement dudit mélange; lesdites chicanes (2) et (3) et ledit tuyau de transfert (6) délimitant un trajet emprunté par le mélange liquide à traiter, qui s'étend du début de ladite première zone (1) dans laquelle est placé un tuyau d'entrée (7) du mélange liquide à traiter et sort par différents points de ladite troisième zone (V3).

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Declaration made as applicant's entitlement, as at the international filing date, to apply for and be granted a patent (Rules 4.17(ii) and 51bis.1(a)(ii)), in a case where the declaration under Rule 4.17(iv) is not appropriate

Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv)) for the purposes of the designation of the United States of America


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