

HOME BIOGAS LTD – Update Report

23.03.2023



Stock Exchange
TASE



Symbol
HMGS



Sector
Technology



Sub-sector
Cleantech



Stock price target
NIS 15.3



Closing price
NIS 7.16



Market cap
NIS 140.6 Mn



No. of shares
19.6 Mn



Average Daily
Trading Volume
42 stocks



Stock Performance
(since Jan. 1, 2023)
15.88%

Signed agreement with UN development program in Rwanda; received orders from customers in US and El Salvador of ~ USD 2.4M; Revenues increased, gross profit rate improved significantly but net loss increased due to expenses and negative cash flow; growth in product development; signed agreement to raise USD 10 million and a commitment to order of USD 15 million; price target is updated

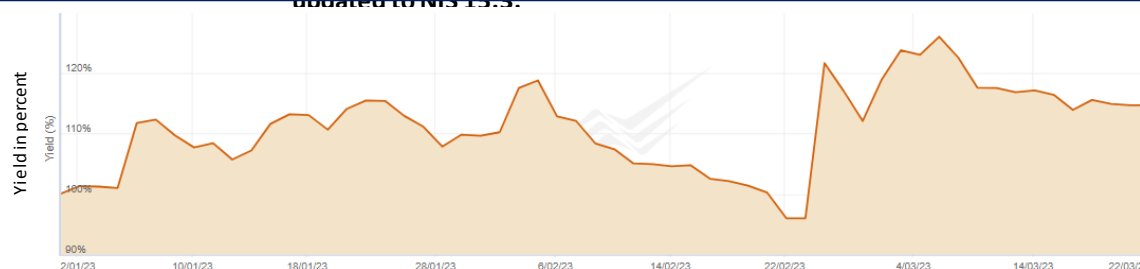
HomeBiogas LTD. (TASE: HMGS) is an Israeli publicly traded company engaged in developing, manufacturing, distributing, and selling domestic and industrial-scale biogas systems that offer a comprehensive solution for waste management, renewable energy creation, clean cooking, fertilizer production, and sanitation.

Q4 2022 highlights:

- Approved a private offer to Closed Loop Partners for NIS 36.63M and the controlling group will hold over 45% of voting rights. The company also approved an extension of the exclusivity period in the US and Canada subject to receiving an order of ~USD 15 M until the end of 2024. Both transactions are subject to the approval of the company's shareholders' meeting.
- Signed agreement with UN Development Program in Rwanda to supply biogas systems for organic waste treatment in eastern Rwanda.
- Received approx. USD 2.4 million orders from Closed Loop Partners, the US and Canada exclusive distributor, and the distributor of the company's systems in El Salvador.
- Reported a revenue increase but also a net loss and decrease in cash due to increased expenses and negative cash flow. It saw growth in product development and personnel but faced financial viability concerns and needs funding.

Recall that the company products address the needs of various markets, such as the cost of handling organic waste created by institutions in the US (~\$55 billion); global expenditures on wood fuel for cooking (~\$50 billion); the anaerobic digestion market (over ~\$15 billion by 2025 with a CAGR of 10.62%); and the global market of new sanitation technologies designed for low-resource settings (over ~\$6 billion by 2030). Also, regulatory trends in the US and EU support the company's operations. The recently published IPCC report prompts calls to tackle methane emissions, stating that methane gas has more than 80 times warming power in the near term than CO₂. In parallel, prices of carbon credits are rising. **This is a significant tailwind and opportunity for HomeBiogas, which reduces CO₂ and methane release in landfills by turning the organic waste into renewable energy on-site.**

In our view, HomeBiogas is advancing significant steps towards penetration into the US market, which is expected to increase the sales pace this year. In the background, continued marketing activity in the institutional market that will yield more significant revenue in 2022 is also expected to affect the share price. In light of the company's meeting our expectations, the price target is updated to NIS 15.3.



Lead Analyst

Dr. Tiran Rothman

Equity.Research@frost.com

Tel.: +972-9-9502888

HOMEBIOGAS LTD

23.03.2023

Key events recent months and Q4 2022:

- On February 23, 2023, Home Biogas announced that the company's board of directors approved a private offer from the company's controlling owners, Closed Loop Partners. The offer is for 4,405,292 company shares at a price of NIS 8.315 per share, totaling NIS 36.63 million, and if approved, the controlling group will hold more than 45% of the voting rights in the company. In addition, the board of directors approved an extension of the exclusive distribution rights for the company's products in the USA and Canada, subject to receiving an order in the amount of 15 million dollars by the end of 2024. Both transactions are subject to the approval of the company's general meeting.
- On November 8, the company signed an agreement with the United Nations Development Program in Rwanda for the supply of biogas systems to treat the organic waste of farmers in communities in eastern Rwanda, including the installation and training of the locals in the use of the systems, for a total consideration of approx. USD 578 thousand.
 - o The systems will be provided during a period of 6 months from the date of signing the agreement.
- On November 24, the company received an order from the company's exclusive distributor in the US and Canada Closed Loop in the amount of approx. USD 1 million. The order includes the export of the company's institutional systems for the first time for projects in the US that are in advanced planning stages and their completion is expected during the year 2023.
- On November 30, the company received an order for the supply of the company's biogas systems with a total amount of approx. USD 1.4 million from the distributor of the company's systems in El Salvador, following its winning a government tender for the supply of home biogas systems to educational institutions. The order is intended for delivery by the end of H1 2023.
 - o The ordered home biogas systems are intended for installation in approximately 600 schools, as the first phase of a large-scale project, which is preparing for the installation of home biogas systems for environmental treatment of organic waste in schools throughout El Salvador.

2022 financial situation:

- The company saw an approx. 90% increase in revenue, amounting to USD 4.7 million, due to growth in sales activity across all channels.
- Gross profit was USD 1.3 million and made up 28% of revenues, an increase of 472% compared to the same period last year when gross profit was \$0.2 million and made up 9% of sales)
- The company incurred a net loss of USD 15.2 million, an increase of 82.07% YoY. This was due to a decline in revenue offset by lower tax expenses and a fluctuation in the dollar exchange rate.
- The company ended 2022 with a cash balance of USD 11.5 million, a decrease of approx. 56% YoY. The decrease was due to a negative cash flow used for the company's current operations and the erosion of the dollar against the shekel.
- The company experienced an increase in research and development expenses, marketing and sales expenses, and administrative and general expenses due to expansion and focus on product development and target markets in developing countries, as well as an increase in personnel.
- The company's financial situation raises concerns about its continued viability as a business and requires funding to implement its plans.

For further details on the company and its markets, please read our initiation of coverage report [here](#)

Investment Thesis

HomeBiogas develops, manufactures and markets biogas systems for home and institutional use associated with the field of environment and green energy. The company's products enable local treatment and the use of waste and organic waste to produce clean energy for cooking and heating water and reduce negative health and environmental impacts. HomeBiogas' solutions have a social and environmental impact that enable companies and organizations to increase compliance with their ESG targets.

Sustainability and environmental trends, combined with maturity of micro-funding models in developing countries, and increasing cost of managing organic waste, are driving commercial adoption of small and medium scale on-site biogas systems. The anaerobic digestion market was valued at \$7.5 billion in 2018 and is expected to surpass \$15 billion by 2025 with a CAGR of 10.62% over the forecast period. Also, in light of the crisis following the war in Ukraine European countries have declared an increase in reliance on renewable energies including biogas.

Key driving trends for domestic/industrial scale systems are policies and regulations for on-site food waste treatment. Recently, the company signed an agreement with Insinkerator, a business division of the American corporation Emerson, which was recently sold to Whirlpool, for technological integration and the development of an integrated product to be installed in commercial and domestic kitchens for the production of biogas energy from organic waste. Emerson is a market leader in automation solutions for private and institutional kitchens. Home Biogas has completed the first phase of technological integration at the company's test sites.

HomeBiogas provides patent-based domestic/industrial scale anaerobic digestion modular biogas systems that enable people and businesses to turn their organic waste into self-made clean energy on-site. Their vision is to promote sustainability, improve lives, and positively impact the environment by harnessing its expertise in waste treatment and biogas systems. The current line of products for domestic and small farms includes three biogas systems of different sizes - HomeBiogas 2, 4, and 7 cubic meters – which treat organic waste and turn it into cooking gas and fertilizer, a Bio-toilet that turns human waste into biogas (cooking gas), and additional products such as stoves, filters and probiotic tablets.

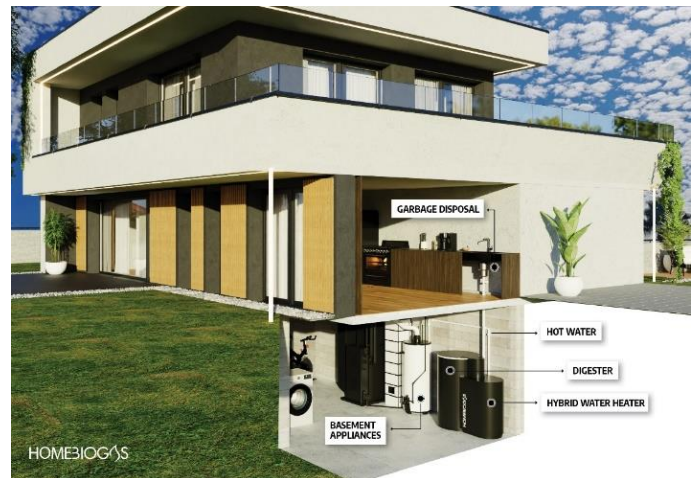
The company has completed the development of a first prototype of the home system for modern kitchens and expecting first U.S. pilots in early 2023. The organic waste of the modern household kitchen will be ground

In the kitchen sink and the company's system will turn it into renewable energy for water heating for the household use. Beyond the benefits of treating organic waste onsite, this system will help alleviate the existing overload on the municipal sewer system

(gri

: pic

nit



As part of its strategy, the company intends to increase its market share in several selected countries, leveraging existing and future agreements with local distributors. In addition, the company plans to offer “Pay as You Go” models, making biogas systems accessible to a larger pool of customers. In the institutional field, the company intends to offer operators of commercial-size kitchens (such as hotel chains) an OPEX-based model for having a small-footprint biogas system that saves costs and meets alternative energy and ESG targets.

We believe that HomeBiogas is on a path for growth and success on a global scale:

- HomeBiogas' novel platform technology and its unique value propositions present great promise in becoming the future incumbent technology for on-site organic waste treatment and sanitation services.
- The company is CE, ISO 14001, ISO 9001 certified and has international product liability insurance. HomeBiogas led to the establishment of a new international standard for household biogas systems, ISO 23590, published in December 2020¹.
- HomeBiogas has received **significant industry recognition**, which speaks volumes about its growth potential; for instance, HomeBiogas is a Phase 1 & Phase 2 SME Instrument winner and was recently granted funds for a pilot project of its institutional system with the Israeli Defense forces.
- **The company has partnered with some of the world's most credible organizations**, including USAID, EU, UN, the International Red Cross, and is a member of the Clean Cooking Alliance. In addition, the company has completed projects with three huge corporations in India, HCL, ADANI and SELCO. Products are sold online to end customers in the developed countries and via a network of 20+ distributors in various countries.

Therefore, we view HomeBiogas as an excellent opportunity for those seeking to invest in sustainable energy and positively impact the environment while improving people lives.

¹ <https://www.iso.org/standard/76157.html>

1. Company Overview

General

HomeBiogas Ltd., headquartered in Israel, is engaged in developing, manufacturing, distributing, and selling domestic and industrial scale biogas systems that offer a comprehensive solution for waste management, renewable energy creation, clean cooking, fertilizer production, and sanitation.

The company was incorporated in 2012 as a private company. Its shares are listed for trading on the Tel Aviv Stock Exchange since 1 February 2021 (TASE: HMGS) after raising approx. 100 million NIS in an IPO.

Distribution of shareholdings includes 37.89% float, 17.43% institutional, and 44.68% interested parties of which main shareholders are Closed-Loop VC with 16.20%, the three founders with 11.69%, Engie New Ventures with 9.43%, and JS Capital with 7.36%.

Vision

HomeBiogas' vision is to promote circular economy, sustainability, improve lives, and create a positive impact on the environment by harnessing its expertise in waste treatment and biogas systems.

Business Activities and Strategy

The company is developing, manufacturing, distributing, and selling a line of domestic and industrial scale biogas systems for domestic and commercial use that offer a comprehensive solution for onsite waste management, renewable energy creation, clean cooking, fertilizer production, and sanitation. The biogas systems convert kitchen waste, animal manure, and human waste into clean cooking gas, liquid fertilizer, hot water or electricity.

Figure 1: Feed and output of HomeBioGas systems



The company is active in 3 segments- 1) Biogas systems for domestic use/ small farms, 2) domestic / off-grid sanitation, and 3) institutional kitchens.

To date, the company has sold over 30,000 small biogas systems for domestic use in over 100 countries, demonstrating product-market fit for domestic use in both developed and developing markets. In the coming years, the company intends to increase its market share in several selected countries, leveraging existing and future distribution agreements with local distributors in those countries. In addition, the company offers “Pay as You Go” models and making biogas systems accessible to a larger pool of customers.

In the institutional field, the company is in the market penetration phase. The system is tailored to local treatment of organic waste by turning it into renewable clean energy, on site. In this context, the company intends to partner with local partners to offer operators of commercial-size kitchens such as hotel chains, fast food chains, hospitals, military bases, and others an OPEX-based model for having a small-footprint biogas system that save costs of sending organic waste to landfill, reduce energy costs, reduce carbon footprint and meet alternative energy and ESG targets.

IP and Technology

Patents

Patent #1

“Lightweight assimilable appliance and respective method for production of biogas and liquid fertilizer”

Description: First-generation system for domestic biogas, with a flexible digestion container, hung from an external rigid scaffolding.

Published: International (2014), Israel (2019), USA (2017), Europe (2017), Australia (2016), South Africa (2017), China (2018), Nigeria (2015)

Expire: December 2033

Patent #2

“Lightweight appliance with exoskeletal support respective kit-of-parts and method for production of biogas and liquid fertilizer”

Description: Second-generation system for domestic biogas, without external rigid scaffolding, but with external flexible casing.

Published: International (2019), USA (2019), Australia (2020), China (2019), India (2018)

Expire: December 2037

Trademark

The company registered its name and logo in the US as a trademark.

Grants

The Israeli Innovation Authority backs the company since its inception. During the years 2012-2020, the company received a total of \$1.3 million.

Recently, in April 2021, the company was granted funds for a pilot project of its industrial system with the Israeli Defense forces.

HomeBiogas is a Phase 1 & Phase 2 SME Instrument winner, supporting the successful commercialization of HBG 7, launched during the SME Phase 2 project. The company was granted €1.6 million by the European Horizon 2020 SME Phase 2 program in 2017 to develop an institutional biogas system. A second project under the Horizon 2020, part of the Consortium program, for granted €167,000 in May 2018.

Safety and Standards

The company is CE, ISO 14001, ISO 9001 certified and has international product liability insurance. HomeBiogas led to the establishment of a new international standard for household biogas systems, ISO 23590, published in December 2020².

Prizes

- ✓ Finalist for 2020 “High-Tech for Humanitarian Aid” Prize (2020)
- ✓ Chivas Venture, UK (2020)
- ✓ Vegas hardware retail choice for innovation (2019)
- ✓ National ENERGY GLOBE Awards, Austria (2018)
- ✓ Green Challenge, Netherlands (2017)

Distribution & Partnerships

The company has partnered with some of the world’s most credible organizations, including USAID, EU, UN, the International Red Cross, and is a member of the Clean Cooking Alliance (www.cleancookingalliance.org). Products are sold online to end customers in the developed countries and via a network of 20+ distributors in various countries, including India, Kenya, US & Canada, Costa Rica & Panama, Philippines, Nepal, Thailand, Laos, and Brazil and in a direct sale through its subsidiary in Kenya.

Offices, Facilities, and Employees

As of the report date, the company has no real estate or fixed assets of material scope and is renting two facilities; one is used for administrative, marketing, and sales purposes, and the other facility is used for storage, quality control, and packing finished products prior to shipment. Workforce is about 90 people.

² <https://www.iso.org/standard/76157.html>

2. Products Overview

Domestic products

Biogas systems

The initial prototype was piloted in 2014. In 2016, the first generation became commercially available.

The current line of products includes 3 biogas systems (HomeBiogas 2, 4, and 7 cubic meters sizes) built from 3 core elements:

1. A welded inner liner designed to contain the gas and digested materials
2. An outer liner specially designed for strength, stability, and UV resistance
3. Injection moldings, including the system's piping, inlet, and outlet

The domestic systems are made of 100% recyclable materials and have a patented mechanical pressure generation mechanism (ensuring that the filtered gas pressure in the storage tank remains constant and controlled).

Key features include:



Daily cooking gas
2 hours to 6.
vary by system size.



User-friendly,
low maintenance.



Easy to transport
Small box
(23kg to 32KG).



Simple assembly in
less than 2 hours.



Safety features
include filters, sealed
tanks and automatic
gas release valve.



Durable, high quality
material with lifespan
of 15+ years.

Bio-toilet

Treating toilet waste, 100% off-the-grid, and only use 1.2 liters of water per flush from a standing source (no electricity is required).

Additional products include cooking stoves, probiotic tablets, and filters.

Institutional products

The company is in the market penetration stage a line of on-site organic waste treatment systems for commercial and industrial kitchens of public institutes, companies, hotels, restaurants, and food complexes.

The systems use an anaerobic digestion process to decompose the organic waste into biogas and organic liquid fertilizer. The biogas is used for water heating or electricity generation, and the liquid is best used as a bio-fertilizer. The kitchen waste is fed to the grinding unit and from there transferred to the anaerobic digester container; the waste is broken down in an anaerobic process; the generated gas is converted immediately into hot water; and the hot water serves the needs of the kitchen.

Key features and advantages

- Affordable Biogas-as-a-service model: all included per use pricing model, based on monthly payments with no additional fees for installation and services. End-users save on waste management costs and renewable energy generation from the first month of use
- Small footprint (starting at 20 m²)
- A safe and sealed system with no odor
- Fits outdoors under any environmental conditions Internal temperature control system
- Certified technology
- Automated waste sorting
- Easy transportation and installation
- Automatic real-time monitoring and remote control
- Convenient user interface located inside the kitchen

The product portfolio includes a few systems in pilot stages, with scalable volume capacity and size from 100kg per day to 1,000 kg per day, was launched in 2022.

HomeBiogas Sanitation- Bio-Toilet



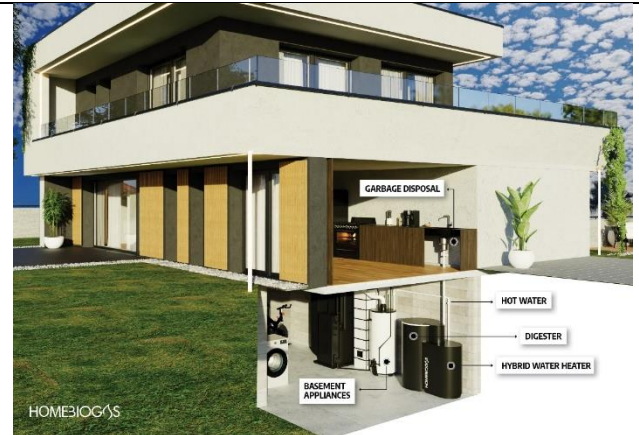
HomeBiogas Additional Products



HomeBiogas PRO



HomeBiogas Premium



3. Market Overview

Global Sustainability Trends

Sustainable Development Goals (SDG's) adopted at the 2015 United Nations Summit provide the principles, framework, and targets for all stakeholders across the value chains to identify key development areas to enhance and seek continual improvement regarding to sustainability, good health, well-being, and climate action.

Figure 5: The 17 United Nations Sustainable Development Goals (SDG's)



HomeBiogas has a strong value proposition matching with 8 of the 17 UN goals, making it attractive and highly-relevant to commercial companies, organizations, banks, and governments.

EU Circular Economy Plan

The updated European Commission's Circular Economy Action Plan from March 2019 is committed to the United Nations SDGs. The plan involves the entire value chain and major focus areas relevant to HomeBiogas: Waste reduction at source, Diversion from landfills, and Sustainable business best practices. One of the targets for 2035 is the reduction of municipal waste landfilling volume by 50%.

Anaerobic Digestion Market

The Anaerobic Digestion market was valued at \$7.5 billion in 2018. It is expected to surpass \$15.0 billion by 2025 with a CAGR of 10.62% over the forecast period.

According to the American biogas council, investment in new biogas systems in 2018 totaled \$1 billion. In recent years, investments in the US biogas industry have been growing at an annual rate of 12%. Although there is already a wide application of biogas technologies worldwide, the industry is still in its initial stages of development. The biogas industry can be analysed in 3 broad categories: micro digesters using biogas, scale digesters generating electricity, and scale digesters producing biomethane³.

Micro digesters

Biogas from micro-scale digesters is most often used in stoves for cooking or heating, displacing solid, high emission fuels like firewood and charcoal, and play an important role in developing countries, where they are an integral part of farming, waste management, and energy security.

The World Biogas Association estimates that close to 50 million micro-scale digesters are operating worldwide, with 42 million operating in China and another 5 million in India, and some 700,000 installed in the rest of Asia, Africa, and South America⁴. Flexible (balloon/bag digester) systems such as HomeBiogas products are relatively new in the market and have a superior value proposition because it is quick to install (DIY/pre-fabricated), has lower costs and innovative payment models.

Clean Cooking and Sanitation Market

Clean cooking

According to World Bank, the UN, and the FAO reports, between 2.4 and 3.5 billion people worldwide do not have access to clean cooking fuels and technologies. These people use inefficient open fires or simple cookstoves today and rely on wood-based fuel, including wood, charcoal, and coal, for cooking.

There are many negative impacts of these types of fuels. Environmentally, inefficient fuel production and consumption lead to increased GHG emissions, solid fuel cooking is tied to catalytic warming effects of black carbon emissions, and forest degradation/deforestation due to fuel collection and production. In terms of health, a broad range of health conditions are associated with indoor air pollution; hundreds of thousands of burns, deaths, and injuries are associated with traditional fuels/cooking appliances; and firewood collection leads to chronic and acute physical ailments. Economically, there is a large amount of avoidable spending on fuel, and lost opportunities for income generation on time spent collecting fuel and cooking.

³ RENA (2017), Biogas for domestic cooking: Technology brief, International Renewable Energy Agency, Abu Dhabi

⁴ World Biogas Association, Global Potential of Biogas, 2019

Costs are the main barrier for adopting clean cooking solutions. The lack of progress in expanding access to clean, modern cooking costs the world more than \$2.4 trillion each year, according to a report released in September 2020 by the Clean Cooking Alliance, the World Bank, and the Modern Energy Cooking Services program. The report estimated that US\$150 billion is needed annually to reach universal access to modern energy cooking services by 2030.

Reports found that the problem is not a lack of consumer expenditure but the need for business models and technologies that make superior alternatives affordable and accessible. Over the last decade, the industry is transitioning from aid-based to becoming commercially viable. To lower barriers and support the adoption of clean solutions, the World Bank's recently announced \$500 million Clean Cooking Fund, housed under the Energy Sector Management Assistance Program (ESMAP)⁵.

Sanitation Market

Sanitation is a basic necessity that contributes to better human health, dignity, and quality of life.

The UN's SDG 6 water and sanitation monitoring program reports that in 2017, over 2 billion people lack basic sanitation services, with 673 million people still practiced open defecation, with 91% live in rural areas⁶.

The result is that the poor are deprived of decent and dignified lifestyles leading to the deterioration of health, wellbeing, and human environment. According to the World Health Organization, poor sanitation and hygiene practices contribute to over 820,000 deaths from diarrhea annually.

Small-scale off-grid sanitation solutions aim to deliver services for the safe disposal of human urine and feces. Off-grid solutions include traditional and improved latrines (various kinds of pits), container-based sanitation (CBS), flush toilets connected to septic tanks, and various wastewater collection and treatment facilities, such as fecal sludge management technologies.

Lack of proper sanitation costs the world an estimated \$223 billion every year. It is estimated that the annual market value for new sanitation technologies designed for low-resource settings, such as the HomeBiogas Bio-Toilet, could potentially reach more than \$6 billion globally by 2030⁷.

⁵ <https://www.worldbank.org/en/results/2020/11/10/accelerating-access-to-clean-cooking-the-efficient-clean-cooking-and-heating-program-and-the-clean-cooking-fund>

⁶ <https://www.unwater.org>

⁷ Bill & Melinda Gates Foundation

Food Waste Management

A United States Environmental Protection Agency (EPA) report from July 2020 on Wasted Food Measurements estimated that the Hospitality and Institutional sectors, which are only responsible for 25% of total food waste⁸, generated 24 million tons of waste in 2016. Potential solutions to process food waste include centralized (such as large AD facilities at landfill locations) and decentralized systems (small-scale systems near the kitchens).

Key drivers and restraints – micro, small, and medium-scale systems

Key drivers include **price increases and limited availability of alternative energy sources** such as coal, wood, gas, and polluting fuels in developing countries; **increasing awareness of the health damage** of cooking with charcoal or wood; **a growing amount of government regulations** that drive organizations and institutions to look for alternatives to organic waste treatment – including the Global Methane Pledge announced at COP26, which committed signatories to reducing their overall emissions by 30% by 2030, compared with 2020 levels; **support by government aid organizations and subsidies** including the UN, World Bank, and many other NGO and commercial organizations; the **price and availability of fertilizers**; and the **Solar PV “Pay as You Go” model maturity**, paving the way for growth and adoption scale in the clean cooking and sanitation domains.

The key restraints include **prices and funding alternatives** that reduce the number of customers that can afford to purchase the systems; **poor operational / logistics infrastructure** for delivering systems in rural areas; **local taxes and fees** imposed by the governments increase prices; and **limited partners and local talents** are required for demonstrations, installations, and services.

⁸ https://www.epa.gov/sites/production/files/2020-06/documents/food_measurement_methodology_scoping_memo-6-18-20.pdf

4. Competitive landscape

Competitors

There are hundreds of competitors in the 3 segments that HomeBiogas is active in, mostly very small and local companies. Some of the more notable players are: Sistema Bio, ATEC Bio, Puxin, Power Knot, QUBE Renewables and SEaB Energy. For further details read our initiation of coverage report [here](#).

5. Strategy & Growth Opportunity

Product and Market Growth Strategy

HomeBiogas plans to reduce product production costs for the 2, 4, 7, and the Bio-Toilet. It will expand product offering and differentiation by developing different biodigester models for developing and developed markets. The company will also offer local manufacturing in target countries to decrease costs, increase capacity and shorten supply time. The current annual production capacity is about 20,000 biogas systems. HomeBioGas is committing to a clear development roadmap for the institution systems (HBG 300/500/1000) during 2021-2022 to be commercially ready in 2022 and 2023. They will offer a “smart home” premium waste to energy solution for houses in developed markets. Completed the POC stage and now in the advanced development stage.

Business Approach

HomeBiogas operates on a B2B2C model, recruiting local employees to provide full support for distributors and their customers. It offers customized market support strategies with a “Pay as you go” model in developing countries. HomeBioGas leverages carbon credits, mainly of the institutional systems, for additional revenues or reduce leasing prices to customers. Each unit saves 1,000 – 1,200 tons of annual carbon emissions, currently values at around \$5,000-10,000.

The company’s distribution and partnership channels include online sales, corporate social responsibility (CSR) projects, humanitarian aid projects, government-funded projects and subsidies, international development projects, and additional distributors (B2B) in target countries.

Business Models

Domestic products. The company currently offers one-time sale of biogas systems and recurrent sales of perishable items such as filters and probiotic tablets. The company plans to launch a Pay as You Go model in developing countries and one-time sale of a biogas systems and recurrent sales of perishable items such as filters and probiotic tablets (via online) in developed markets.

Institutional systems. The company plans to offer Leasing and Pay Per Use (per volume of waste and energy) models.

Summary of the Market Opportunity

Domestic

- Developing countries – some 250 million families in rural and urban areas that do not have access to sanitation and clean cooking.
- Developed countries – tens of millions of environmentally-sensitive families living in rural areas that are not connected to a central sanitation system.

Institutional

- There are over 500,000 medium and large-scale food service facilities in the US and EU markets, of which 60,000 can be targeted as short-term opportunities, driven by stringent state and local policy and regulations for on-site waste management.

Appendix 1: About Frost & Sullivan

Frost & Sullivan* is a leading global consulting, and market & technology research firm that employs staff of 1,800, which includes analysts, experts, and growth strategy consultants at approximately 50 branches across 6 continents, including in Herzliya Pituach, Israel. Frost & Sullivan's equity research utilizes the experience and know-how accumulated over the course of 55 years in medical technologies, life sciences, technology, energy, and other industrial fields, including the publication of tens of thousands of market and technology research reports, economic analyses and valuations. For additional information on Frost & Sullivan's capabilities, visit: www.frost.com. For access to our reports and further information on our Independent Equity Research program visit www.frost.com/equityresearch.

*Frost & Sullivan Research and Consulting Ltd., a wholly owned subsidiary of Frost & Sullivan, is registered and licensed in Israel to practice as an investment adviser.

What is Independent Equity Research?

Nearly all equity research is nowadays performed by stock brokers, investment banks, and other entities which have a financial interest in the stock being analyzed. On the other hand, Independent Equity Research is a boutique service offered by only a few firms worldwide. The aim of such research is to provide an unbiased opinion on the state of the company and potential forthcoming changes, including in their share price. The analysis does not constitute investment advice, and analysts are prohibited from trading any securities being analyzed. Furthermore, a company like Frost & Sullivan conducting Independent Equity Research services is reimbursed by a third party entity and not the company directly. Compensation is received up front to further secure the independence of the coverage.

Analysis Program with the Tel Aviv Stock Exchange (TASE)

Frost & Sullivan is delighted to have been selected to participate in the Analysis Program initiated by the Tel Aviv Stock Exchange Analysis (TASE). Within the framework of the program, Frost & Sullivan produces equity research reports on Technology and Biomed (Healthcare) companies that are listed on the TASE, and disseminates them on exchange message boards and through leading business media channels. Key goals of the program are to enhance global awareness of these companies and to enable more informed investment decisions by investors that are interested in "hot" Israeli Hi-Tech and Healthcare companies. The terms of the program are governed by the agreement that we signed with the TASE and the Israel Securities Authority (ISA) regulations.

For further inquiries, please contact our lead analyst:

Dr. Tiran Rothman T: +972 (0) 9 950 2888 E: equity.research@frost.com

Disclaimers, disclosures, and insights for more responsible investment decisions

Definitions: "Frost & Sullivan" – A company registered in California, USA with branches and subsidiaries in other regions, including in Israel, and including any other relevant Frost & Sullivan entities, such as Frost & Sullivan Research & Consulting Ltd. ("FSRC"), a wholly owned subsidiary of Frost & Sullivan that is registered in Israel – as applicable. "The Company" or "Participant" – The company that is analyzed in a report and participates in the TASE Scheme; "Report", "Research Note" or "Analysis" – The content, or any part thereof where applicable, contained in a document such as a Research Note and/or any other previous or later document authored by "Frost & Sullivan", regardless if it has been authored in the frame of the "Analysis Program", if included in the database at www.frost.com and regardless of the Analysis format-online, a digital file or hard copy; "Invest", "Investment" or "Investment decision" – Any decision and/or a recommendation to Buy, Hold or Sell any security of The Company. The purpose of the Report is to enable a more informed investment decision. Yet, nothing in a Report shall constitute a recommendation or solicitation to make any Investment Decision, so Frost & Sullivan takes no responsibility and shall not be deemed responsible for any specific decision, including an Investment Decision, and will not be liable for any actual, consequential, or punitive damages directly or indirectly related to The Report. Without derogating from the generality of the above, you shall consider the following clarifications, disclosure recommendations, and disclaimers. The Report does not include any personal or personalized advice as it cannot consider the particular investment criteria, needs, preferences, priorities, limitations, financial situation, risk aversion, and any other particular circumstances and factors that shall impact an investment decision. Nevertheless, according to the Israeli law, this report can serve as a *raison d'être* off which an individual/entity may make an investment decision.

Frost & Sullivan makes no warranty nor representation, expressed or implied, as to the completeness and accuracy of the Report at the time of any investment decision, and no liability shall attach thereto, considering the following among other reasons: The Report may not include the most updated and relevant information from all relevant sources, including later Reports, if any, at the time of the investment decision, so any investment decision shall consider these; The Analysis considers data, information and assessments provided by the company and from sources that were published by third parties (however, even reliable sources contain unknown errors from time to time); the methodology focused on major known products, activities and target markets of the Company that may have a significant impact on its performance as per our discretion, but it may ignore other elements; the Company was not allowed to share any insider information; any investment decision must be based on a clear understanding of the technologies, products, business environments, and any other drivers and restraints of the company's performance, regardless if such information is mentioned in the Report or not; an investment decision shall consider any relevant updated information, such as the company's website and reports on Magna; information and assessments contained in the Report are obtained from sources believed by us to be reliable (however, any source may contain unknown errors. All expressions of opinions, forecasts or estimates reflect the judgment at the time of writing, based on the Company's latest financial report, and some additional information (they are subject to change without any notice). You shall consider the entire analysis contained in the Reports. No specific part of a Report, including any summary that is provided for convenience only, shall serve per se as a basis for any investment decision. In case you perceive a contradiction between any parts of the Report, you shall avoid any investment decision before such contradiction is resolved. Frost and Sullivan only produces research that falls under the non-monetary minor benefit group in MiFID II. As we do not seek payment from the asset management community and do not have any execution function, you are able to continue receiving our research under the new MiFID II regime. This applies to all forms of transmission, including email, website and financial platforms such as Bloomberg and Thomson.

Risks, valuation, and projections: Any stock price or equity value referred to in The Report may fluctuate. Past performance is not indicative of future performance, future returns are not guaranteed, and a loss of original capital may occur. Nothing contained in the Report is or should be relied on as, a promise or representation as to the future. The projected financial information is prepared expressly for use herein and is based upon the stated assumptions and Frost & Sullivan's analysis of information available at the time that this Report was prepared. There is no representation, warranty, or other assurance that any of the projections will be realized. The Report contains forward-looking statements, such as "anticipate", "continue", "estimate", "expect", "may", "will", "project", "should", "believe" and similar expressions. Undue reliance should not be placed on the forward-looking statements because there is no assurance that they will prove to be correct. Since forward-looking statements address future events and conditions, they involve inherent risks and uncertainties. Forward-looking information or statements contain information that is based on assumptions, forecasts of future results, estimates of amounts not yet determinable, and therefore involve known and unknown risks, uncertainties and other factors which may cause the actual results to be materially different from current projections. Macro level factors that are not directly analyzed in the Report, such as interest rates and exchange rates, any events related to the ecosystem, clients, suppliers, competitors, regulators, and others may fluctuate at any time. An investment decision must consider the Risks described in the Report and any other relevant Reports, if any, including the latest financial reports of the company. R&D activities shall be considered as high risk, even if such risks are not specifically discussed in the Report. Any investment decision shall consider the impact of negative and even worst case scenarios. Any relevant forward-looking statements as defined in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 (as amended) are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. **TASE Analysis Scheme:** The Report is authored by Frost & Sullivan Research & Consulting Ltd. within the framework of the Analysis Scheme of the Tel Aviv Stock Exchange ("TASE") regarding the provision of analysis services on companies that participate in the analysis scheme (see details: www.tase.co.il/LPages/TechAnalysis/Tase_Analysis_Site/index.html, www.tase.co.il/LPages/InvestorRelations/english/tase-analysis-program.html), an agreement that the company has signed with TASE ("The Agreement") and the regulation and supervision of the Israel Security Authority (ISA). FSRC and its lead analyst are licensed by the ISA as investment advisors. Accordingly, the following implications and disclosure requirements shall apply. The agreement with the Tel-Aviv Stock Exchange Ltd. regarding participation in the scheme for research analysis of public companies does not and shall not constitute an agreement on the part of the Tel-Aviv Stock Exchange Ltd. or the Israel Securities Authority to the content of the Equity Research Notes or to the recommendations contained therein. As per the Agreement and/or ISA regulations: A summary of the Report shall also be published in Hebrew. In the event of any contradiction, inconsistency, discrepancy, ambiguity or variance between the English Report and the Hebrew summary of said Report, the English version shall prevail. The Report shall include a description of the Participant and its business activities, which shall inter alia relate to matters such as: shareholders; management; products; relevant intellectual property; the business environment in which the Participant operates; the Participant's standing in such an environment including current and forecasted trends; a description of past and current financial positions of the Participant; and a forecast regarding future developments and any other matter which in the professional view of Frost & Sullivan (as defined below) should be addressed in a research Report (of the nature published) and which may affect the decision of a reasonable investor contemplating an investment in the Participant's securities. An equity research abstract shall accompany each Equity Research Report, describing the main points addressed. A thorough analysis and discussion will be included in Reports where the investment case has materially changed. Short update notes, in which the investment case has not materially changed, will include a summary valuation discussion. Subject to the agreement, Frost & Sullivan Research & Consulting Ltd. is entitled to an annual fee to be paid directly by the TASE. Each participant shall pay fees for its participation in the Scheme directly to the TASE. The named lead analyst and analysts responsible for this Report certify that the views expressed in the Report accurately reflect their personal views about the Company and its securities and that no part of their compensation was, is, or will be directly or indirectly related to the specific recommendation or view contained in the Report. Neither said analysts nor Frost & Sullivan trade or directly own any securities in the company. The lead analyst has a limited investment advisor license for analysis only.

© 2023 All rights reserved to Frost & Sullivan and Frost & Sullivan Research & Consulting Ltd. Any content, including any documents, may not be published, lent, reproduced, quoted or resold without the written permission of the companies.