Welcome to SimGas

We offer millions of rural households in Africa and Asia the opportunity to improve their lives and income positions.
SimGas believes in empowering people by offering them graceful, reliable and sustainable tools that help to improve their lives and income positions.
What we do

We are a Dutch, innovative, design and production company that focuses on clean, affordable and high quality energy and sanitation solutions. We offer millions of rural households in Africa and Asia the opportunity to improve their lives and income positions.

Our teams in The Netherlands and East Africa work together to design and mass produce high quality, modular, domestic biogas and bio-sanitation systems. By doing so, we create healthy and safe environments for rural households while contributing to the reduction of indoor air pollution, deforestation, and carbon emissions. With a factory in Tanzania, we are the largest supplier of domestic biogas systems in Africa. SimGas has the ambition to become the number one supplier of sustainable and decentralised utilities in Africa and Asia.

SimGas is a triple bottom line company that takes social and environmental impact just as seriously as economic impact; we prove that social entrepreneurship can be profitable.
SimGas designs, produces and installs biogas systems that generate clean energy and organic fertiliser. This saves lives, nature, money and time.
Biogas is a fuel that burns clean and prevents indoor air pollution caused by cooking on wood fuels and kerosene lighting.
Traditional *domestic biogas*

Domestic biogas systems make use of a well-known, and mature technology that finds its roots in the early 17th century. Two centuries later, the first domestic biogas plant was built in India. And in the 1890s, the English recognised the practical and commercial value of biogas, such as using biogas for the purpose of cooking and lighting. **Since the 1970s, worldwide dissemination of domestic biogas plants has taken off to reach today’s count of roughly 50,000 in Africa, 4 million in India, and 27 million in China.**

Traditionally, biogas digesters are made of masonry and/or cement. If done right, this can be a very reliable technology. However it is difficult to reach scale using this method. Construction takes a long time and is thus costly, and customers are responsible for finding the well trained masons and the right building materials.

**To make biogas digesters accessible for the millions, there needs to be a clear product and service offering, and consistent quality. To reduce costs and lead times, mass production of prefab biogas digesters is key. SimGas has developed a high quality biogas digester that does precisely that: it makes biogas accessible to millions of rural households.**

Biogas is a fuel that burns clean; it is the clean alternative for cooking on wood fuel and charcoal - the main cause of indoor air pollution, which kills four million people annually, worldwide.
Each day, the farmer nourishes the bacteria in the digester with manure from livestock and water. The biogas that is produced is a clean fuel that is used for cooking and other energy needs, and replaces wood fuel, charcoal and kerosene. **Using biogas thereby lowers household energy expenditures and makes households independent of unreliable or non-existent power grids.** Biogas not only takes away the health hazards of indoor air pollution, it also saves time: about two to four hours a day. Slurry that has been fully digested (digestate) exits the biogas system in the form of organic fertiliser. The improved crop yield is consumed by the household or sold at the local market, increasing income. The improved cow fodder is fed to the cows, which in turn will produce more milk and manure. **The cycle repeats itself, every day.**
SimGas biogas systems are fully integrated farm solutions. Through anaerobic digestion, bacteria work symbiotically to convert organic waste into biogas.

1. Remote monitoring
Monitor system performance and carbon emission reduction, and manage customer service from a remote location.

2. Biogas milk chiller
Off-grid small-scale biogas milk chiller to store fresh, cooled milk.

3. Biogas stove
Clean cooking on a biogas stove; no more smoke in the house.

4. Biogas lamp
Biogas lamp to provide task light.
Our solution

SimGas biogas systems enable our customers to become more productive, independent, cost-efficient, and healthy farmers. Our biogas systems produce clean energy and organic fertiliser: two valuable assets to increase income whilst saving lives, nature, money and time. Our off-the-shelf domestic biogas digesters are mass produced in recycled plastic and consist of multiple parts, creating a modular system that is adaptable and scalable to the customer’s needs.

SimGas biogas systems are designed to reach millions of rural households in developing countries. Our systems are high value, low cost products with an average payback period of less than two years. Due to local mass production, fast installation and efficient transportation, the systems have a high dissemination speed.

The scalable nature of our design and our business model, make biogas accessible not just for the lucky few, but for the worthy many. That is how we create immediate, meaningful impact that is there to stay.
Benefits of our biogas systems

**Affordable for smallholder farmers**
The payback period is less than two years. Lease-to-own financing is available.

**Durable design**
The system is made from durable, recycled HDPE plastic.

**Long term service model**
SimGas stays close to customers through its local hub networks. A customer service center allows for quick response to each inquiry.

**Movable**
The system can be (re)moved and sold second-hand and thus can serve as collateral for a loan.

**Modular system**
The modular system is scalable from 2m³ to 25m³ (in 1m³ increments) for farmers with 1 to 30 cows.

**Fast installation**
The pre-fabricated kit can be installed in a day by trained technicians.

**Efficient in transport**
The lightweight and stackable parts make transport efficient.

**Remote monitoring**
SimGas can measure impact by remotely monitoring system performance and carbon emission reduction.
Biogas is a clean cooking fuel

Worldwide, three billion people are being exposed to toxic fumes, fuels and dangerous open fires while cooking their meals. The direct consequences cause four million people to die each year. Biogas is a clean cooking fuel and puts an end to one of the world’s top causes for death and disease.

No money spent on fuel

Biogas is free, it simply turns manure into heat, power, or light. SimGas empowers its customers in developing countries to become more independent, cost-effective and productive households. Moreover, biogas saves on average USD 250 per household per year on energy expenditure.

Extra income from fertiliser

The slurry from the biogas system is an excellent fertiliser. Crops can serve as cow fodder or food for the household. Alternatively, slurry from a biogas system can be sold. The value of the slurry is estimated to be USD 300 per household per year.

More time for school, work or leisure

Women and children save about two to four hours a day by not having to collect wood or buy charcoal to light and fire or prepare a meal. This time can be used for education, work, or simply leisure.
“I’ve told just about all my neighbours how great and helpful the biogas system is. It has helped me to save costs and there is no more firewood smoke. The slurry is very helpful for my banana plants. They look better than ever, I am even planning on selling them. The SimGas biogas system is what we all need!”

Mama Alinda Massawe
Positive impact on the environment

No need to cut down trees

Globally, an estimated 18 million acres of forest are lost each year. Replacing woodfuel by biogas reduces deforestation and helps to lessen global greenhouse gas emissions.

No carbon emitted

Cooking on biogas reduces carbon emission with 5-10 tonne CO₂-equivalent per household per year. This is about as much CO₂ as an average passenger car emits in two years. SimGas has a registered Programme of Activities and sells Certified Emission Reductions under the Clean Development Mechanism of the UNFCCC.
“Developing countries are growing fast and as a consequence CO₂ emissions are increasing rapidly. This is due both to deforestation as people chop trees for fuel and to the rising popularity of diesel generators, electrical lanterns, kerosene lamps and other fossil fuelled devices. SimGas’ biogas installations are really great: they are an innovative way of energy generation, but without CO₂ emissions. At Climate Focus we are proud to assist SimGas securing finance through carbon credits: rewards for low-carbon energy production. It is a true pleasure working with them!”

Adriaan Korthuis, Director Climate Focus
How does SimGas build smart and sustainable solutions for millions of smallholder farmers in Africa and Asia? Our approach to doing business is based on the following five pillars.

1. **We invest in research and design**
   SimGas invests heavily in research and design to extend the possibilities of value creation to our customers. Our design engineers operate in customer context: with one foot in The Netherlands, and the other in East Africa or Asia. We design our products to be ‘easier to use than not to use’, to be low cost and high quality, and we standardise and mass-produce our products to scale our business and create greater impact.

2. **We apply scalable business models**
   SimGas operates in a huge, yet diversified market, in which demand for affordable energy solutions greatly exceeds supply. In order to reach impact and make profit, SimGas applies tailor-made, scalable business models in all regions we operate in. This ensures a steady pace of dissemination and contextual fit. This is how we change the game.
3. We partner up for impact
To make our products accessible for the millions, we team up with partners to exchange expertise and experiences, and we continue to grow our network. Together we implement sustainable and profitable business cases in our target countries.

4. We are locally present
We are a local player and a global business. We have local in-house production, apply a local hub-model with SimGas certified franchisees, and collaborate with acknowledged local organisations. Local partners have the best knowledge and expertise to make our products fit in the local context; we leverage our global network to reach scale.

5. We provide service
Service is an inseparable part of SimGas. We pre-arrange low interest microfinance loans and mobile payments, and offer two years of after-sales service and a full-service warranty free of charge. Our trained technicians do not only deliver and install the system, but also train customers to optimise biogas production. We won’t let waste go to waste.

“Their innovative design and market approach has made SimGas a game changer in the African domestic biogas sector. It’s the unique qualities of their product and the inspiring nature of the SimGas team that made it a privilege to assist them over the past five years.”

Felix ter Heegde, Regional Senior Biogas Advisor East and Southern Africa, SNV
Biogas innovations *Three projects*

We get our hands dirty to extend the value of biogas technology and implement new ideas. We think of biogas as much more than a clean cooking fuel. SimGas researches opportunities to apply biogas to cool milk, improve sanitation, charge mobile phones, or power lights.

Through constant dialogue with our customers, our engineers, our business developers, and our partners, we understand their needs and wants, and transform great ideas into tangible products.

*On the following pages we present three of our projects: biogas milk chilling, bio-sanitation and remote monitoring.*
SimGas biogas turns users into more productive, independent, cost-efficient, and healthy farmers.
The emerging dairy industry in East Africa affects the livelihoods of more than 2 million smallholder farmers. *While demand is expected to more than double in coming years, only 15% of milk produced reaches the formal market and 30-50% is not delivered to milk collection centers.* The reason being that raw milk is not cooled at farm level because 85% of rural East Africa lacks access to a (reliable) power grid. There are no solutions available on the market to provide milk chilling at micro-scale, for farmers with up to 10 dairy cows, that run independently from the power grid, and that comply with the international milk cooling standard.

*SimGas is developing the first off-grid, biogas-powered milk chiller at farm level to help milk supply meet demand: the SimGas Biogas Milk Chiller (BMC).*

The BMC sparks a revolution in the dairy industry; it is the first link towards a reliable milk cool chain from cow to dairy. It helps small dairy farmers to reduce milk losses and meet international quality standards required to access the formal sector. *The amount of manure produced by a cow creates enough biogas to refrigerate her own milk, while leaving enough biogas to cook a meal for the household!*

Together with our partners *SNV, Mueller* and *BoPInc*, SimGas aims to prove that cooling milk on biogas is an efficient and affordable way to combat milk spoilage.
“By combining the knowledge of Mueller and SimGas we’ve been able to develop a biogas milk chilling system that meets European standards. It will enable farmers to raise their milk quality. And, it will enable us to deliver a high class product on the market. A great achievement all partners involved can be proud of!”

Peter Fopma, New Business Manager, Mueller
If we can convert livestock manure to energy, why not convert human faeces to energy as well? More than 70,000 boarding schools in East Africa struggle to provide sufficient sanitation conditions for their teachers and pupils. Consequently, the unhygienic conditions cause children to become ill and stay home from school.

*SimGas is developing a safe bio-sanitation system to improve health and hygiene for schools and institutions.*

When our partners WASTE and K-Rep bank discussed the possibilities to solve sanitation problems at Kenyan schools, they brought SimGas to the table to develop a product that would not only provide safe sanitation, but would also supply the schools with biogas for cooking and organic fertiliser for on-school crop production.

Together with partners **SNV** and **WASTE** we aim to improve the living conditions of school children at **49 schools in Kenya and Tanzania** by providing safe and financially viable bio-sanitation systems.
“Bio-sanitation is the power engine improving school health, increasing school income, and the magic answer to protect our trees - reclaiming our mother earth.”

Paul Ogalo, Executive Director Centre for Regeneration and Empowerment of Africa Through Africa (CREATA)
How do you know if millions of remotely placed biogas systems are performing? Throughout Africa and Asia, biogas enterprises and promotion programmes struggle to answer this question, because they lack sufficient data on the performance of their systems. Without performance data, operational control, effective customer service, attractive financing, and access to the international carbon market is very limited.

Together with a team of experts in the field of the internet of things and sensor system development, SimGas is developing a remote monitoring system that collects performance data locally, whereupon it transfers the data automatically to a central database. A live dashboard shows the status of all connected biogas systems.

Live data is a vital asset to reach operational excellence, to optimise product offering and customer service and to offer attractive lease-to-own financing options for our customers. Having performance data also ensures that monitoring requirements of carbon credit buyers can be met, which increases access to the international carbon market. With the remote monitoring system we can measure and analyse our impact to create even more impact, while making renewable energy solutions affordable for emerging markets.
“Imagine this: ‘Good day Baba Massao! We’re calling because our data tells us that there’s a problem with your gas turret. Did you notice the low gas production yesterday? Yes, so, could we send a technician to your farm today?’ That’s how we change the game in rural Africa; no other company is doing this.”

Mirik Castro, CEO SimGas East Africa
Excited to work with us?

Do you want to co-develop a groundbreaking product or service with us?
Here’s the deal: You hire us for the co-development of a sustainable, groundbreaking product. Together with local partners, we design the product for you and with you. You get to utilise our engineering capacity, local know-how, knowledge of the decentralised utilities market in Africa and Asia, and experience with sustainable development and social responsible entrepreneurship.

We only have two conditions:

The product should empower people by offering them graceful, reliable and sustainable tools that help to improve their lives and income positions.

You fully embrace our core values: Doing good, Trailblazing, Winning, Trust, and Fun.
“I strongly believe in co-creation and involving all relevant stakeholders during new product design projects: users, design-engineers, manufacturing operators, technicians, marketeers, financial experts, business developers and business partners. Together we know more, learn faster and are more successful!”

Jeroen Thoolen, CTO SimGas
Track record

2009

SimGas B.V. founded
SimGas B.V. founded by Sanne Castro and Mirik Castro
Seed-funded by founders, friends and DOEN foundation
Finalist Postcode Lottery Green Challenge

2010

Two biogas digester designs
Two biogas digester designs developed with engineering agency Van Berlo, and with the help of SNV, TNO, TU Delft and BORDA

2011

Two angels and two international patents
Two angel investors joined
Two international patents on biogas products
Finalist Rabobank Herman Wijffels Innovation Award
Joint venture agreement with Sumaria Group in East Africa

2012

Start local production and sales in Tanzania
Mirik Castro moves to Tanzania to set up SimGas Tanzania Ltd.
600 sales in Tanzania
UNFCCC registered Biogas Program of Activities (PoA) for trade of carbon credits
Development of biogas appliances for cooling, cooking and charging

- Founded SimGas Kenya Ltd., sales start in Kenya
- Pilot for a low-voltage biogas to electricity device in Tanzania and Bangladesh
- Start product development of biogas milk chiller, biogas stove and biogas socket
- Siemens Empowering People Award Finalist

Expansion to Rwanda and India

- Pilot with dairy farmers in Gujarat, India
- Biogas milk chiller prototypes in Tanzania
- Pilot for bio-sanitation systems at schools in Kenya and Tanzania
- Founded SimGas Rwanda Ltd.

New production line in Tanzania

- New production line in Tanzania
- Inclusion in the Africa Biogas Partnership Programme
- Global Alliance for Clean Cookstoves Spark fund grantee
- Ashden Awards Finalist
Partners

**Strategic partners**
SimGas involves local stakeholders and strategic partners throughout the development and implementation of our products and services in the African and Asian market. We bring the technology and expertise, they provide the means to reach customers and the resources to produce our products.

**R&D partners**
SimGas’ unique biogas technology has been, and continues to be, developed in cooperation with acknowledged, local and international engineering agencies, research institutes, and universities. Here are a few organisations we gladly work with on research and development.

“Doing it alone is not an option. Together we can really build something big and meaningful. We are entrepreneurial enthusiasts and fun to work with, always open for new ideas for collaboration.”

Sanne Castro, CEO SimGas
Strategic partners

- Africa Biogas Partnership Programme
- Africa Enterprise Challenge Fund
- Aqua for All
- BoPInc
- Climate Focus
- Climate-KIC
- EEP Programme of Southern and East Africa
- European Development Fund
- FINISH Services and Management Company
- Global Alliance for Clean Cookstoves
- Hivos
- Human Development Innovation Fund
- Netherlands Enterprise Agency
- OPEC Fund for International Development
- Silafrica
- SNV
- Stichting Doen
- Sumaria Group
- Tanga Fresh
- Tanzania Domestic Biogas Programme
- WASTE
- Yes!Delft

R&D partners

- BPO
- Climate-KIC
- Delft University of Technology
- Mueller
- Shamba Technologies
- SNV
- TNO
- VanBerlo
- Wageningen University
- Yes!Delft
SimGas aims to be a game changer. SimGas is already the largest supplier of biogas systems in Africa. **We have the ambition to lead the market for decentralised utilities in Africa and Asia by 2030.** Our strategy to accomplish this goal comprises three steps:

1. **Local introduction**  
   We test and introduce new SimGas products in our home-markets Tanzania, Kenya, and Rwanda.

2. **Scale up**  
   In close collaboration with the ABPP and SNV we will ramp up sales in neighbouring countries Zambia, Ethiopia, and Uganda.

3. **Expand globally**  
   We are setting our first steps into Asia by running pilots in India and by building partnerships in Bangladesh and Nepal.
“SimGas is creating a clean energy revolution where it matters most: for people at the base of the pyramid. We have no doubt that they will succeed in their ambitious mission and we’re extremely proud that they were part of the Climate-KIC Accelerator.”

Frans Nauta, Deputy Director Climate-KIC Entrepreneurship
We create impact through local presence, great partnerships and focus on research and development.
## Where we are

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