



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Global Cleantech Innovation Programme

Promoting climate and clean energy
technology innovation and entrepreneurship



Global Cleantech
Innovation Programme

“In today’s economic landscape, resource constraints and climate concerns are no longer externalities. They are opportunities for technology innovation and new business models, and a major driver of sustainable and inclusive economic growth. The Global Cleantech Innovation Programme (GCIP) supports emerging cleantech SMEs and start-ups to introduce innovative solutions to the market, by strengthening the local entrepreneurial and innovation ecosystems and policy frameworks. The GCIP is transforming the way we address the most pressing environmental challenges of our time.”



The United Nations Industrial Development Organization (UNIDO) has partnered with the Global Environment Facility (GEF) to foster innovation and entrepreneurship ecosystems, promoting affordable and scalable solutions that enable our partner countries to leapfrog to cleaner, more resilient economies while protecting our global commons.



UNIDO promotes industrial development to reduce poverty, and enable inclusive globalization and environmental sustainability. UNIDO's work responds to the Sustainable Development Goals (SDGs), and in particular SDG-9 which calls on all to help "build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation". The organization supports the transition to a sustainable energy path as a key solution to a climate that is resilient to and unaffected by economically sustainable growth. It prioritizes technology transfer and capacity building of industries, including small and medium-sized enterprises (SMEs).



The GEF is a catalyst for action on the environment. Through its strategic investments, the GEF works with partners to tackle the planet's biggest environmental issues. GEF funding helps reduce poverty, strengthens governance and achieves greater equality between women and men. Thus, GEF occupies a unique space in the global partnership for a more sustainable planet. It aims to expand private sector investment and commitment to environmental solutions across its focal areas and initiatives, while seeking to identify potential opportunities to enhance private sector engagement.



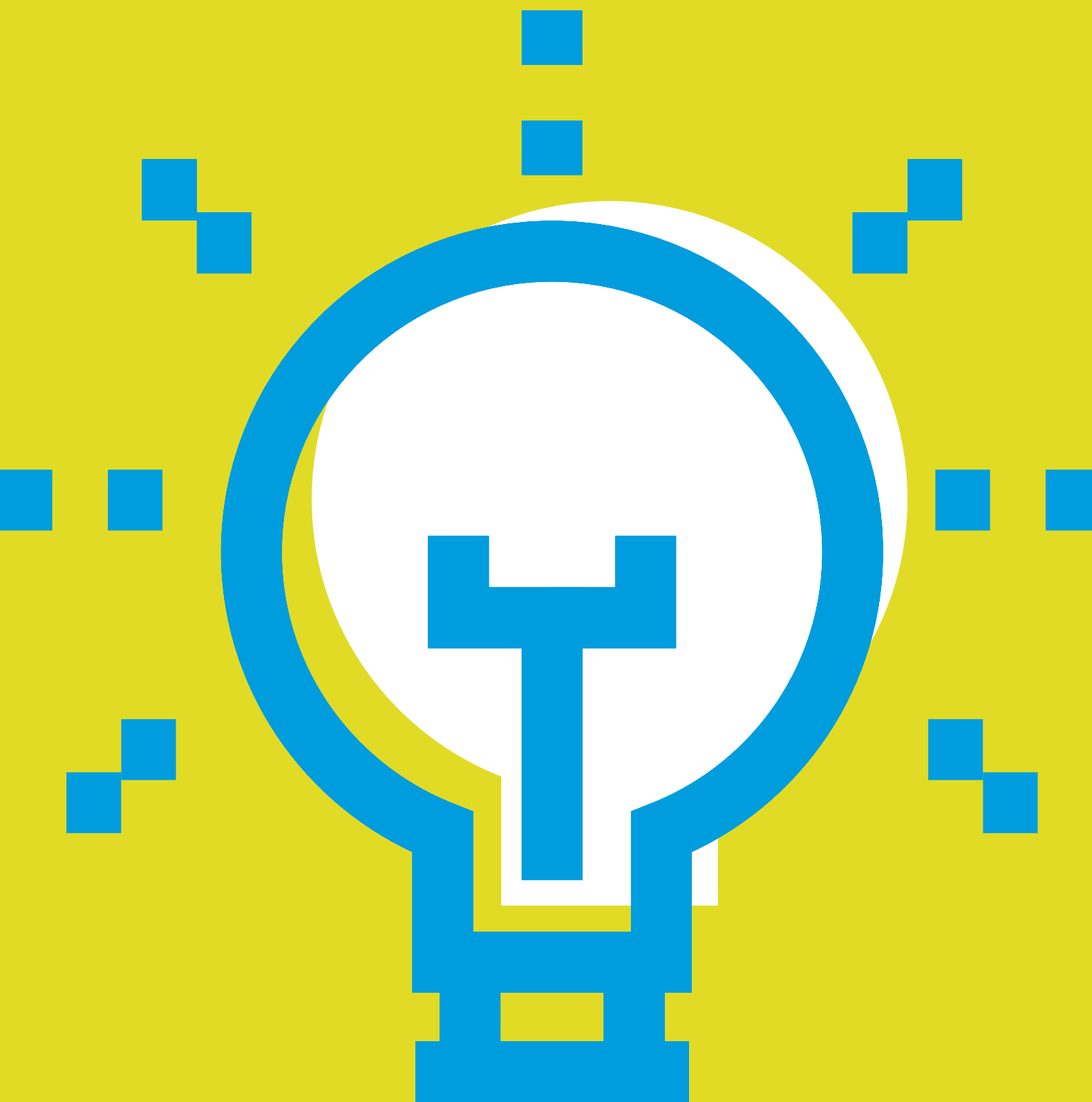
What is the 'global commons'?

Resource areas not governed by any nation. These areas include our shared natural resources, for example the high seas, the atmosphere, outer space and Antarctica. The health and sustainability of these resources are critical for our socio-economic development.

Leveraging Innovation and Entrepreneurship for Transformative Impact

Global trends and experiences have shown the catalytic potential of technology innovation and entrepreneurship in seizing **opportunities for economic growth embedded in environmental challenges**. New industries and business models are emerging in sustainable energy and climate technology sectors. The agility of start-ups and SMEs allows them to be key drivers in this transition to a low-carbon economy.

For developing countries to fully participate in this alternative development trajectory and capture a growing share of the new emerging market, as well as the concomitant employment and industrialization opportunities, they need to **establish effective cleantech ecosystems to support endogenous cleantech innovations**. Such ecosystems would support the transformation of cleantech innovations into sustainable businesses by providing the private sector with the requisite network of expertise, finance and organizational resources.



The Global Cleantech Innovation Programme

Supporting cleantech-based start-ups and SMEs

The GCIP supports start-ups and SMEs from around the world to develop cleantech innovations into market-ready products that mitigate the causes of climate change, pollution, and resource depletion, and adapt to its negative consequence. This wave of innovation is followed by the creation of new markets, and with these, a variety of business opportunities.

With the GCIP, the start-ups and SMEs provide cleantech solutions to energy and climate challenges, as well as contribute to the transformation into a low-carbon path of clean energy systems, sustainable cities, healthy oceans and sustainable fisheries, climate resilient food systems, and landscape restoration. At the same time, the start-ups and SMEs are contributing to industrial and economic development of their countries.

It is well understood that while sustainable energy and climate technologies have the potential to stimulate economic growth, create new job opportunities, and mitigate ecological risks; a parallel thrust is essential to establish enablers to address the innovation chasm between research results and socio-economic outcomes.

Because global environmental challenges are experienced locally, homegrown solutions are often not only more efficient, but absolutely necessary. The GCIP works directly with start-ups and SMEs that innovate to solve local problems, and help them introduce their cleantech solutions to the local market. When the solutions with global impact potential are identified, the GCIP leverages UNIDO's international network to support scale-up and expansion of these solutions. This is where the GCIP plays an invaluable and enabling role.

Strengthening cleantech ecosystems

In parallel to working directly with cleantech-based start-ups and SMEs towards commercialization, the GCIP also creates an enabling environment that can systematically support cleantech innovation and entrepreneurship. Our goal is to create, in each partner country, an ecosystem that enables start-ups and SMEs to succeed in developing and commercializing new and innovative cleantech solutions. We do this by strengthening national institutions and developing new policies, and partnering with national agencies to increase their capacity to identify and foster cleantech innovation in a sustainable way. More than that, we advise governments to introduce policies that enable innovations to become economically viable businesses.

“Entrepreneurial innovation is the answer to the world’s most pressing environmental challenges, and the key to sustainable economic growth.”

The GCIP seeks to harness the catalytic potential of innovation and entrepreneurship in SMEs and start-ups to be catalysts of sustainable economic development.



Innovation for impact

The GCIP promotes innovation in clean technologies through a cross-sectoral and multi-stakeholder approach to build sustainable innovation ecosystems for SMEs and start-ups.

A cleantech ecosystem

A cleantech ecosystem is an interconnected network of individuals, institutions, policy and regulatory frameworks, soft and hard infrastructure, market forces, social norms and values, that interact as a system to influence the cleantech innovation and entrepreneurial value chain of a country.

Impact

Partner countries

Armenia, India, Malaysia, Morocco, Pakistan, South Africa, Thailand, Turkey, Ukraine.¹

Between 2014 and 2019, more than 900 cleantech-based enterprises in eight partner countries have been trained, mentored and supported towards commercialization of their cleantech innovations, and benefited from exposure to investors, policy makers, and the media.

In addition to contributing to reductions in greenhouse gas emissions, the technology innovations fostered under the GCIP also reap positive impacts for the environment, including improved water efficiency, soil protection and waste beneficiation.

The growth of the cleantech industry creates employment opportunities, leading to poverty reduction through income generation.

An initial assessment of a few participating companies to demonstrate the current and potential impact of the GCIP, highlighted the following:

Early projections show the exponential potential of the GCIP, considering that more than 900 companies have graduated from the programme. Upon completion of the impact assessment exercise, a more precise compilation of the impact achieved, and impact projections will be available.

At the global level, GCIP is projected to have avoided GHG emissions of between 3.8 million and 7.6 million tonnes of CO₂ equivalent.

Building on the success of the GCIP thus far, UNIDO plans to expand the geographic scope of GCIP to 25 countries by 2020 to become a truly global accelerator of cleantech innovations.

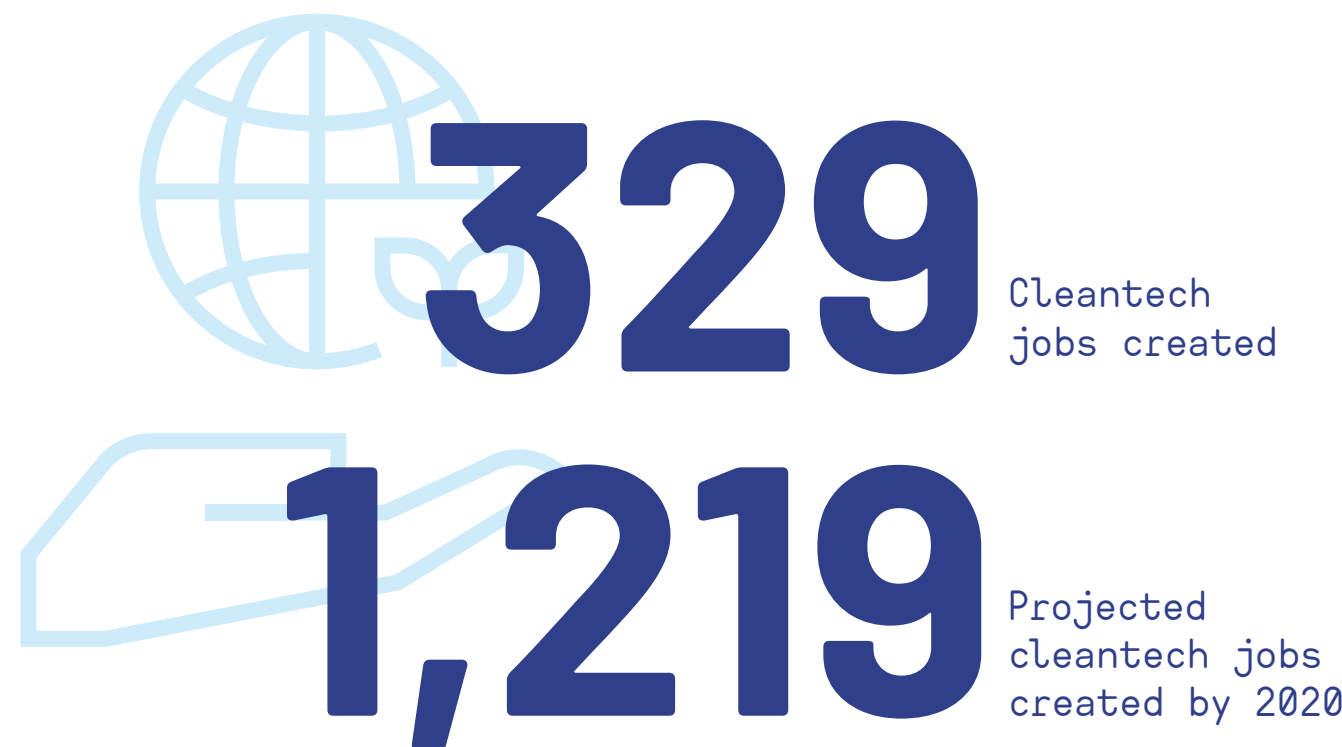
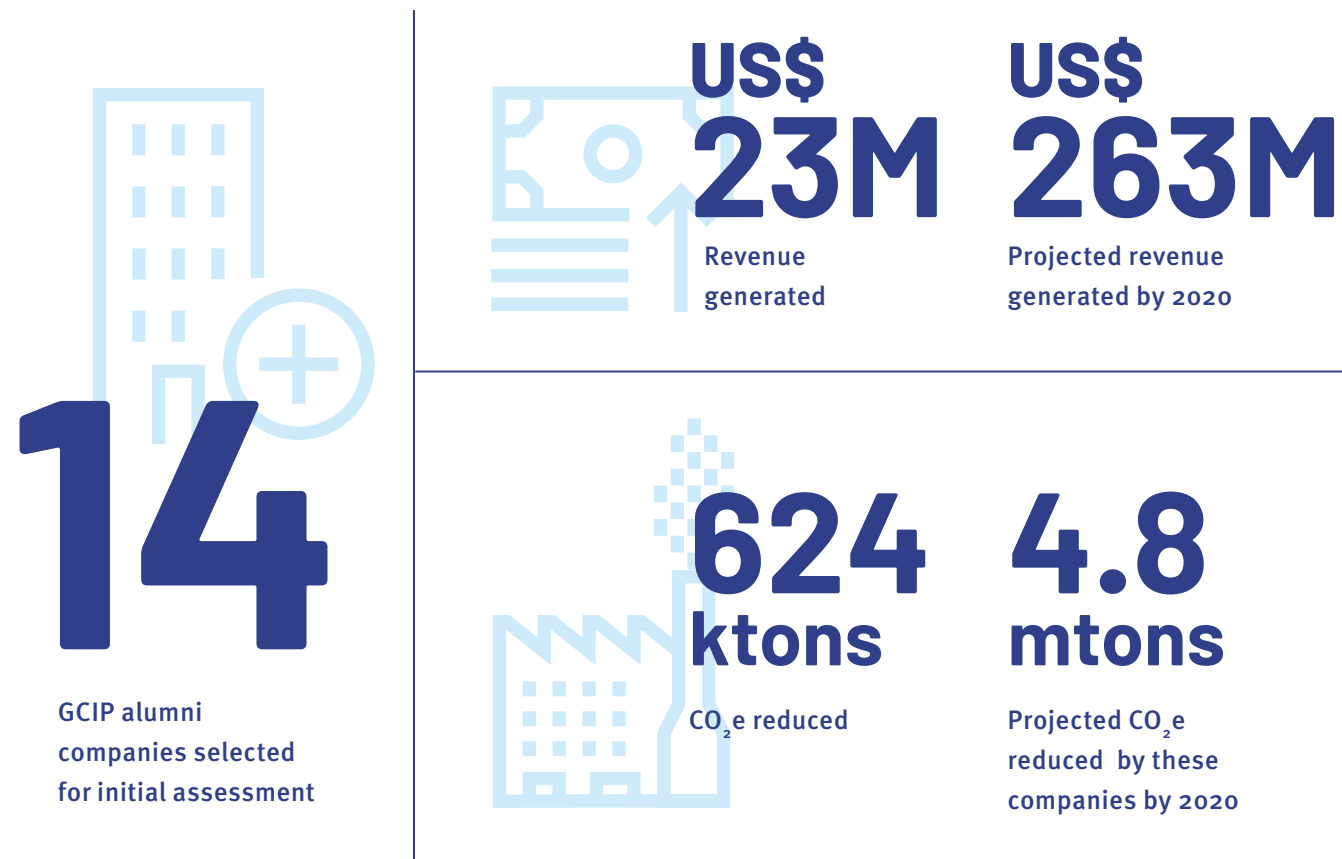
The innovations identified and developed in GCIP partner countries also have the potential to address challenges in other parts of the world.

Country Targets for GHG Emissions Avoided

GCIP Country	Target for GHG Emissions Avoided (approx. 2013-2023, tonnes of CO ₂ e)		Unit Abatement Costs (USD/tonnes of CO ₂ e)	
	Lower estimate	Upper estimate	Lower estimate	Upper estimate
Malaysia	425,000	849,000	1.18	2.36
Armenia	18,409	36,818	14.88	29.77
India	350,000	700,000	1.43	2.86
Pakistan	452,000	904,000	1.50	3.03
South Africa	815,000	1,630,000	1.22	2.44
Turkey	730,000	1,460,000	0.68	1.36
Thailand	811,500	1,623,000	1.23	2.46
Morocco	200,923	401,845	2.27	4.55
(Total)	(3,802,832)	(7,604,663)		

¹ Ukraine joined GCIP in 2018 and did not participate in the impact survey.

An initial assessment of a few participating companies to demonstrate the current and potential impact of the GCIP, highlighted the following:



GCIP building blocks for success

An effective cleantech innovation and entrepreneurship ecosystem

A cleantech ecosystem is an interconnected network of individuals, institutions, policy and regulatory frameworks, soft and hard infrastructure, market forces, social norms and values, that interact as a system to influence the cleantech innovation and entrepreneurial value chain of a country.

The GCIP employs a cross-sectoral and multi-tiered approach to build a sustainable ecosystem for cleantech innovation and entrepreneurship in small businesses.

Identifying and accelerating cleantech innovations

From identifying technology innovations to commercialization and application, **the GCIP supports entrepreneurs across the innovation value chain to develop demand-driven and investment-ready climate solutions.**

Early-stage cleantech and business model innovations are identified and accelerated through coaching, mentoring, and training so that they become fast-growing, scalable and investible enterprises. For select enterprises with high-impact potential, advanced support is provided for product development, piloting and commercialization of the innovations. The GCIP also supports the identification and development of demand-driven solutions that can address the most pressing environmental challenges at national levels. Through National Innovation Challenges, innovators are invited to propose technology innovations that can address a particular problem with high-impact potential. This approach allows direct market access for the technologies, ensuring efficiency and effectiveness in impact scaling.



Connecting synergies

The synergetic value of collaboration among developing countries and advanced economies is quickly leading to innovation linkages, and receiving recognition as a catalyst for global game-changing solutions.



Innovation focus areas

Energy efficiency, renewable energy, waste beneficiation, water efficiency, green buildings, transportation, and advanced materials and chemicals.

Linking enterprises to financing opportunities

Continued support is provided for enterprises to access early stage financing and risk capital instruments and opportunities. Strategic partnerships are established with venture capital funds, industry associations, banks and angel investors to increase their awareness as well as the likelihood of investments.

Supporting an enabling policy and regulatory environment

The GCIP assesses the strengths and weaknesses of the national innovation landscape, and determines the set of services required to create an enabling environment for cleantech-based start-ups and SMEs in the partner country. It supports governments and agencies that have policy mandates with advice and tools to enhance the frameworks that create business incentives and obligations that address both the supply and demand side of cleantech markets. This includes assisting in the development of standards, norms and other instruments that facilitate the overall growth of cleantech markets. The GCIP also advises governments to focus on high-impact sectors, especially from the perspective of encouraging and supporting increased engagement and participation of SMEs.

Innovation and entrepreneurship policy frameworks contribute to an enabling environment where cleantech companies can thrive and nations can benefit.

Enhancing national capacities for innovation and entrepreneurship

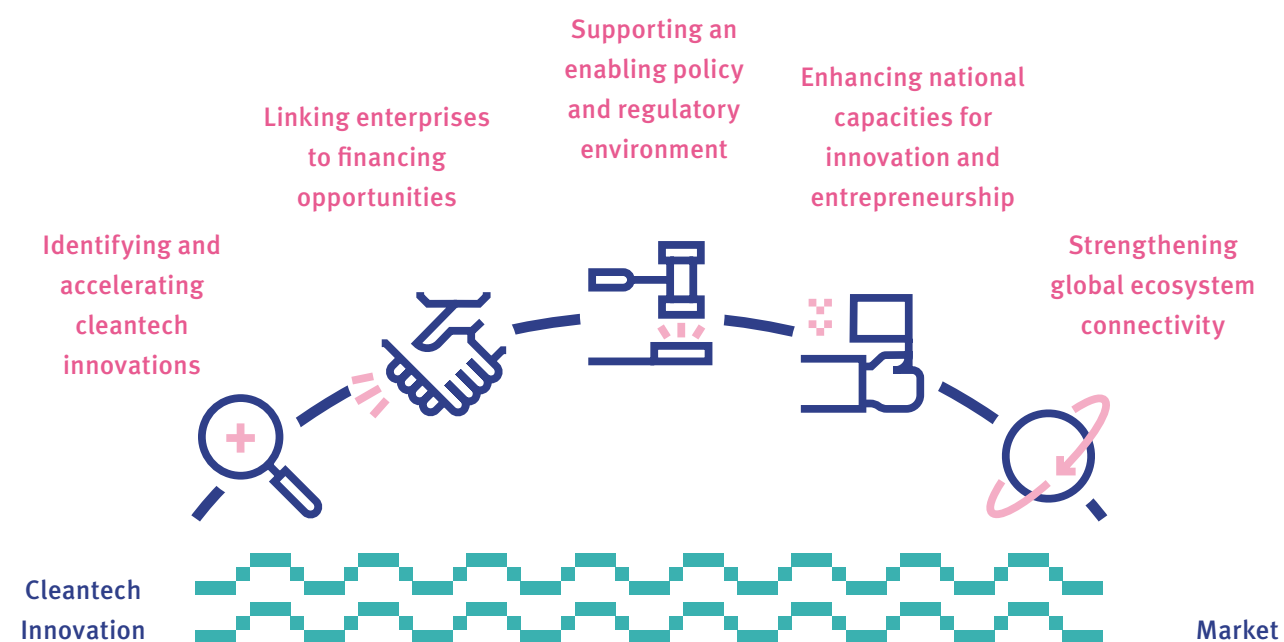
Key ecosystem players such as national institutions, industry associations, universities, investor networks, large corporations etc. are engaged and consulted as stakeholders. They receive targeted training to understand their respective roles in the ecosystem, and to promote commercialization, and entrepreneurship and upscaling of cleantech innovation.

Strengthening global ecosystem connectivity

Leveraging the GCIP's unique strength as a global initiative, the national ecosystems of partner countries are connected at all levels (government agencies, start-ups and SMEs, investors, universities etc.) to facilitate knowledge transfer and sharing, technology collaboration, product co-development, market expansion, and investment facilitation.

Today's clean technology innovations will more than likely fuel the next industrial revolution that will shape tomorrow's global economy and job market.

Bridging the innovation gap



GCIP highlights

The GCIP Accelerator

A key intervention of the GCIP is its annual competition-based Accelerator, which identifies the most promising innovators and entrepreneurs across a country.

The programme consists of an Official Launch, Investor Connect, National Academy, Business Clinic and Mock Judging. In addition, the selected start-ups are continuously mentored and trained. Access to capital and showcasing opportunities are facilitated on a regular basis to enhance the start-ups' business skills and connect them to potential business partners, financiers and investors.

A tailored mentoring programme is provided through an elite group of general and specialist mentors. Trainers are drawn from industries, universities and professional institutions, as well as business leaders from within the country and abroad.

“The GCIP is currently the best business training programme for energy efficiency technology in South Africa. Solar Veranda was honoured to be part of the 12-week training programme. The skills that we developed helped lift Solar Veranda to a higher business level. The credible GCIP award leads to fantastic exposure and this translates to funding.”

Solar Veranda,
GCIP-SA Most Promising
Youth-Led Business 2015

The Process





Influencing policy

Under its policy component, the GCIP seeks to enhance the enabling environment in partner countries by supporting national policies which promote innovation in clean technologies. The GCII-GCIP Country Profiles serve as a valuable policy tool to stimulate a broader economic action plan including strategic support for cleantech solution providers.

Investor Connect

In bridging the gap between the start-ups with technology innovations, and investors that can support market-based dissemination of the solutions, Investor Connect events are organized at national and global levels. The GCIP engages with impact investors and cleantech-targeted financial mechanisms to further support the commercialization and market-based scale-up of the cleantech solutions.

GCIP Global Forum

National GCIP winners are invited to the annual GCIP Global Forum – a confluence of the cleantech industry and the climate. The event aims to create business opportunities, highlighting solutions, engaging citizens and cultivating partnerships, while spurring investment in clean technologies to address climate change.

The GCIP national winners and finalists are connected to a community of cleantech innovators and entrepreneurs from all over the world. The GCIP national winner also meets with the national winners of the other GCIP countries and compete for the Global Prize.

Global Cleantech Innovation Index

The biennial Global Cleantech Innovation Index (GCI) was first created in 2012 to investigate which countries have the greatest potential to produce entrepreneurial cleantech start-up companies and which will commercialize clean technology innovations over the next decade.

The World Wide Fund for Nature (WWF) and the Cleantech Group (CTG) have produced the third edition of the GCI for 2017, and UNIDO has partnered with the WWF and the CTG to provide a special addendum to the GCI. The addendum focuses on the cleantech innovation ecosystem of the GCIP-participating countries.

Empowering women and engaging youth

The promotion of gender equality and women's empowerment in the technology innovation and entrepreneurship space is integral to the vision of the GCIP. Targeted awareness-raising and outreach activities for women-led start-ups and women engineering students, among other activities, aim to encourage and increase women's participation in the GCIP.

Particular efforts are also made to recruit women judges and mentors, so that gender balance is achieved at all levels of the GCIP cycle. In addition, all training materials, resources and documents ensure that both men and women are informed of the gender dimensions of the GCIP, and the gender dimensions relevant to technology innovation and entrepreneurship in general. In some GCIP partner countries, specific prizes and follow-up support for women-led start-ups are considered.

The GCIP also engages extensively with young cleantech leaders of tomorrow. The global youth unemployment crisis has led many highly educated young minds to consider entrepreneurial initiatives, and the GCIP can provide strong guidance and mentoring needed by young entrepreneurs. The GCIP works with youth organizations as well as government partners to raise awareness among youths of the opportunities and trends in the cleantech innovation field.

All these efforts combine to ensure that, through the GCIP, all men and women are given equal access and information to succeed as cleantech innovators and entrepreneurs.



The GCIP provides opportunities for locally grown solutions to reap global impacts by providing mentoring and market access across borders.



Partner Countries

Armenia

The key objectives of the **Enterprise Incubator Foundation** are to improve competitiveness in the Armenian IT/High-Tech sector in the global marketplace, build linkages with international entities, provide assistance in investment attraction, export promotion, and enable venture capital institutes and start-up acceleration, as well as to stimulate formation of the Armenian IT industry development infrastructure, capacity building, IT/High-Tech industry development in the regions and formation of e-society in the country.

www.eif.am



India

The **Ministry of Micro, Small & Medium Enterprises (MoMSME)** promotes a vibrant micro, small and medium-enterprise (MSME) sector through the design and implementation of policies, and the facilitation and monitoring of programmes, projects and schemes. The target is to assist and scale up MSMEs. MoMSME encourages entrepreneurship, employment and livelihood opportunities and enhances the competitiveness of MSMEs in the changed economic scenario.

www.msme.gov.in



Malaysia

The **Malaysian Industry-Government Group for High Technology (MiGHT)** is a partnership between the industry and the public sector, working together to prospect for business and technology in the domestic and international market-place. It is an independent, non-profit organisation driven by a membership drawn from the public and private sectors. It acts as a think-tank that underlines the key strategies that must be taken to develop the country's high-technology industry and further the position of Malaysia as a globally competitive player. MiGHT constructs these strategies based on the combined input from the high-technology industry, governmental and nongovernmental organizations and academic institutions.

www.might.org.my



Morocco



The **State Secretariat of Sustainable Development** is the ministerial department in charge of the development of the national sustainable development strategy. It monitors the implementation and evaluation of the strategy in collaboration with the relevant ministerial departments. The State Secretariat also promotes cooperation with public bodies, local and regional authorities, the private sector and non-governmental organizations in the field of environment and sustainable development. The Secretariat works to integrate the environmental dimension into development, education, training and scientific research programmes and development of green entrepreneurship and friendly initiatives.

www.environnement.gov.ma/fr/

Pakistan



The **Pakistan Council for Science and Technology (PCST)** is mandated to advise the government on the development of science and technology (S&T) at the national level. The Council is involved in S&T and innovation policy making, planning, implementation and carrying out of policy studies. The PCST is also the secretariat of the National Commission of Science and Technology, headed by the Prime Minister, who takes the major decisions for the development of S&T. The PCST works as a think-tank to identify the priority areas of research and development, keeping in view the futuristic developments of S&T in Pakistan.

www.pcst.org.pk

South Africa



The Technology Innovation Agency (TIA) was established with the objective of stimulating and intensifying technological innovation to improve economic growth and the quality of life of all South Africans, by developing and exploiting technological innovations. TIA's core business objective is to support the development and commercialization of competitive, technology-based services and products. The Agency primarily uses South Africa's science and technology base to develop new industries, create sustainable jobs and help diversify the economy. South Africa piloted the first GCIP in 2011.

www.tia.org.za

Thailand

The **Department of Industrial Promotion (DIP)**, under supervision of the Ministry of Industry, is mandated to support and reinforce SMEs, community-based enterprises, entrepreneurs and industrial service providers to achieve excellent performances and sustainability. The activities DIP carries out to deliver on its mandate comprise enhancing industrial networking of relevant public and private sectors; recommending policies and measures on development of (as well as supporting) capacity building of SMEs, community-based enterprises, entrepreneurs and service providers.

www.dip.go.th

Turkey

The **Scientific and Technological Research Council of Turkey (TÜBİTAK)**, established in 1963, is the leading agency for management, funding and performing of research in Turkey. TÜBİTAK is responsible for promoting, developing, organizing, conducting and coordinating research and development in line with national targets and priorities. Setting its vision to be an innovative, guiding, participating and cooperating institution in the fields of science and technology, TÜBİTAK not only supports innovation and academic and industrial R&D studies, it also – in line with national priorities – develops scientific and technological policies and manages R&D institutes, carrying out research, technology and development studies.

www.tubitak.gov.tr

Ukraine

The Ukraine joined the GCIP in 2018. The **State Finance Institution for Innovations (SFII)** was established in 2000 by the Cabinet of Ministers of Ukraine, with the mandate to strengthen the economy of Ukraine by attracting foreign and domestic credit and investment resources and directing these to finance innovative and investment projects in strategic industries of economy. The SFII is responsible for the implementation of innovation policy through the provision of financial instruments, full administrative support, co-investment and project management. It provides financial support to economic entities of various forms of ownership within the framework of state innovation policy, conducts a competition of innovative and investment projects and programmes, attracts funds and controls the effective implementation of projects and programmes.

www.sfii.gov.ua





GCIP
Innovation
Showcase
by Country

Agnisumukh Energy Solutions



The Company

Agnisumukh is a cleantech start-up from Bangalore in India. It provides innovative solutions for radiant heat applications using liquid petroleum gas (LPG), natural gas and biogas. The product is market-ready, with several pilot installations in commercial kitchens. The company has raised US\$ 1.5m to date, and is preparing to raise additional US\$ 30m in two stages for scaling up and for a global launch.

The Innovation

The energy-efficient radiant heat gas burner system is flameless, smokeless and noiseless. The technology can be applied to commercial kitchen equipment ranging from clean cookstoves to steam boilers. The burners produce uniform heat that resembles charcoal heat, emitting far-infrared rays. The technology has been tested and certified under IS 14612. Thermal efficiency ranges between 65% and 68.9%, compared to that of conventional commercial gas burners with a rating of between 36% and 45%.

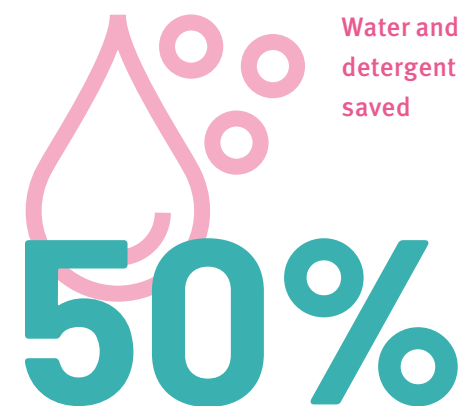
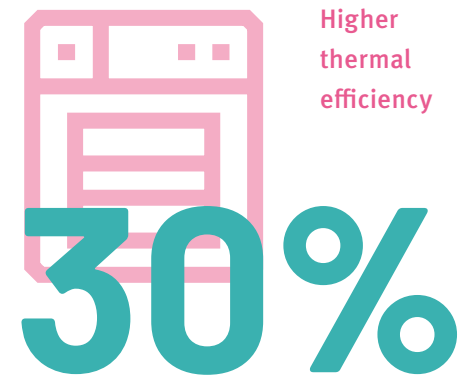
The Impact


The technology can reduce fuel use by up to 30%, has the potential to eliminate indoor air pollution and carbon emissions resulting from a high thermal efficiency (69%), and zero emissions from carbon soot. The product also has lower gas pressure, increasing safety in kitchens. In addition, kitchens can save over 50% water and detergent used for the cleaning of stoves. Agnisumukh aims to contribute to income generation in rural areas by creating green jobs across India.

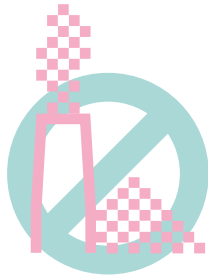
At a Glance

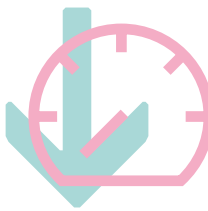
 Company	Agnisumukh Energy Solutions
 Location	Bangalore, Karnataka, India
 Product	Energy efficient radiant cooking systems for commercial kitchens
 Technology category	Energy efficiency
 GCIP	2015 GCIP-India National Winner, 2018 GCIP Alumni Leader of the Year
 Technology stage	Commercialized
 Patent/IPR	Granted in April 2018; patent number 295436
 Next steps	Looking for Series-A funding for scaling up and preparing launch as a global brand
 Email	info@agnisumukh.com
 Website	www.agnisumukh.com

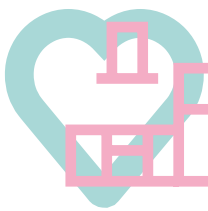
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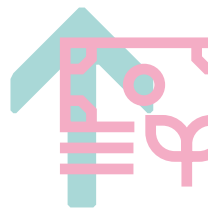


- 

Zero indoor air pollution
- 

Reduced carbon emissions and zero carbon soot
- 

Lower gas pressure
- 

Improved kitchen safety
- 

More income and green jobs in rural areas

Atomberg Technologies



The Company

Established in April 2012, Atomberg Technologies is a household appliances R&D and manufacturing company. Its flagship product, an energy-efficient ceiling fan, was launched in November 2015 and has sold over 150,000 units to date. The company generated US\$ 2.5m in revenue during 2017-18. It plans to expand its product range to include table, pedestal and wall-mounted fans. Additional revenue expected from these products amounts to US\$ 6m in 2018-19. By 2021-22, the company aims to reach an annual revenue of US\$ 50m.

The Innovation

The core innovation behind the fan is the super-efficient brushless direct current (BLDC) motor. The BLDC motor uses AC power supply, and internally converts it to 24V DC. Permanent magnets are used as rotors for superior performance, and Atomsens' algorithm tunes the motor in real time to eliminate power losses for the highest efficiency. The result is that the fan consumes 28 W at full speed, compared to an ordinary fan that consumes 75 W, reducing power consumption by 65%. This results in a saving of US\$ 15-25 per year/fan depending on usage and electricity costs.

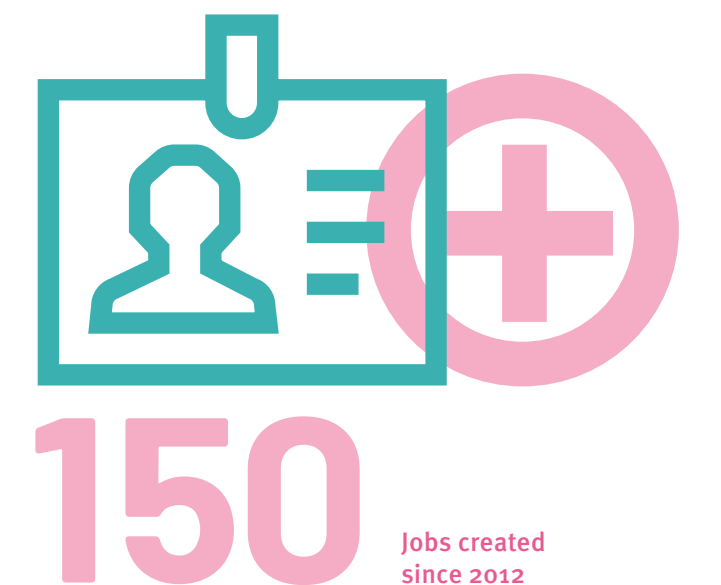
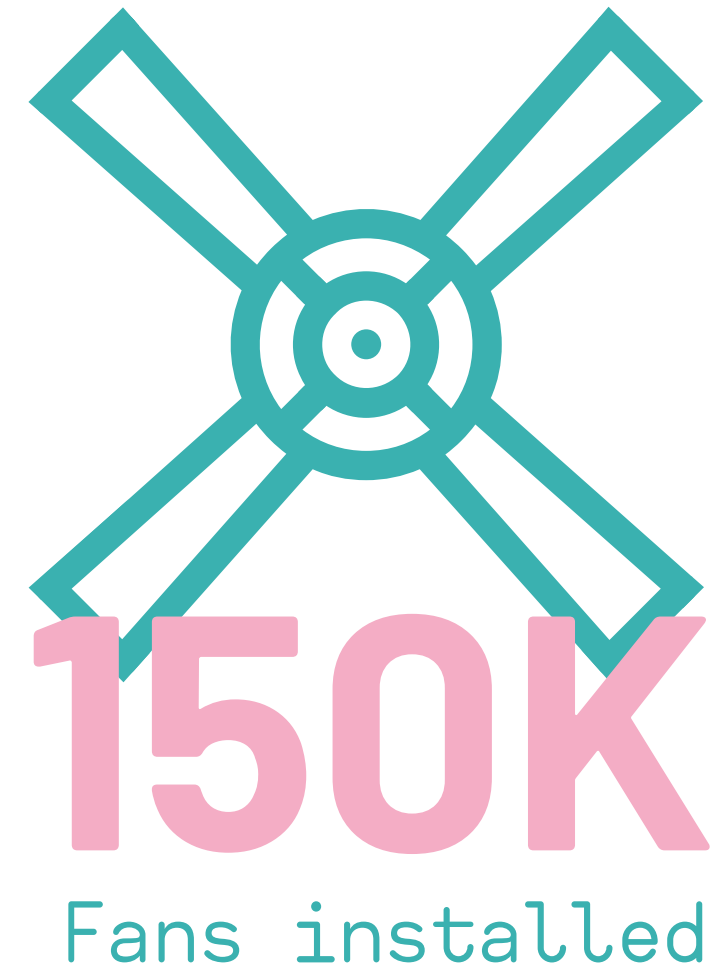
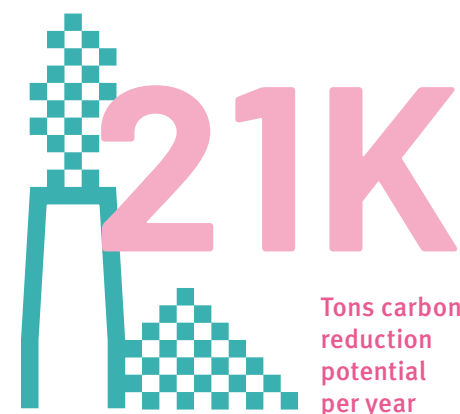
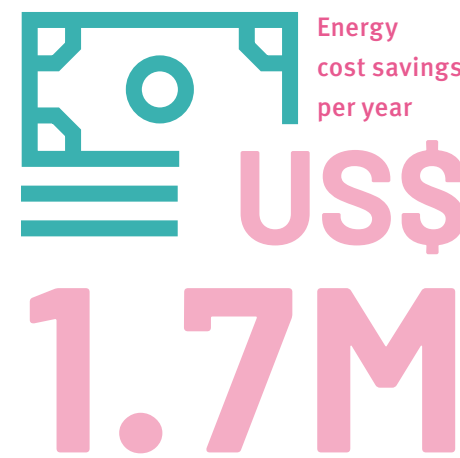
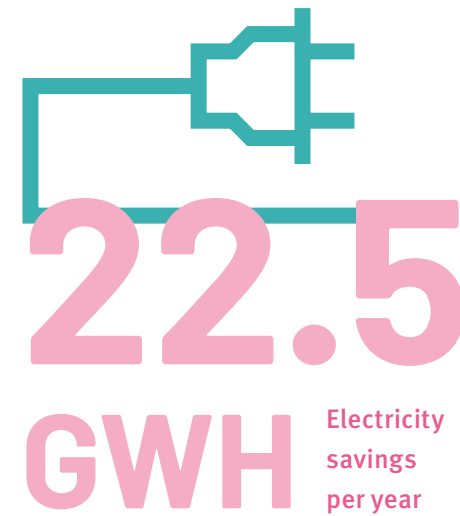
The Impact

With over 150,000 fans installed, the innovation achieves 22.5 GWH of electricity savings per year. This translates into energy cost savings of US\$ 1.7m per year, with carbon reduction potential of more than 21,000 tons per year. The company created more than 150 jobs since 2012, and is engaged in multiple rural electrification projects.

At a Glance

 Company	Atomberg Technologies
 Location	Mumbai, Maharashtra
 Product	Super-efficient ceiling fan
 Technology category	Energy efficiency
 GCIP	2016 GCIP-India National Finalist , 2017 Global Energy Efficiency Category Winner
 Technology stage	Commercialized
 Next steps	Scale up by using the same technology in similar products
 Email	manoj@atomberg.com
 Website	www.atomberg.com

Impact



Saathi Eco Innovations



The Company

Saathi developed 100% biodegradable and compostable sanitary pads made from banana tree fiber. The company has established a medium-scale set-up for manufacturing and is currently generating revenue. To date, Saathi has received investment of US\$ 558,000. An additional US\$ 3m is required to reach the projected scale and for further product development to improve quality.

The Innovation

Saathi has developed a single platform technology to create a wide array of absorbent products from natural fibers which are 100% biodegradable and chemical-free.

The first product line is sanitary pads made from banana fiber. Banana fiber is one of the most absorbent natural fibers and is abundant in India, making it an optimal replacement for wood pulp.

The Impact

Saathi buys agro-waste from banana farmers, creating an extra revenue stream. In addition, the company contributes to women's empowerment through awareness campaigns and access to sanitary pads for women in rural areas. This enables them to continue with economic and educational activities without interruption during menstruation. Saathi has reached 6,000 rural women to date, and will

increase access to sanitary pads for 1.5 million women by 2023.

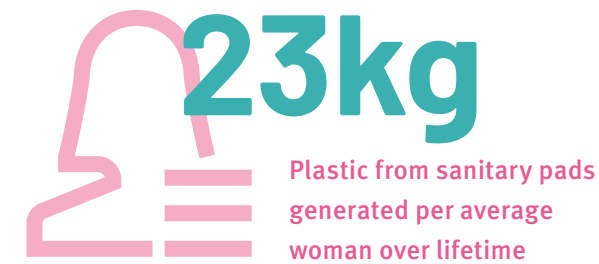
The average conventional sanitary pad contains 3.4 g of plastic, which means that the average woman will generate 23 kg of plastic from sanitary pads alone over her lifetime. In 2016, there were 150,000 tons of sanitary pad waste in India. The alternative product offered by Saathi is completely plastic free. It degrades within six months – 1,200 times faster than plastic. Most plastic sanitary pads use chlorine-bleached wood pulp as an absorbent, while most other eco-friendly pads use cotton. Banana fibre uses six times less water per ton produced than cotton, and ten times less fertilizers.

At a Glance

Company	Saathi Eco Innovations India
Location	Ahmedabad, Gujarat
Product	Eco-friendly sanitary pads
Technology category	Waste beneficiation
GCIP	2017 GCIP-India National Winner, 2018 Global Winner
Technology stage	Revenue generation
Patent/IPR	Patent pending
Next steps	Scale up
Email	saathi@saathipads.com
Website	www.saathipads.com

Challenge

Impact



Women estimated to access Saathi sanitary pads by 2023



Innovation



Months to degrade



Times faster degradation rate than plastic



Times less water used per ton produced than cotton



Times less fertilizers used than cotton



No plastic

Biotech Fuels



The Company

Biotech Fuels is a renewable energy solutions provider. Its main product, the solar powered flour mill and water pump, is tailored to provide energy and water access in rural areas and has been piloted in a rural village in Pakistan with multiple installations in remote locations. The company received investments of US\$ 5m in capital to date, and is preparing to raise an additional US\$ 10m.




The Innovation

The product comprises a solar system that powers water pumps and flour mills, for off-grid areas. The two applications are installed as one product, offering a one-stop solution for farmers in rural areas, with water pumping for irrigation and a wheat crushing facility for daily use.

The Impact

The solar system replaces the diesel generators that are often used for water pumps and wheat crushing. In addition to the reduction in carbon emissions and costs from the use of diesel, the product contributes to increased crop yield due to improved irrigation. The innovation has the potential to improve farming practices and crop yield in rural villages across the country.

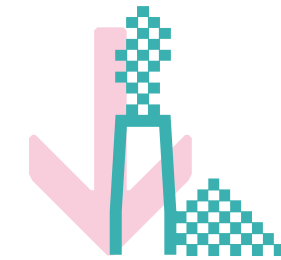
At a Glance

 Company	Biotech Fuels
 Location	Karachi, Pakistan
 Product	Solar powered water pump and flour mill
 Technology category	Renewable energy
 GCIP	2017 GCIP-Pakistan National Runner-up
 Technology stage	Implementation
 Next steps	Scale up and installation in multiple locations
 Email	Mustafa@biotechfuels.org
 Website	www.biotechfuels.org

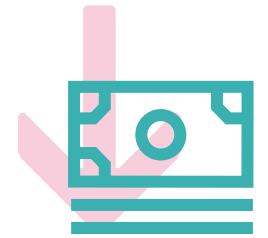
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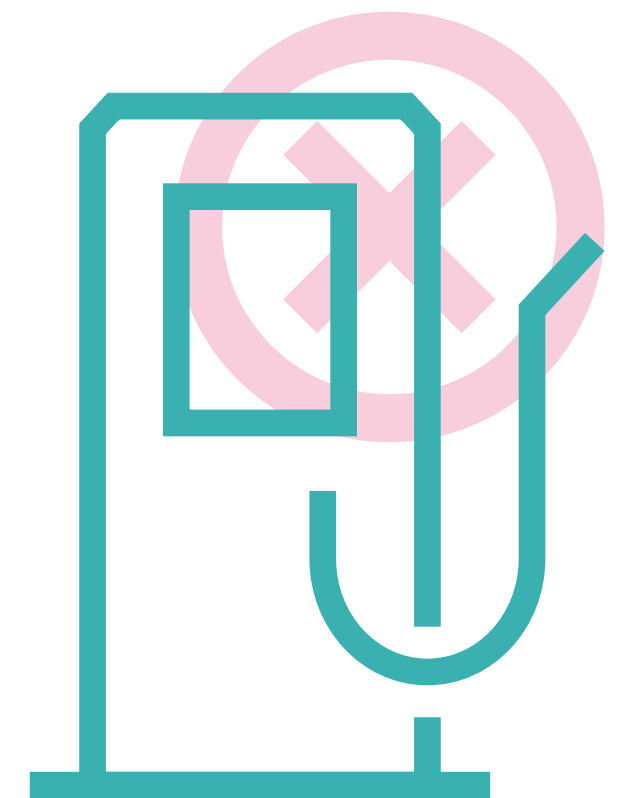
Sustainable farming practices



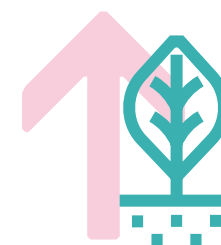
Carbon emission reductions



Reduced energy costs



Replacing diesel generators



Increase in crop yield



Improved irrigation

ModulusTech



The Company

ModulusTech aims to revolutionize the affordable housing sector through its innovative flat-packed modular design. Using an industrialized housing concept, the houses can be transported and set up in minimal time, while being cost-effective and sustainable. The start-up has won US\$ 40,000 from various grants and competitions and is now looking to raise its first round of investment, as well as form business-to-business partnerships to increase its manufacturing capability.

The Innovation










ModulusTech's technology makes it possible to set up houses in as little as three hours. These houses provide proper living standards and come with utilities and fixtures preinstalled, ready for occupancy after assembly. The fast and easy installation allows an agile response to large settlement establishment needs. The flat-packed units also allow economical transport or relocation of the houses, and 11 units can be shipped in a 40 ft container. Moreover, the technology is resistant to earthquakes and cyclones, and the use of passive technologies

makes the houses energy efficient and sustainable, reducing the carbon footprint by 50 times compared to traditional housing. The technology enables the low cost of US\$ 3,000 per house.

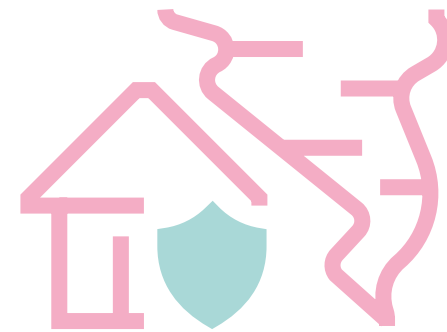
The Impact

With millions of people displaced in the world today, and a large percentage of the population lacking adequate housing, the potential social impact is huge. Providing a basic need such as housing can result in better mental and physical health, and in turn, realise economic upliftment of the region.

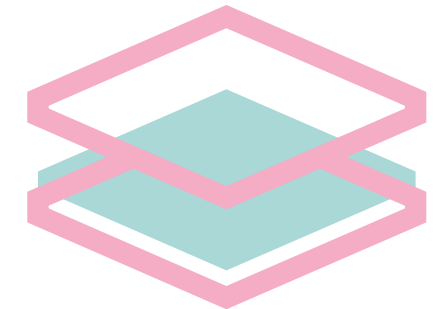
At a Glance

 Company	ModulusTech
 Location	Karachi, Pakistan
 Product	MT Homes, MT Schools, MT Clinics, MT Labour Homes, MT Offices
 Technology category	Green buildings
 GCIP	2017 GCIP-Pakistan National Winner, 2018 Global Forum Special Mention
 Technology stage	Production ready, generating revenue
 Next steps	Scaling production capacity, R&D, patent acquisition, expanding to global markets
 Email	info@modulus-tech.com
 Website	www.modulus-tech.com

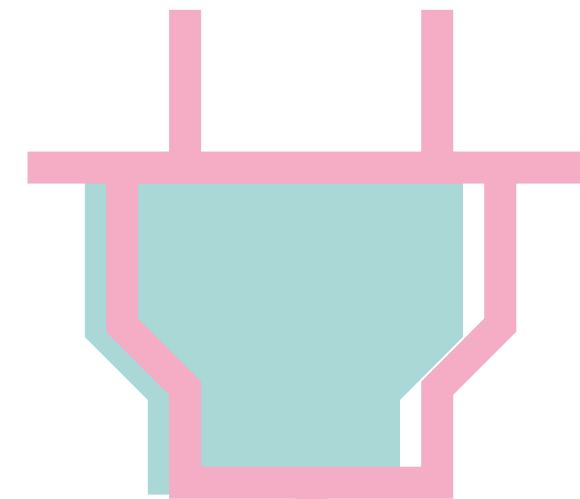
Innovation



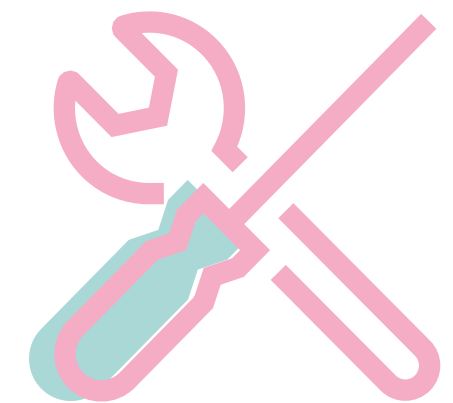
Earthquake and cyclone resistant



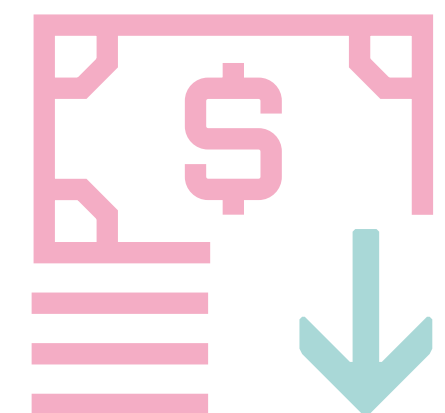
Flat-packed



Energy efficient



Fast installation (3 hours per unit)



Low-cost (US\$ 3000 per unit)

Jaan Pak Enterprises



The Company

Jaan Pak developed a line of fuel-efficient, biomass cookstoves through extensive R&D over three years and 26 iterations. The company has raised US\$ 224,518 through two social business competitions, three grants, a revenue-sharing agreement and a crowd-funding campaign. Over 830 units of its main product, Supreme Stove, have been sold during five commercial pilot projects in 2017. Three new models are currently being tested, and will be introduced in 2018. Revenue generated to date is US\$ 12,638. The company is

preparing to raise further funding to scale-up production, distribution and promotion.

The Innovation

The Supreme Stove reduces the use of fuel by up to 40% through the increased efficiency of combustion heat used, in addition to decreasing cooking time by half.

The Impact

Nearly half of Pakistan's 200 million population reside in off-grid areas, and burn biomass for cooking and heating. Women and children are exposed to solid fuel fumes, more

so than adult men, because women take the lead in cooking. 'Dirty cooking' is, therefore, a huge source of spreading fatal respiratory illnesses across Pakistan's rural population. Through Jaan Pak's innovation, households in rural, off-grid areas can save up to 50% on fuel costs. The company also contributes to women's empowerment by employing women. Its retail model, comprising a combination of commission-based revenues and a fixed salary, enables women entrepreneurs to earn up to PKR 30,000.

At a Glance

 Company	Jaan Pak Enterprises
 Location	Lahore, Pakistan
 Product	Supreme Stove (fuel efficient biomass cookstove)
 Technology category	Fuel efficiency
 GCIP	2017 GCIP-Pakistan National Finalist
 Technology stage	Commercialized
 Next steps	Scaling innovation through impact investment
 Email	info@jaanpak.com; iftkhar@jaanpak.com
 Website	www.jaanpak.com

Impact



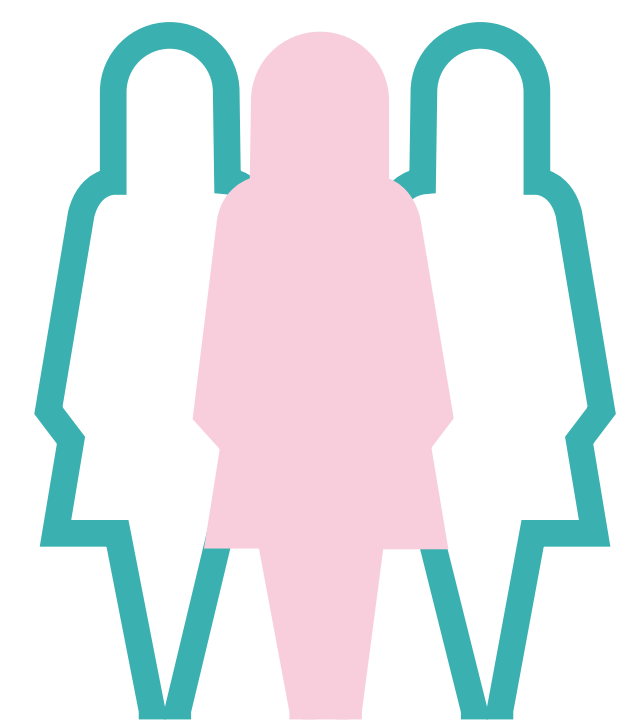
Respiratory disease rife in rural population



Biomass burned for cooking or heating



Women & children (responsible for cooking) exposed to solid fuel fumes



Women employed and empowered



Cleaner air



Estimate earnings of entrepreneurs from commission and fixed salary combination



Reduced fuel costs

Eco-V



The Company

Eco-V provides renewable hot-water and electricity solutions for communities (homes, hospitals and schools) and industries in the form of containerised hybrid solar microgrids that are affordable and easily transportable.

The Innovation

BlueGreenTower™ technology achieves 90% in energy saving for heating water (compared to electric boilers) by harvesting and storing solar power, while conserving water by using an Internet-based software management platform to optimize performance not provided

by any of its competitors. The modular BlueGreenTower™ design incorporates containerised micro-grid units, each providing off-grid hot water for up to 16 homes, making its solution more affordable than competing solutions. By incorporating multiple micro-grid units, BlueGreenTower™ solutions can be scaled to serve any size community, hospital or school that requires domestic hot water as well as factories that require 80°C process hot water.

The Impact

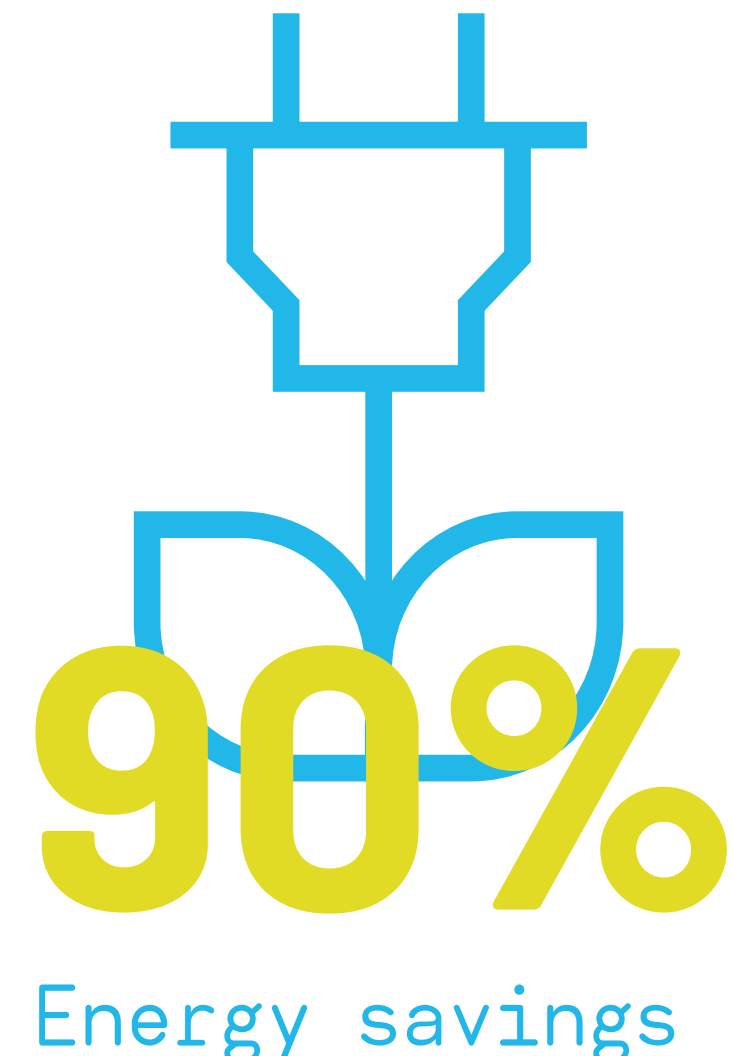
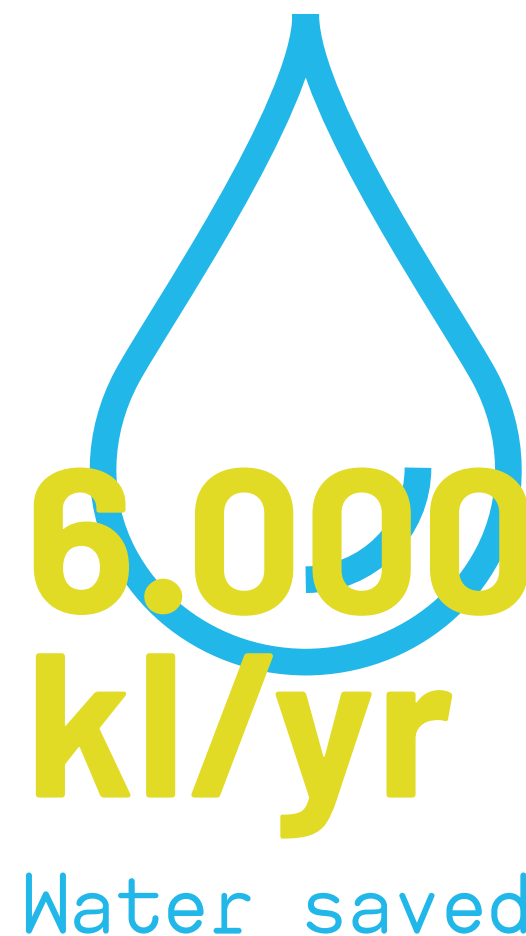
Over the next decade, Eco-V aims to replace one million

electric boilers in Africa at corporate buildings, shopping malls, educational institutions and government agencies, with BlueGreenTower™ Microgrid. A typical BlueGreenTower™ Microgrid has a pay-back period of five years and achieves 90% energy savings. Environmental results of 20 installations showed a GHG offset (February 2018) of 200 tons per year, and water savings of 6,000 kl per year. Five full-time and five part-time jobs have been created which strengthen the technical capacity in South Africa to serve markets in Southern Africa Development Community (SADC) countries.

At a Glance

Company	Eco-V
Location	Pretoria, South Africa
Product	BlueGreenTower™ Microgrid
Technology category	Renewable energy
GICIP	2015 GICIP-South Africa National Runner-Up
Technology stage	Market Application
Patent/IPR	Patent registered
Next steps	Improved software to manage microgrids and provide for industrial-scale applications, integration with wind turbines; future markets include student accommodation, shopping malls and the hospitality sector
Email	ajnel@eco-v.co.za
Website	www.eco-v.co.za

Impact



Sustainability Professionals



The Company

Sustainability Professionals is a social enterprise focusing on solving the cooking needs of rural schools and communities in the SADC. The company sells fuel-efficient Mashsha Stoves that cook with large pots for institutional use, and medium-sized pots for household use. The stoves are safer as they use a closed gasification process for combustion.

The Innovation

The Mashsha metal cookstove burns with a clean hot flame using

gasification techniques. The stoves use biomass/wood fuel, save 56% fuel, are nearly smoke-free and halve the cooking time. The value chain is a combination of innovative production (Mashsha/briquettes) with low-technology selling channels, suitable to African markets.

The Impact

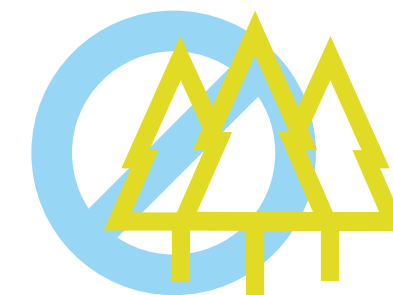
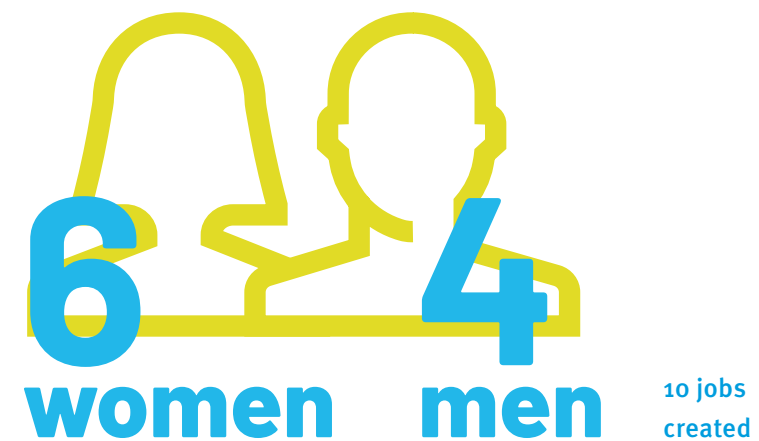
Each day, some 34,500 rural schools in South Africa rely on wood to prepare food for students. The Mashsha stove uses half the amount of wood compared to an open fire, and has the potential

to save 33,000 tons of wood from being burnt, preventing the emission of 52,000 tons of CO₂. Additional environmental benefits include preventing deforestation, biodiversity loss and mitigating climate change. The product also contributes to Sustainable Development Goals 3, 5, 7, 12 and 13, which address good health and well-being, gender equality, access to energy, and mitigate climate change as well as promote responsible production and consumption. The company created ten jobs to date, six of these for women.

At a Glance

Company	Sustainability Professionals
Location	Mbombela, South Africa
Product	Mashsha Stoves
Technology category	Energy Efficiency
GCIP	2016 GCIP-South Africa National Finalist, 2016 Innovation for Social Impact Category Winner, 2018 GCIP Alumni Leader of the Year
Technology stage	Early commercialization
Next steps	Finalise large biomass briquette composition ratios, get to market and expand the product range
Email	lwilliamson@vodamail.co.za
Website	www.mashsha.co.za

Impact



Preventing deforestation and biodiversity loss



Mitigating climate change



Water, Hygiene and Convenience



The Company

Water, Hygiene and Convenience (WHC) was founded in 2007 and provides technology solutions to comprehensively address social, economic and environmental problems, in particular water conservation.

The Innovation

The WHC Leak-Less Valve™ is a water control device that can detect and save up to 70% of water currently


lost through toilet leaks. A toilet is the single largest water consumer in the house, accounting for roughly 28% of overall usage. A leaking toilet can waste between 30 litres and 700 litres (approximately seven full bathtubs) of water per day.

The Impact

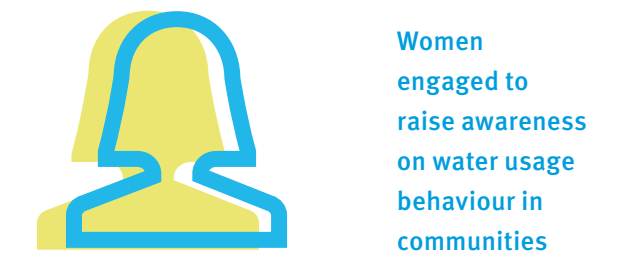
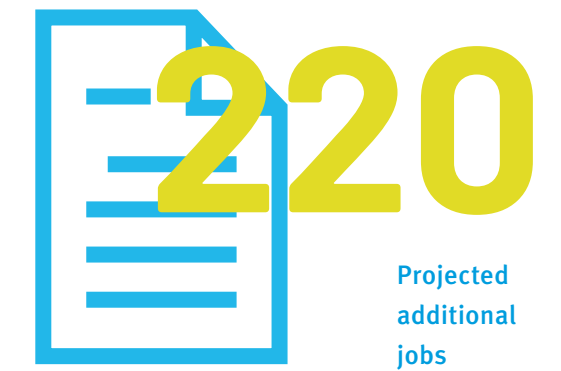
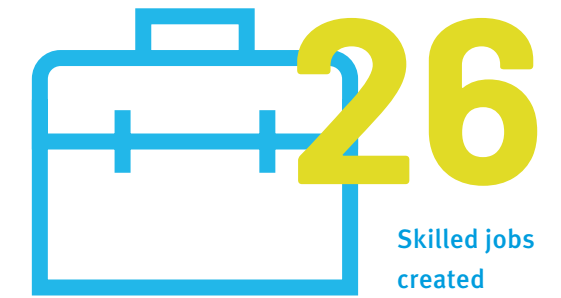
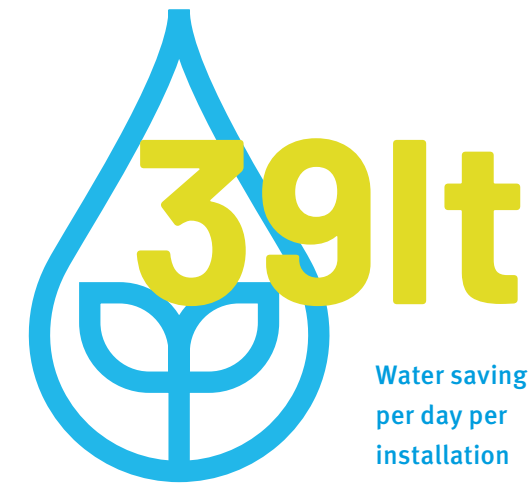
By the end of 2017, the company created 26 skilled jobs. Projected public sector contracts will lead to an additional 220 jobs in manufacturing

and distribution. The company also engages women to raise awareness on water usage behaviour in communities, and trains and employs youth as plumbers to install the units. Environmental results verified in pilot installations include water savings of 39 litres per day per installation. In one community, 865 installations achieved 6,072,300 litres of water saved within six months. This is the equivalent of two-and-a-half Olympic-sized swimming pools.

At a Glance

 Company	Water, Hygiene and Convenience (WHC)
 Location	Pretoria, South Africa
 Product	WHC Leak-Less Valve™
 Technology category	Water efficiency
 GCIP	2014 GCIP-South Africa National Runner-Up, 2018 Global Alumni of the Year
 Technology stage	Market application
 Next steps	Convert the public and private sector interest into cash sales, and scale impact
 Email	paseka@whcpty.com
 Website	https://whcpty.com/

Impact



Fang Thai Factory



The Company

Fang Thai Factory is a rice straw paper and packaging company. Its products are some of the most environmentally friendly options on the market, with a manufacturing process that follows the zero waste management approach. Rice straw is used in every part of the paper-making process. Currently, the company is at full production capacity, and is looking to raise investment to increase manufacturing capacity to meet customer demand.

The Innovation

The paper production process uses 100% rice straw. The resulting

paper is non-toxic; chlorine, mercury and heavy metal free; and is biodegradable in 30 days. In addition to being one of the most environmentally friendly options on the market, Fang Thai's products offer high quality features at a competitive price. The paper is water, oil and grease resistant (more than two hours), can withstand high and low temperatures, and is strong with a tensile index of 36.92 N m/g, elongation at break of 2.05%, tear index of 1.52 mN m²/g, and burst index of 2.29 kPa m²/g.

The Impact

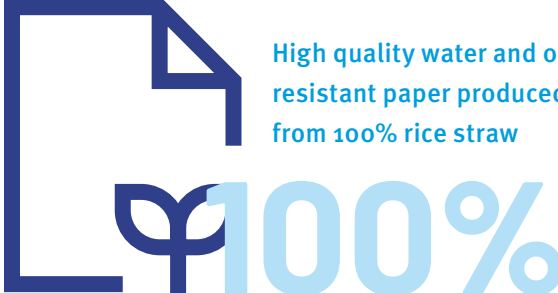
Rice straw is a crop residue and is traditionally burned in open fire,

producing smoke and air pollution. In 2018, in Thailand, CO₂ emissions from rice residue open burning were estimated at approximately 6 Mt of CO₂. Fang Thai's technology can prevent open burning of rice straws by valorizing the waste into a market-ready product. Fang Thai also contributes to avoided deforestation and waste management, by replacing paper and plastic products. By providing employment opportunities in rural farming communities after harvest season, as well as an additional revenue stream from sales of rice straws, Fang Thai contributes to decent work and income generation.

At a Glance

 Company	Fang Thai Factory
 Location	Lampang, Thailand
 Product	Packing from rice straw paper
 Technology category	Waste to beneficiation
 GCIP	2017 GCIP-Thailand National Waste to Beneficiation Category Winner
 Technology stage	Scale up
 Email	fangthaifactory@gmail.com
 Website	www.fangthaifactory.com

Innovation



High quality water and oil resistant paper produced from 100% rice straw



Cost competitive against plastic alternatives



Biodegradable in 30 days

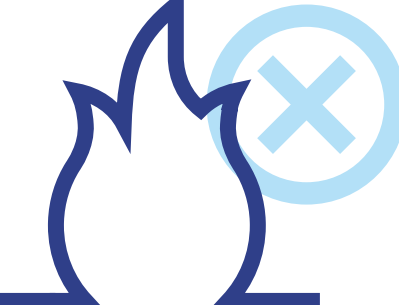
Impact



Paper and plastics replaced



Income and job creation for rural farming communities



Open burning of rice straw avoided

PAC Corporation



The Company

PAC Corporation, founded in 2016, produces an innovative energy-efficiency product, the PAC Frenergy Heat Recovery Water Heater. The product is in commercialization stage, and the current focus is on expansion to domestic and overseas markets.

The Innovation

The PAC Frenergy Heat Recovery Water Heater cuts the electricity cost of hot-water systems by

100% and reduces the electricity consumption of air conditioners by 10%. PAC Frenergy can produce hot-water temperatures of up to 70°C and reduces heat transfer to the atmosphere by about 15%.

The Impact

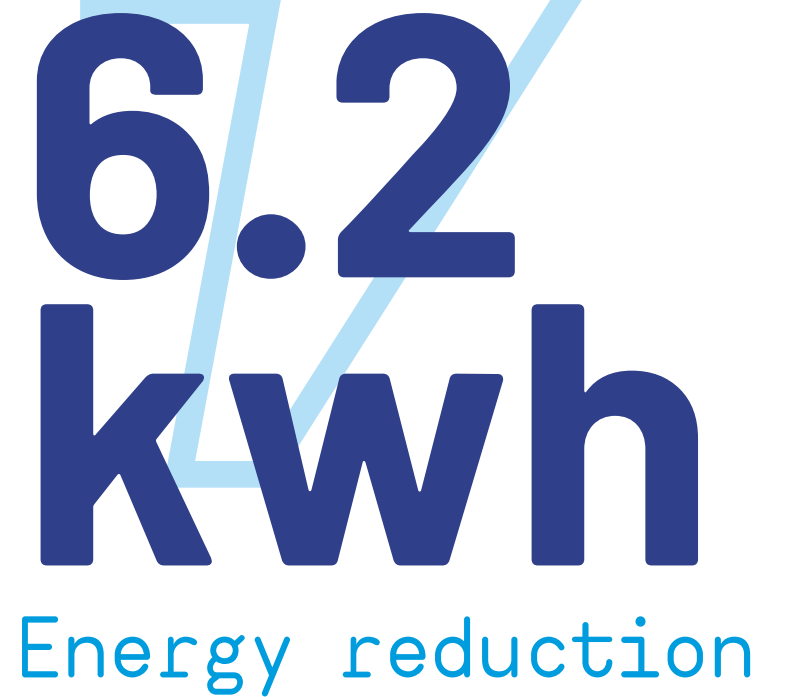
Energy reduction of PAC Frenergy is 6.2 kwh and the GHG reduction amounts to 2.8 kgCO₂e/hour. For projected sales of 7,000 units in 2020, total energy savings of 79.87

GW, total cost savings of US\$ 12.11m, and total GHG reduction of 25,422,25 kgCO₂e are estimated. In addition, circularity of the product life cycle is considered from the manufacturing stage. The product is made with materials that can be recycled, and use of raw materials and packaging resources are minimized. Logistics and route management are arranged to reduce the impact on the environment.

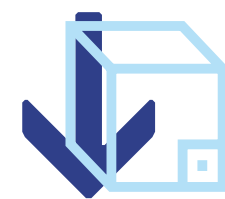
At a Glance

 Company	PAC Corporation
 Location	Bangkok, Thailand
 Product	PAC Frenergy Heat Recovery Water Heater
 Technology category	Energy efficiency
 GCIP	2017 GCIP-Thailand National Winner
 Technology stage	Commercialized
 Next steps	Development of Internet of Things smart controller to maximize energy efficiency and usability
 Email	atchara@pac.co.th
 Website	www.pac.co.th

Impact



Circular product life cycle; materials can be recycled



Use of raw materials and packaging resources



Impact on environment through optimal logistics & route management

Tom Casava



The Company

Tom Casava was founded by a group of experts in cassava production and utilization for food, feed, energy and industrial applications. The company aims to utilize the valueless cassava stumps, a waste product from cassava plantation, by turning these into high value and high price charcoal and activated carbon for industrial, agriculture, household and health applications.










The Innovation

After seven years of research, the company developed an innovative kiln (furnace) with high efficiency which can burn 36 times faster than the conventional kiln. It uses minimal to no energy, has no carbon emissions, requires no chemical in the process and produces a higher yield of the product. The kiln transforms cassava stumps into activated carbon that is suitable for a wide variety of applications, including medical and healthcare.

The Impact

Farmers and traders generate income through crop waste that is otherwise discarded, and new jobs are created throughout the product value chain. Every tonnage of cassava stump processed into activated carbon, instead of open fire burning, reduces emissions by an estimated 1,518 to 3,016 kg CO₂.

At a Glance

 Company	Tom Casava
 Location	Thailand
 Product	1. Plaichon NC@: Cat sand/litter. 2. Plaichon NC@: Soap. 3. Plaichon NC@: Vegetable/fruit washing pack. 4. Plaichon NC@: Raw products for variable applications
 Technology category	Waste beneficiation
 GCIP	2016 GCIP-Thailand National Winner, 2018 Global Finalist
 Technology stage	Commercialized
 Next steps	Development of products and machinery to support the expansion of production
 Email	Tom_casava@hotmail.com
 Website	www.tomcasava.com

Impact



Improved air quality due to avoided open burning



Additional income source for framers and traders



Jobs created in rural communities

Delphisonic Elektronik



The Company

Since 2012, Delphisonic has been developing measurement applications and cloud-based software solutions for railway, wind turbine, marine, aviation, oil & gas and industrial manufacturing process. Delphisonic's technology solution provides immediate and secure monitoring of machine operations, allowing businesses to identify machine failures in advance by utilizing the Internet of Things, big data and artificial intelligence.

The Innovation

Combining hardware and software components, the main product is developed for train monitoring. Through sensors detecting vibration, speed, pressure and temperature, data on mechanical systems of trains and railways are collected. The Internet of Things, artificial intelligence, and data analysis capabilities are employed through a software algorithm to predict the time and exact location of an upcoming failure or breakdown. This technology is applicable to multiple sectors.

The Impact

Delphisonic's technology has contributed significantly to the safety and competitiveness of its customers. Since implementation of its solution in 2013, Turkish National Railways has had no accident or major disruption. Mey Icki, the biggest beverage manufacturer in Turkey, has not experienced any unplanned stop in its assembly line since 2015, and has saved over €1.4m over the last two years. UN Roro, one of Turkey's largest ship producers, has also saved over €1.1m over two years owing to the prevention of break malfunctions.

At a Glance

 Company	Delphisonic Elektronik
 Location	Turkey (Kocaeli), UK (Warrington), US (Washington) and Germany (Berlin)
 Product	Real-time vibration analyzer and AI-based software algorithm
 Technology category	Smart transportation
 GCIP	2017 GCIP-Turkey National Winner, 2018 Global Smart Transportation Category Winner
 Technology stage	Scale-up stage
 Next steps	Looking for global expansion
 Email	gokhan@delphisonic.com
 Website	www.delphisonic.com

Impact



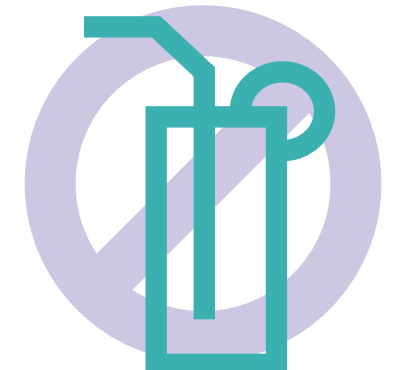
No break malfunctions

in ship manufacturing



No accidents or disruptions

for Turkish National Railways



No unplanned stops

in beverage production line



Increased safety & competitiveness of customers



Production and operation cost savings of customers

Biolive



The Company

Biolive Biological and Chemical Technologies Industry and Trade is a biotechnology company founded in 2016. It produces and sells antimicrobial and antioxidant bioplastic granules from olive seeds. The company also designs and develops the technical production processes for product lines such as licensing on food packaging, refrigerator/home appliance technologies, plastic bottles, food containers, pacifiers and eco-friendly automotive bioplastic interior products.

The Innovation

Biolive produces natural bioplastic granules from olive seeds as

an alternative to conventional petroleum-based plastics. The first step of the patented technological process includes the extraction of antioxidants from olive seeds, and the second step involves the creation of polymers from olive seeds. The combination of these two steps produces bioplastic granules. The resulting product is biodegradable and non-carcinogenic, compostable, recyclable, and 90% more cost-effective than existing bioplastics. The active ingredient oleuropein acts to extend bioplastic shelf life and hastens the biodegrading process. Instead of using expensive nanotechnology to give antibacterial features to plastics

or adding synthetic additives in foods, Biolive bioplastic packaging has shown to extend the shelf life of food products by 60% as well as keep these fresh, as seen in the case of meat, dairy, bakery products, fruits and vegetables.

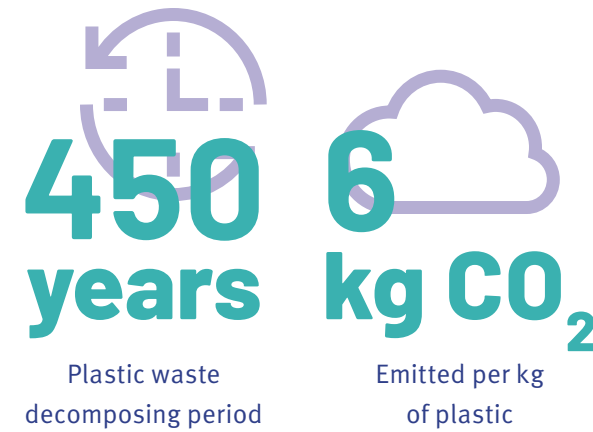
The Impact

The innovation replaces petroleum-based plastics that are harmful to human health and the environment. Plastic waste is non-biodegradable, requiring over 450 years to decompose, and emits approximately 6 kg of CO₂ per kg of plastic. The bioplastic products developed by Biolive decomposes in nature in 9 to 12 months, and has no CO₂ emissions.

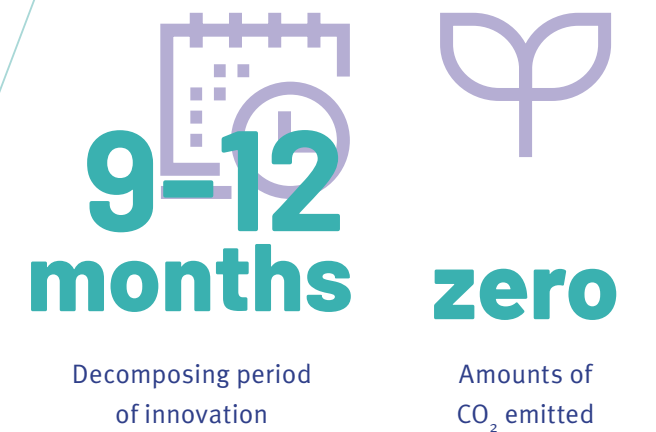
At a Glance

 Company	Biolive Biological and Chemical Technologies Industry and Trade
 Location	Istanbul, Turkey
 Product	Antimicrobial bioplastic products
 Technology category	Advanced materials
 GCIP	2017 GCIP-Turkey National Winner, 2018 Global Smart Transportation Category Winner
 Technology stage	Product development
 Next steps	Sales
 Email	Duygu16@outlook.com
 Website	www.biolivearge.com

Challenge



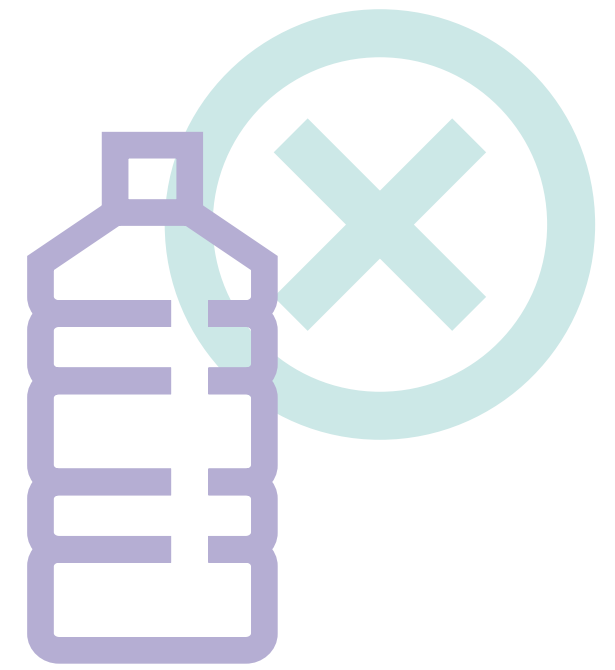
Innovation



Impact



Human health and environment improved



Petroleum-based plastics replaced

NG Biyoteknoloji



The Company

NG Biyoteknoloji is an R&D company, founded in 2014 with the mission to develop, manufacture and sell environmentally friendly microbial products to promote sustainable agricultural practices. The products are used as biopesticides, microbial fertilizers, as well as organic control agents for public health and for bioremediation of persistent organic pollutants.

The Innovation

The company has developed a unique microbial formulation containing selected natural, non-GMO micro-

organisms that degrade pesticides in soil and reduce their use; thus significantly limiting the negative effects on agricultural land, while also conditioning the soil and plant health via several mechanisms. The patented technology enables farmers to restore the health and fertility of agricultural land rather than continually increasing the use of pesticides.

The Impact

The product allows direct operational cost savings of between 40% and 50% over five years. Use of the product has shown an increase in crop yield of between 25% and 30%, equivalent to approximately €11,000

in extra income per year for a typical greenhouse tomato farmer. In addition, the crops can be sold at a premium price, boosting profits for a typical greenhouse vegetable farmer (four-decare farm) by more than €5,000 per year. In addition, the product has multiple health benefits compared to chemical pesticides, as it is non-toxic and 100% biodegradable, decreasing pesticide residues in soil over time. The technology has the potential to become the first multifunctional biostimulant that can remediate soil biodiversity, quality and productivity in a sustainable and cost-effective manner.

At a Glance

- Company**
- Location**
- Product**
- Technology category**
- GCIIP**
- Technology stage**
- Email**
- Website**

NG Biyoteknoloji
 Istanbul, Turkey
 A unique microbial formulation containing specifically selected natural, non-GMO micro-organisms
 Advanced materials and chemicals
 2015 GCIIP-Turkey National Winner
 Prototype demonstration
 erg@ngbiyoteknoloji.com
 www.ngbiyoteknoloji.com

Impact



Extra income per year



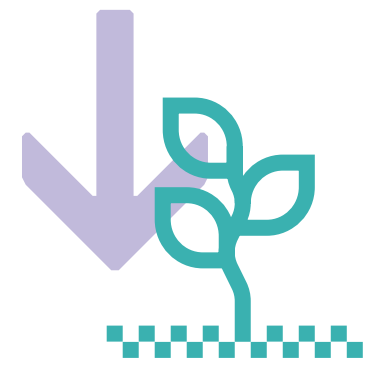
Boost in profits per year for vegetable farmer



Increased crop yield



Remediate soil biodiversity, quality and productivity



Reduced pesticide residues in soil over time



100%

Biodegradable

Farasha Systems



The Company

Farasha Systems offers precise and real-time monitoring solutions for solar panel installations. The solution combines the latest technologies embedded in unmanned aerial vehicles (UAVs), reduces operation and maintenance costs and improves power yield of the solar power plants.

The Innovation

Cutting-edge technologies, including aerial thermography, visual inspection, orthophotography, 3D modelling and photogrammetry, are mounted on UAVs for accurate inspection of solar installations.



The solution is implemented in three main steps: flight planning, image and video capture by UAVs, and analysis and processing of the collected data against a geographical information system developed by Farasha. A drone equipped with a thermal camera and coupled with a second digital camera, are used as a reference and allow visual inspection, which helps to determine the decomposition of the temperature and allows the detection of overheated areas. Image processing and automatic learning algorithms are used to detect finer failures. By integrating a GPS system, an accurate map of

the area and spatial temperature distribution are made possible. The solution can be tailored for customer specifications, and can be applied to wind farms, agricultural plantations, pipelines and other large-scale industrial and commercial sites.

The Impact

Farasha's solution is a cost-effective way of increasing efficiency of solar power systems. It increases yield by real-time monitoring and prevention of failures, and also reduces the need for travel by operations and maintenance teams, thereby reducing transport carbon emissions.

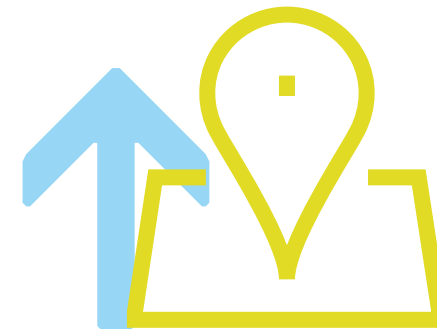
At a Glance

 Company	Farasha Systems
 Location	Rabat, Morocco
 Product	UAV inspection
 Technology category	Renewable energy
 GCIP	2018 GCIP-Morocco National Winner
 Technology stage	First sales
 Email	kriouile@farasha.net
 Website	www.farasha.net

Impact



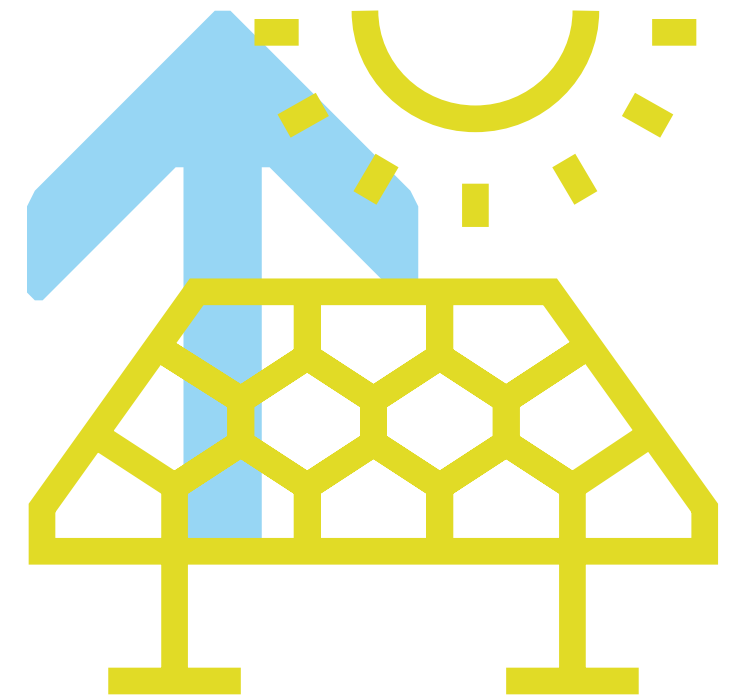
Transport carbon emissions reduced



Power yield of solar power plants increased



Operation and maintenance cost savings



Increases efficiency of solar installations through real-time monitoring and failure prevention

Green Engineering Mission SARL (GEMS)



The Company

GEMS provides a water efficiency solution for the agriculture and irrigation sector through a nano-irrigation system that significantly reduces water consumption, and also reduces operational and labour costs related to the daily management of irrigation, fertilizers and treatment, while ensuring an increase in productivity.

The Innovation

Moistube is a porous underground irrigation tube with a slow, continuous and low-pressure water release capability. The product is based on a unique nanotechnology that reduces water consumption by up to 75% compared to other irrigation systems. Equipped with nanopores along its entire length and placed at the foot of crops and vegetation, it reduces the plant's water stress, has good resistance

to clogging and eliminates losses caused by evaporation and percolation while increasing crop yield and plant productivity with significant optimization in terms of human intervention and cost.

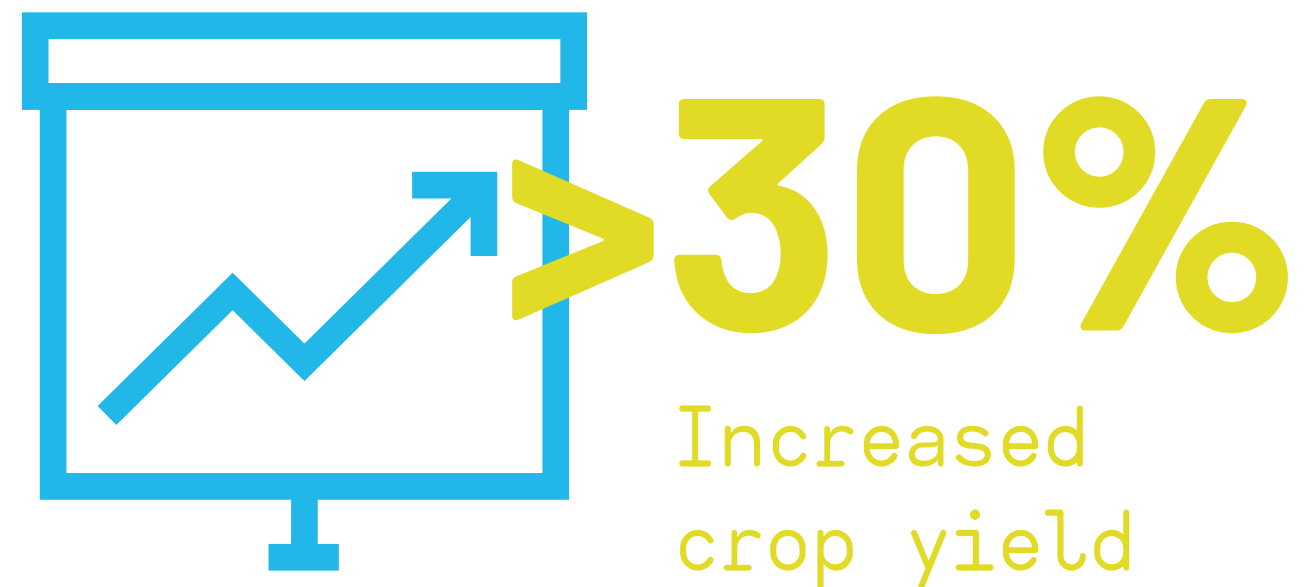
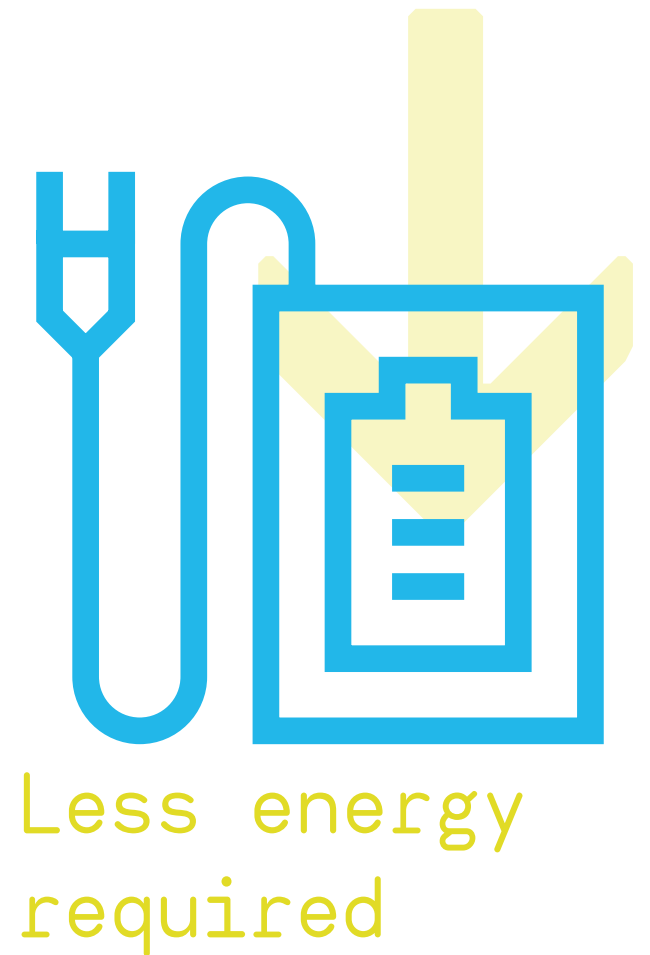
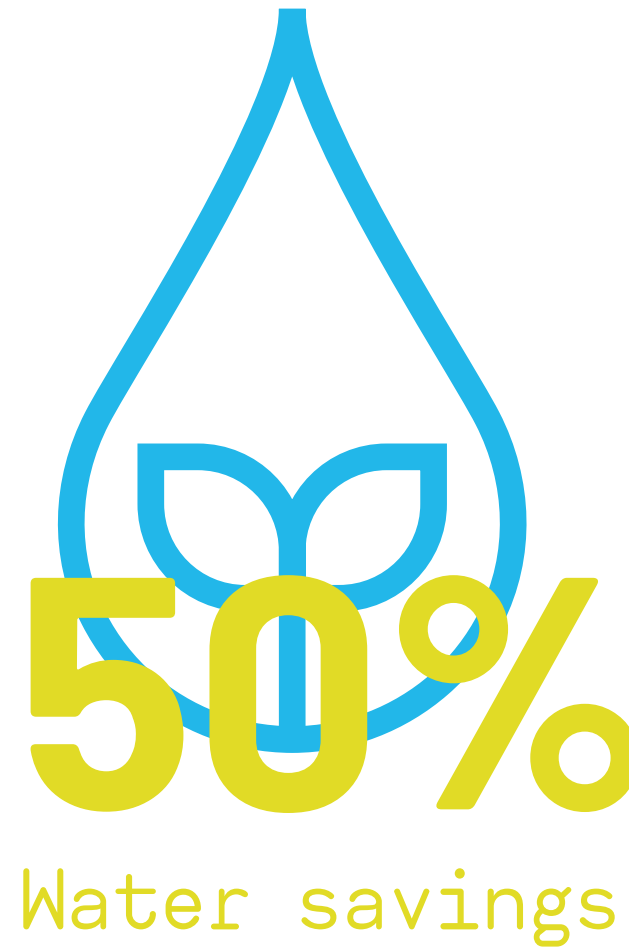
The Impact

At least 50% water savings, with less energy required (0.2 bars stable pressure), and an increase in productivity yield of between 20% and 30%.

At a Glance

 Company	Green Engineering Mission SARL
 Location	Agadir, Morocco
 Product	Moistube
 Technology category	Water efficiency
 GCIP	2018 GCIP-Morocco National Finalist
 Technology stage	Proof of Concept
 Next steps	First sales
 Email	meryamelouafi@gmail.com
 Website	www.gems.ma

Impact



18 Serre-Inno



The Company

Serre-Inno develops heating systems using cheaper, local and environmentally friendly materials to address the problem of temperature control in agricultural greenhouses and buildings.

The Innovation

Serre-Inno has developed an economical and environmentally friendly heating system, which will make it possible to maintain an optimal temperature for plantation growth. The solution is a natural air conditioner consisting of a clay

tank buried under the ground of the greenhouse or a building at a specific depth. The tank is filled with rock pebbles with the calorific capacity to store heat. The tank is equipped with a fan on both ends to let air in and out.

The Impact

In winter, farmers are forced to prevent crop damage in agricultural greenhouses either by using chemicals to kill insects and viruses that are dangerous to health and the environment, or by maintaining optimal temperatures in agricultural

greenhouses through space heating that radically increases energy costs. The Serre-Inno solution will allow harvest with high yields without using chemicals. It is estimated that the system can double profits, considering that winter coincides with a rise in prices of agricultural products on the market and a strong demand for these products for export. On average, the use of Serre-Inno reduces farmers' energy bills by 40%, reduces water consumption by 30%, limits the use of chemicals and increases crop yield by 25% to 40%.

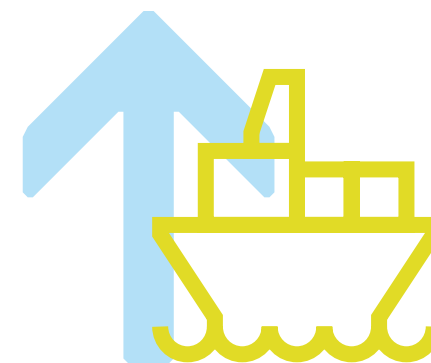
At a Glance

 Company	Serre-Inno
 Location	Agadir, Morocco
 Product	Serre-Inno
 Technology category	Green buildings
 GCIP	2017 GCIP-Morocco National Category Winner
 Technology stage	First sales
 Email	l.gourdo@gmail.com

Impact



Doubled profits through crop yield in winter



Increase in agricultural exports



No Chemicals



25%

Increased crop yield



30%

Reduction in water consumption



40%

Average reduction in energy bills of farmers



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GCIP is an integrated programmatic approach to leverage the power of innovation and entrepreneurship and address the energy, environmental and economic challenges of today. GCIP supports the development of climate solutions as profitable business models and does this by empowering cleantech start-ups and bolstering the local entrepreneurial ecosystem and policy frameworks.



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