



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



United Nations
Climate Change



United Nations
Convention to Combat
Desertification



UNIDO Global Call

GLOBAL CALL FOR INNOVATIVE SOLUTIONS IN CLEANTECH AND
SUSTAINABLE LAND MANAGEMENT





BACKGROUND INFORMATION

Origin of the Global Call

While the world still grappled with the COVID-19 pandemic, the fight against another immensely important global challenge was pushed somewhat to the background: combating climate change.

Climate change is one of the greatest global challenges of our times and experts estimate that we are the last generation to prevent irreparable damage to our planet. Those adverse effects of climate change not only threaten vulnerable coastal areas and low-lying coastal countries, including many least developed countries, they undermine the efforts of all countries to achieve sustainable development.

UNIDO therefore supports its Member States to unlock future-proof opportunities for resilient, carbon-neutral and circular growth, through expertise in matters that are central for sustainable industrialization. Innovation and new technologies are key for these transformative processes. They help accelerate the deployment of renewable energy, optimize resources use, implement circular models, and reduce industrial emission.

Investments in technologies and their application in developing countries play an important role to ensure that

all countries benefit from sustainable development and achieve the Sustainable Development Goals (SDGs). With this Global Call, UNIDO aimed to identify readily deployable and scalable solutions, particularly for the benefit of developing

countries. The competition focused on innovations and new technologies in two important areas related to international climate change mitigation and adaptation efforts, namely cleantech and sustainable land management.

The UNIDO Global Call 2021 was inspired by the previous year's successful Global Call for innovative ideas and technologies vs. COVID-19 and beyond, initiated by the UNIDO Investment and Technology Promotion Office (ITPO) Italy. To find more about previous year's Global Call, access the publication by scanning the QR code:



ITPO Germany, the initiator of the 2021 UNIDO Global Call, promotes sustainable outward investments and technology transfer by German companies to industrializing countries. Priority sectors include renewable energy, energy efficiency, agribusiness, environmental technologies, and manufacturing. ITPO Germany recognizes that a key challenge for on-time solutions to the climate challenge is to ensure the development, adoption and scaling of high-impact cleantech solutions. In line with German and international development goals, ITPO Germany is continuously scouting for and engaging with companies, research institutions and investors who are developing and implementing cleantech

solutions that are relevant and applicable in industrializing countries.

The Global Call was jointly implemented by the UNIDO Investment and Technology Promotion Network (ITP Network) with its nine ITPOs and in collaboration with other UN organizations, namely the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Convention to Combat Desertification (UNCCD).



ITPO Germany initiated this Global Call in close collaboration with Future Cleantech Architects (FCA), a think tank based in Germany, dedicated to high-impact R&D for the energy transition.

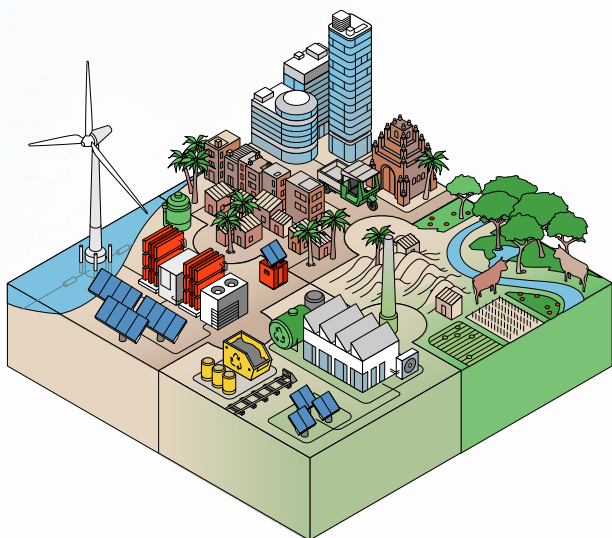
“It was a pleasure for us to collaborate with UNIDO ITPO Germany, providing our expertise in the technical evaluation of applications. Our international networks helped us to bring innovators, investors and cleantech stakeholders to the table at the award ceremony and events at COP26.”

Peter Schniering
Founder and CEO of Future Cleantech Architects (FCA)





OBJECTIVES AND CATEGORIES



The UNIDO Global Call solicited submissions of innovative solutions and technologies from the private sector in the areas of cleantech and sustainable land management with the overall objective to identify readily deployable and scalable solutions to addressing the adverse effects of climate change in developing countries.

Land use is fundamentally linked to both climate change mitigation and adaptation, and offers great potential to reduce emissions, sequester carbon and increase both human and biophysical resilience. Sustainable land management plays a critical role in protecting livelihoods, climate and biodiversity. Addressing desertification,

land degradation and drought is key for climate change mitigation and adaptation.

By linking sustainable land management to the sustainable productive use of land, the Global Call considered another important pathway to limit climate change, the transformation of the global energy sector from fossil-based to zero-carbon, both in agriculture and industry. This energy transition is spurred by clean technologies (cleantech) that reduce negative environmental impacts, lead to a more sustainable use of resources and thereby foster environmental protection.

The call focused on technologies from four different categories, each vital for climate change mitigation and adaptation:

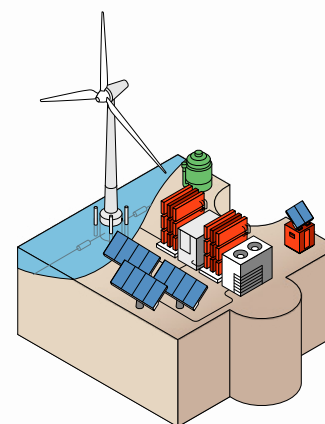
1. Decarbonizing growing urban environments

Within this century, the global population will increase to about 10 billion, with millions rising out of poverty annually. This growing population will predominantly live in large cities. In order to ensure an equitable standard of living on the level of today's developed economies, electricity production and building stock will have to be more than doubled. At least 15 gigatonnes of CO₂ equivalent (GtCO₂e) are directly or indirectly associated with the growth of these urban areas.

In this category, UNIDO sought to identify innovative solutions for decarbonizing growing urban environments by addressing the demands and distribution of water, agricultural, energy, mobility and other resources, as well as solutions for areas that are vulnerable to climate change (e.g. coastal areas).



2. Clean and efficient energy generation and storage



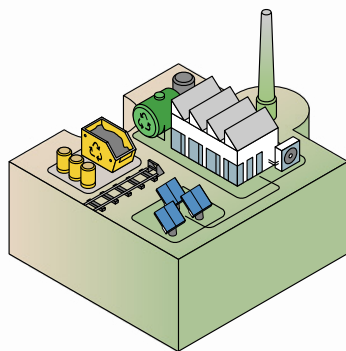
Almost all human activity relies on energy use, especially electricity. While renewable and clean sources like solar and wind are increasingly available, the required scale is enormous, both in terms of replacing fossil electricity and electrifying uses of other energy. At the same time, those renewable sources are intermittent, and especially less developed grids struggle to integrate them. 14 GtCO₂e are associated with this challenge.

In this category UNIDO sought to identify innovative solutions for generating and distributing energy in a clean and smart way, especially affordable and decentralized renewable energy solutions that are applicable in developing countries.

3. Circular production and industrial processes

Many vital industrial processes, such as fertilizer or cement production, rely heavily on fossil fuels or are inherently CO₂-intensive. Many are very hard to decarbonize and cause a large portion of yearly emissions accounting for about 16 GtCO₂e. These often-neglected processes need especially high innovation efforts to enable solutions that can scale globally.

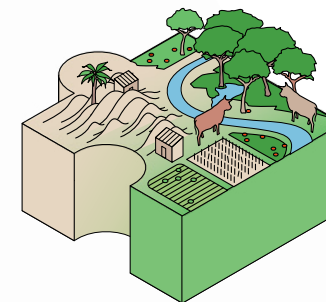
In this category UNIDO sought to identify innovative solutions related to the re-use, re-cycling and re-manufacturing of resources, as well as energy and process efficiency solutions and smart approaches for more climate-cautious consumption.



4. Sustainable land management

About a quarter of all emissions, approximately 10 GtCO₂e, are related to the use of land, from agriculture to forestry. Half of all habitable land is used in this way, and 77% of that for animal husbandry. As the majority of these animals are raised for food, but only represent a small fraction of calorie and protein production, innovative solutions to using this land more efficiently and sustainably are urgently needed.

In this category UNIDO sought to identify innovative solutions for productive lands, including new technologies and approaches to production with a demonstrable positive contribution to soil health, land rehabilitation and combating desertification.





FACTS AND FIGURES

The Global Call was addressed to private sector entities (micro, small, medium, and large companies, as well as start-ups) at different stages of development:

- » Technological solutions in the early stage (technologies at an advanced stage of R&D ready for implementation with verified data from testing)
- » Technological solutions in the growth stage (solutions that have already been piloted with verified data at a replicable scale and that have a demonstrated Proof of Concept)
- » Mature technological solutions (technologies that are demonstrably established on the market and are aiming at the expansion to new markets)

This year, a total of 294 companies from 71 countries applied to the UNIDO Global Call in all four categories.

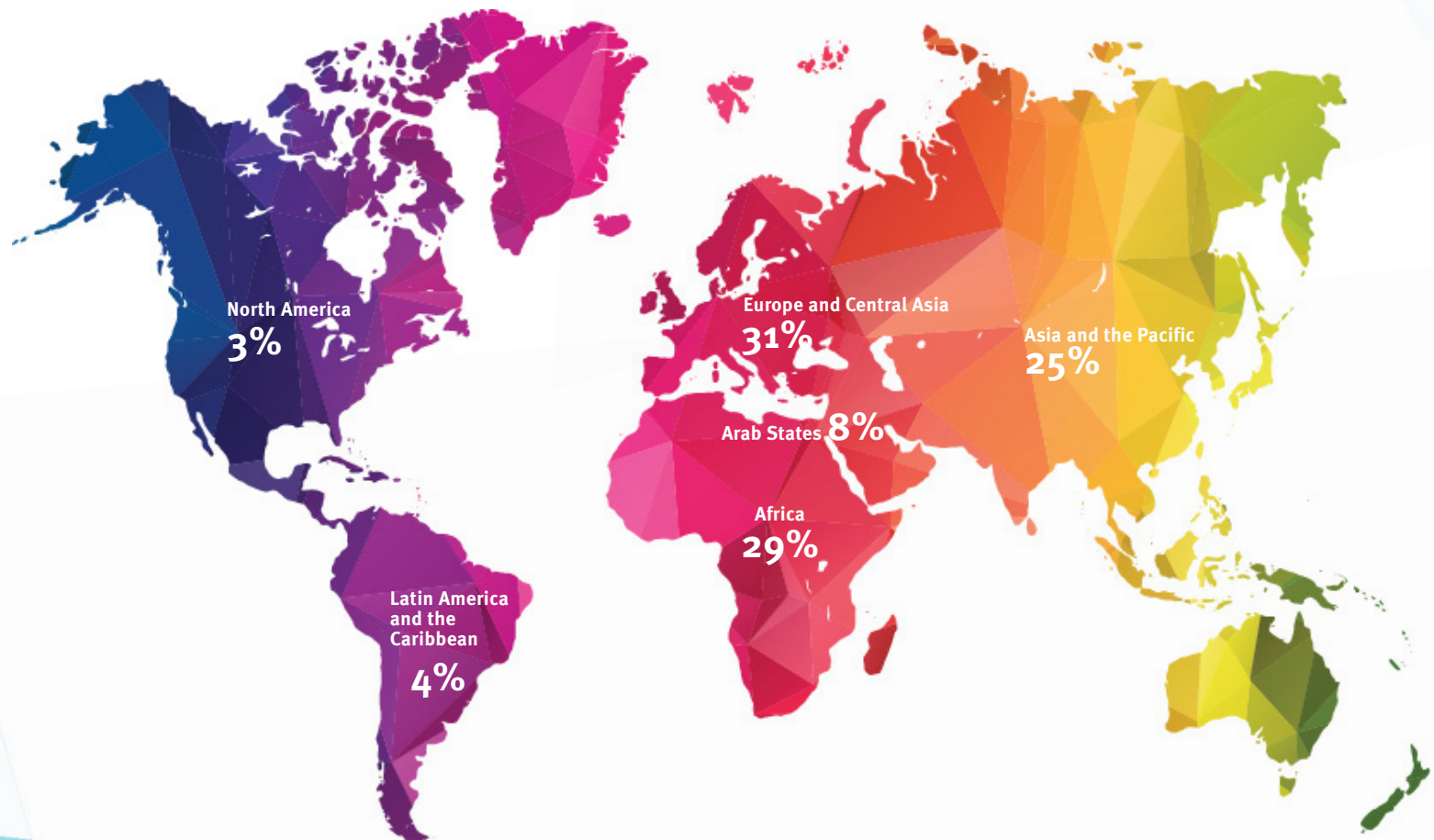
“Thanks to the support from UNIDO Field Offices and the nine UNIDO ITPOs, we were able to attract many applications from developing countries. It is important that representatives and businesses from developing countries see themselves as key players in this process. Local solutions are quintessential for more inclusive approaches in solving the global developmental challenges.”

Bernardo Calzadilla-Sarmiento
Managing Director, Directorate of Digitalization, Technology and Agribusiness,
UNIDO



71 COUNTRIES

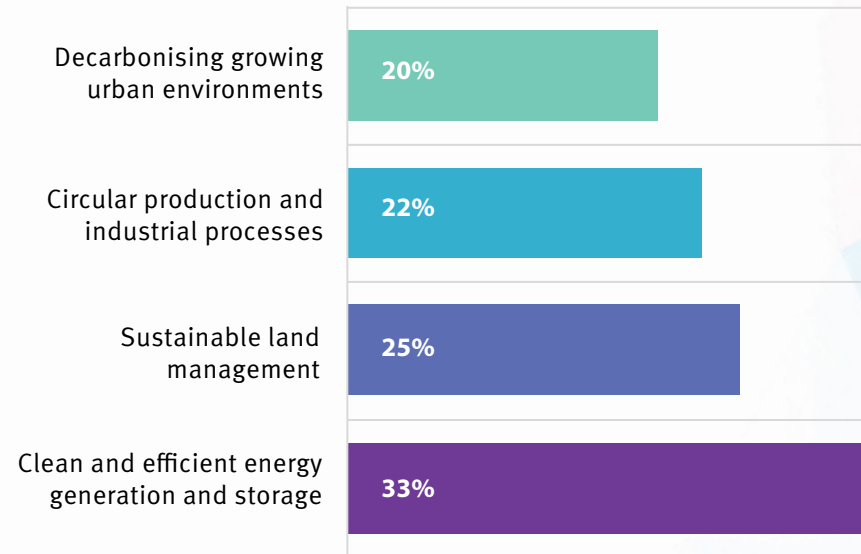
5 CONTINENTS



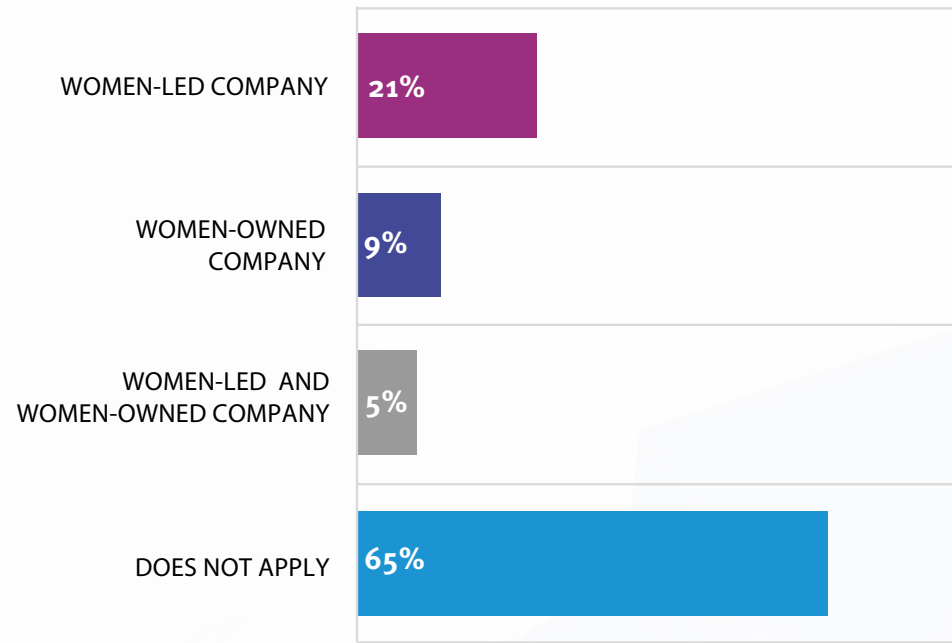
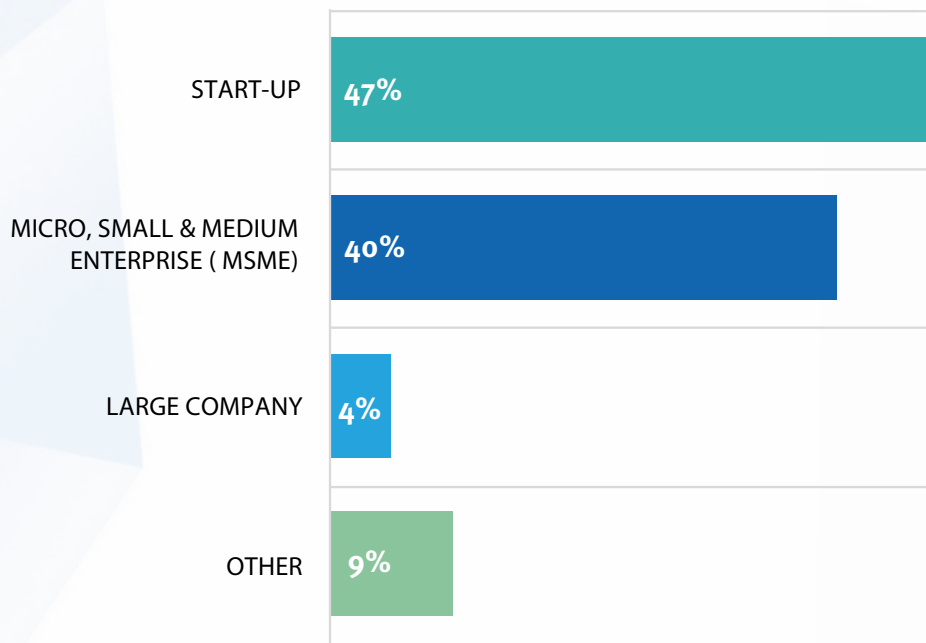
SDGs covered by applications



Applications by Award Category



Type of Businesses that applied





EVALUATION CRITERIA AND SELECTION PROCESS

The cleantech experts from FCA and experts on sustainable land management from UNCCD evaluated all 294 applications according to the eligibility criteria and evaluation criteria. They created a shortlist of 23 applications for final evaluation by the Jury.

All 23 shortlisted applications underwent an internal due diligence and were evaluated by the Jury according to the following criteria:

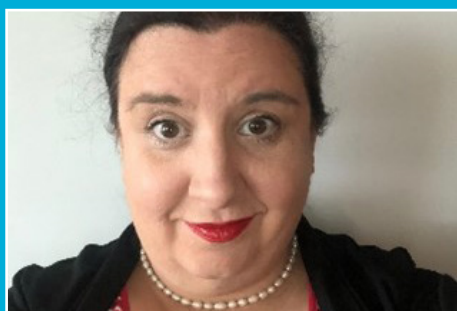
	Innovative content of the proposal	30%
	Potential contribution to international climate change mitigation and adaptation efforts and environmental sustainability	25%
	Proven applicability, scalability and possibility of expansion to different geographical and socioeconomic contexts	20%
	Economic and social long-term sustainability	15%
	Expected occupational return (job creation and income generation potential)	10%



JURY MEMBERS

The Jury, comprised of independent experts in the areas of cleantech and sustainable land management from UNIDO, UNFCCC and UNCCD, voted on the best innovative technologies and ideas in the context of this competition.

The members of the Jury of the UNIDO Global Call were:



LOUISE BAKER

Managing Director, Global Mechanism,
UNCCD



ANDREA CAMPONOGARA

TEC Liaison Officer, Technology Sub-division,
UNFCCC



ABIMBOLA WYCLIFFE

Head of UNIDO ITPO Nigeria



ROLF STELTEMEIER

Head of UNIDO ITPO Germany



ALOIS MHLANGA

Chief, Climate Technology and
Innovations Division, UNIDO



XIAOLEI ZHAO

Head of UNIDO ITPO Shanghai



“Going through the shortlist of the Global Call 2021 in the run-up of the COP26 was really energizing. It shows once more that things are happening, solutions are out there, and are already being implemented.

Meeting people through this Global Call who put in the effort and energy to come up with solutions to the climate challenge has really been a shower of optimism!”

Andrea Camponogara

TEC Liaison Officer, UNFCCC, jury member of this year’s Global Call.






MEET OUR WINNERS AND SHORTLISTED SOLUTIONS!

Category 1 - Decarbonizing growing urban environments

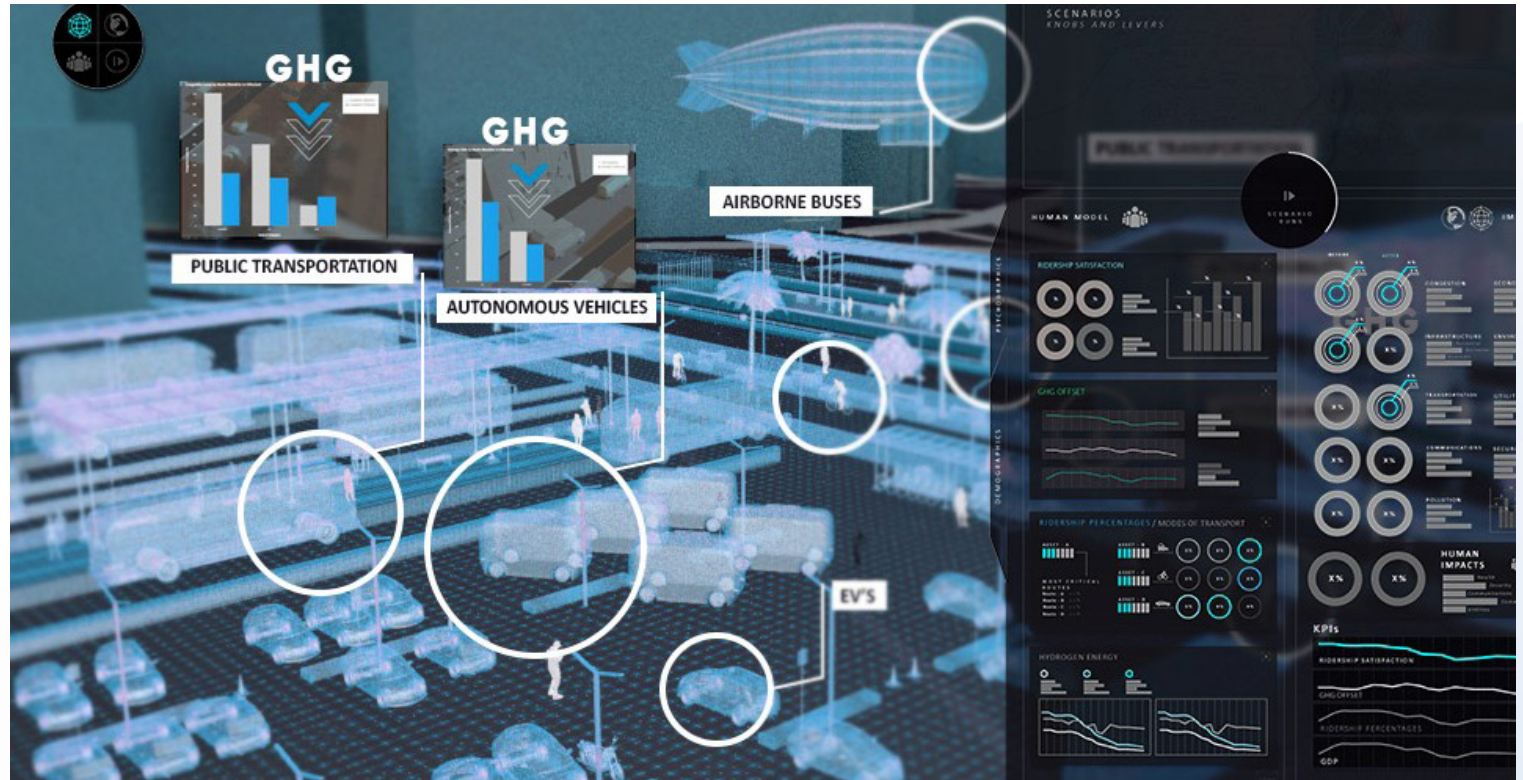
SHORTLISTED COMPANIES:

The needed solutions in this category are of a cross-sectional nature. A common thread to the most impactful solutions is collecting and analysing large amounts of data to enable more efficient use of resources. Integrating spatially distributed small to medium power generators and consumers into a common grid is an especially vital goal.

Company name	Country	Link (Website, Social Media)	Type of Technology	Description of Technology
eccov Inc. - Pedal Electric Micro Mobility Platform Architecture	South Korea		Micro mobility platform	Modular platform to enable small EVs for delivery to personal transport
ME SOLshare Ltd. - Electric 3-Wheeler (E3W) Battery Charging - Bangladesh's Local Tesla!	Bangladesh		Off-grid energy use	Solar energy sharing platform with charging for small EVs
Sparrow.city - Sparrow - The Next Generation Urban Measurements Ecosystem for the future Smart and Sustainable Cities	Switzerland		Distributed sensor network	Data gathering on mobile vehicles for measuring urban data such as pollution and temperature

WINNER: RUNWITHIT Synthetics Inc.

RUNWITHIT Synthetics' application was selected out of 58 other strong applications in the same category and convinced the jury with its system Artificial Intelligence (AI) to create city and region-specific living digital future labs. Its simulation of cities and regions can make a significant contribution to innovating and decarbonizing growing urban environments by evaluating alternative mobility systems effectively.



Myrna Bittner

CEO and Founder of RUNWITHIT Synthetics:

“Our models put people at the centre of decarbonization. How we change minds is central to taking the rapid actions required to reduce our emission-heavy economies and reach GHG emissions targets.”







Watch the short video to learn more about the RUNWITHIT Synthetics' solution, the people behind it and what it would take to scale the solution:



Category 2 - Clean and efficient energy generation and storage

Modern clean energy systems can reach unprecedentedly low generation costs with intermittent sources like solar, but their true cost is higher as they rely on grid balance services of fossil power. In the future, these need to be provided by a range of other technologies such as storage, less intermittent renewables, like wave power, or even baseload capable clean power, like super-hot rock geothermal.

SHORTLISTED COMPANIES:

Company name	Country	Link (Website, Social Media)	Type of Technology	Description of Technology
BayWa r.e. Solar Projects GmbH - BayWa r.e. Agri-PV Technology (project example: Babberich)	Germany		Solar PV adapted to agriculture	Using the symbiosis of PV and plant by protecting plants that require less sun and using the cooling effect of evaporation for more efficient PV
ENWISE - Clean and Affordable Energy	China		Biodigester	Microbiological methane generation from organic waste for energy generation
GA Drilling - PLASMABIT	Slovakia		Drilling for geothermal energy	Novel plasma based drilling technology for low cost access to deep geothermal energy
HD Fotovoltaica - BIPV for Cities and Rural Zones(Agrovoltaic)	Argentina		Rooftop solar materials	Integrated solar PV modules in easy to assemble roof materials for rural access to electricity
Kraftblock GmbH - REET - renewable energies in existing technologies	Germany		Power to high temperature industrial heat with integrated heat storage	Solution for using renewable electricity for hard to decarbonize industrial heat and storing energy to mitigate intermittency
Nunam Technologies Pvt. Ltd. - Reliable and affordable energy solutions from repurposed EV batteries for inclusive and sustainable economic development	India		Reuse of battery cells at conventional end of life	Repackaged second life EV batteries for off grid solar electricity storage

WINNER:

BETTERIES AMPS GmbH

Betteries' application was selected out of 97 other strong applications in the same category. The solution provided by betteries is an affordable and reliable energy storage system based on second-life electric vehicle (EV) batteries. The modular and mobile system combines an efficient energy storage with a holistic circular economy approach and offers off-grid energy access in developing countries.



Rainer Hönig
Founder & Managing Director, Betteries:

“Betteries offers the first true modular, mobile, multi-purpose and connected 2nd life battery system for productive use.”

Watch the short video to learn more about betteries' solution, the people behind it and what it would take to scale the solution:



Category 3 - Circular production and industrial processes

Applying circular principles, such as the re-use, re-manufacturing and re-cycling of resources, offers vast scope to reduce industry's carbon footprint. Energy and process efficiency measures equally represent an underrated hidden champion in climate technology. Innovative approaches to the industrial challenges of decarbonization need to tackle the problem of how to provide chemical energy carriers, especially hydrogen, in an affordable but clean manner. As some problems cannot be decarbonized completely, carbon capture and storage is inevitable and the required infrastructure must be scaled quickly.



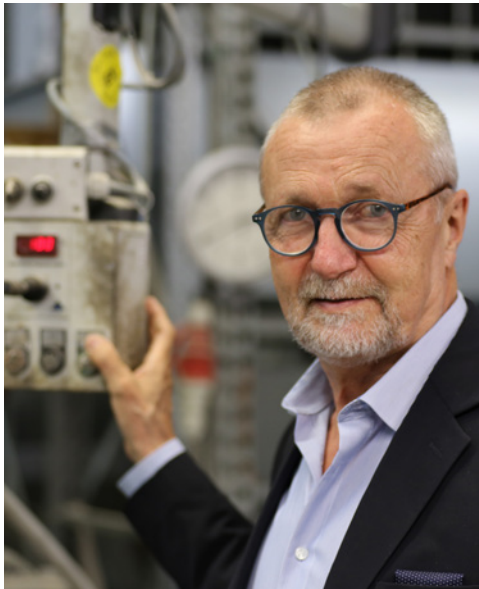
SHORTLISTED COMPANIES:

Company name	Country	Link (Website, Social Media)	Type of Technology	Description of Technology
Ecovon - Biodegradable building and packaging materials made from coconut waste	Ghana		Renewable building materials	Biodegradable building and packaging materials made from coconut waste
Re-Fresh Global - Re-Born Textiles Microfactory	Israel		Recycling of textiles	Process to remake clothes from recycled textiles
Rootzone Africa Limited - Waste to Value	Uganda		Nitrogen recycling	Accelerated production of nitrogen-rich biomaterials as fertilizer

WINNER:

Polycare Research Technology GmbH & Co. KG

Polycare's application was selected out of 66 other strong applications in the same category. Polycare convinced the jury with the solution of building blocks produced from polymer concrete with inferior sands or processed waste and recycled PET. The building blocks make an important contribution to sustainable and circular construction that can be assembled and reassembled easily.



Gerhard Dust
CEO and Founder of Polycare:

"Today you have a pile of sand, tomorrow you can have a pile of blocks, and next week you can have a building"

Watch the short video to learn more about Polycare's solution, the people behind it and what it would take to scale the solution:










Category 4: Sustainable land management

Solutions from players in the food, fibre and feed supply chains that can ensure more sustainable land use throughout the production process. Solutions include supply management approaches, as well as changes within the supply structure or new technologies. It is important to consider innovative solutions for developing sustainable

value chains in dryland regions with demonstrable positive contribution on soil health and to combat land degradation at scale, while meeting global consumption demands and moving away from net-negative land products.

SHORTLISTED COMPANIES:

Company name	Country	Link (Website, Social Media)	Type of Technology	Description of Technology
Aussan Laboratories - CropBioLife Soil Organic Carbon	Australia		Agricultural additive	Biological compound for plant and soil health and accelerated soil carbon sequestration
GAIAGO - CARBOSOIL	France		Agricultural additive	Prebiotic for soil health and accelerated soil carbon sequestration
PREMIUM HORTUS	Benin		App	Small scale farmer food delivery app
SUNfarming GmbH - Agro-Solar to combat desertification	Germany		Agrovoltaics	Using the symbiosis of PV and plant by protecting plants that require less sun and using the cooling effect of evaporation for more efficient PV
Sustainable Planet Ltd - Sustainable Planet Cambodia	United Kingdom		Alternative protein production	Water lentil based protein Efficient protein production with carbon sequestration
AtoANI - AtoANI i-CROP: Data-based Produce-to-Demand Sustainable Agriculture Model	Philippines		App	Sustainable farming based on preorders Data analysis informs crop planning
Sinafis SAS - SinaSens SmartAgri	France		Agricultural sensors	Temperature, humidity, and humectation sensor

WINNER: **Zhejiang Chint New Energy Development Co., Ltd.**

Zhejiang Chint New Energy Development's application was selected out of 73 other strong applications in the same category. Zhejiang Chint New Energy Development's Kubuqui 310 MW desert solar PV project combines the generation of green power with sand control, grass planting, farming and poverty alleviation with a clear and demonstrated impact on soils.



Chuan Lu
Chairman of the Board and CEO of Zhejiang
Chint New Energy Development:

“Kubuqi 310MW desert Solar PV project was constructed by Zhejiang Chint New Energy Development Co., Ltd. It is the first Solar PV project built on the desert and has become the benchmark and demonstration desert Solar project in China. Besides generating green power, the project is also considering of the agricultural planning, animal husbandry and ecological management beneath the solar panels, which well reflects five conceptual aggregation of sand control, grass planting, farming, power generation and poverty alleviation.”

Watch the short video to learn more about Zhejiang Chint New Energy Development's solution, the people behind it and what it would take to scale the solution:





AWARD CEREMONY

The winners were awarded by UNIDO ITPO Germany in a hybrid award ceremony on 26 October 2021 in Remscheid's Teo Otto Theater, Germany. In compliance with COVID-19 regulation, the hybrid award ceremony was attended by representatives of all four winners and about 160 cleantech innovators, investors, and stakeholders alongside representatives from different UN organizations and NGOs.

The winning companies introduced their technological solutions and demonstrated how their projects contribute to addressing adverse effects of climate change and contribute to inclusive and sustainable economic development.



Experts and Jury Members from UNIDO, UNCCD and UNFCCC gave the audience an insight into the challenges and opportunities of the four strategic categories. Further shortlisted companies per category were introduced and winners received an Award and Certificate. The event was moderated by Vanessa Voelkel, Deputy Head of UNIDO ITPO Germany and Peter Schniering, Founder and CEO of FCA.

The day was completed by a networking dinner and two side events organized in cooperation with FCA on Breakthrough Innovation and Decarbonizing Heavy Industry. Both side events zoomed in on some of the hardest challenges in the energy transition: sectors where technologies to decarbonize comprehensively are still in their infancy – and what can be done to speed up the process.

To learn more about the Global Call winners and shortlisted candidates, watch the award ceremony:



Award Ceremony

Watch the side events here:



Breakthrough Innovation



Decarbonizing Heavy Industry



REWARDS AND THE UNIDO GLOBAL CALL WINNERS AT COP 26 IN GLASGOW



Upon invitation of UNFCCC, UNIDO ITPO Germany and FCA organized two side events at the UNFCCC Global Innovation Hub during COP26 in Glasgow. One side event presented key takeaways from the Global Call about the role of technological innovations in cleantech to address effects of climate change. At the second side event winners of the Global Call were invited to the Innovation Hub via video call so that they could present their award-winning applications to an audience of stakeholders and decision-makers. This platform during COP26 was part of the rewards stipulated for the winners on the outset of the UNIDO Global Call.

Selected winning proposals will further receive advisory support by the UNIDO

ITP Network and will be provided with matchmaking opportunities. These range from opportunities to showcase their solutions in an exhibition-format, to pitching their ideas to potential investors/donors.

The follow-up support is targeted and specific to the winners, depending on the opportunities in their specific field of activity. Polycare already profited from ITPO Germany's business matchmaking support during the German-Nigerian Business Forum in November 2021:



Watch the first technical session here:



Watch the second session about the award-winners here:



Chibo Onyeji
Senior Manager Business Development,
Polycare (third from the left)

“Since Remscheid and from what I gathered there as a benefit of coming on top of a category in the 2021 UNIDO Global Call, I understood that UNIDO would support the winners to achieve greater visibility. But in Lagos ITPO Germany went beyond this visibility agenda, surpassing our expectations beyond belief. Adekunle Olusile, the ITPO Germany Advisor in Lagos left no stones unturned and mapped new paths that are opening new grounds for us. On behalf of Polycare Germany, I do convey our sincere gratitude for your embrace of and faith in the Polycare model. We can only hope that the cooperation between our two organizations will continue to strengthen.”



NEWS ARTICLES

Interested in learning more about about the Global Call 2021?

Read the news articles of UNIDO and our partners:

UNIDO:



UNFCCC:



FCA:



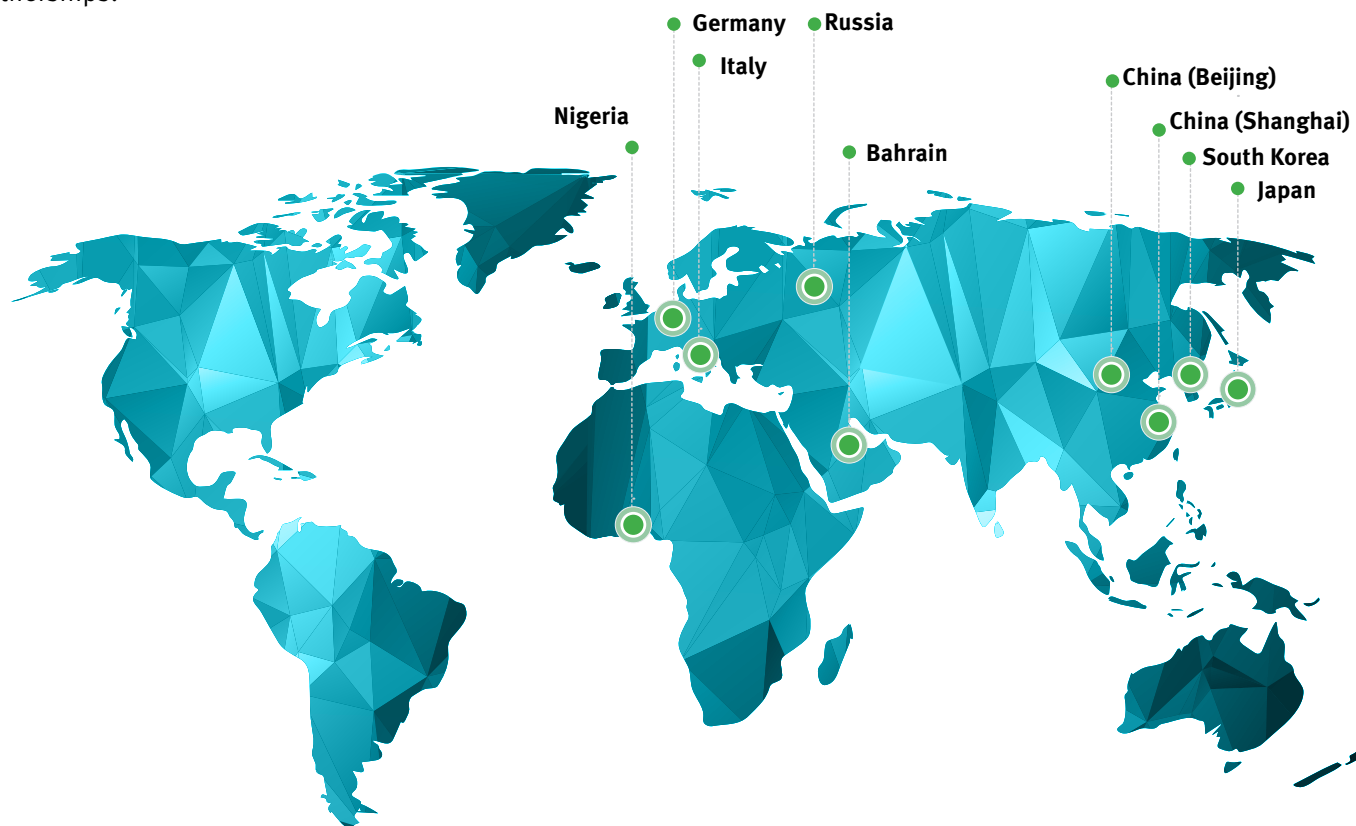


THE ROLE OF THE UNIDO ITP NETWORK

With the mandate of coordinating and mainstreaming the Fourth Industrial Revolution in its technical cooperation, strategic, normative activities, the UNIDO Directorate of Digitalization, Technology and Agribusiness aims at fostering inclusive and sustainable industrial development, by promoting the adoption of new and sustainable technologies. Within the Directorate, the Department of Digitalization, Technology and Innovation leads the way in addressing opportunities, challenges and risks stemming from the 4IR and its contribution to sustainable socio-economic progress. The department further supports and coordinates the activities of the UNIDO ITP Network with UNIDO programmes, projects and field operations to facilitate responsible business partnerships, innovative and 4IR technologies adoption, and up-scale development impact.

The ITP Network Secretariat at the UNIDO headquarters ensures effective networking, information and knowledge sharing among the nine ITPOs worldwide. With the mandate of promoting inclusive and sustainable investments and technology transfer from developed to developing countries, the ITPOs are well-placed to support a Global Call targeted to the private sector through their respective networks. The ITPOs are strategically located in developing and developed countries and promote investment and technology flows between investors and technology suppliers

in their host countries and potential partners in developing countries. ITPOs are well positioned to foster synergetic partnerships in line with UNIDO's vision of inclusive and sustainable industrial development and advancing the 2030 Agenda for Sustainable Development, in particular SDG 9: Industry, Innovation and Infrastructure and SDG 17: Partnerships.



© UNIDO 2022. All rights reserved. This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” or “developing” are intended for statistical convenience and do not necessarily express a judgement about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

Photos © UNIDO, Christian Ewald, iStock, shutterstock, RUNWITHIT Synthetics Inc., betteries AMPS GmbH, Silke Reents, Polycare Research and Technology GmbH & Co. KG, Zhejiang Chint New Energy Development Co., Ltd.



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO ITP Network Secretariat

Department of Digitalization, Technology and Innovation
United Nations Industrial Development Organization

Vienna International Centre,
P.O. Box 300, 1400 Vienna, Austria

itp-network@unido.org