



7.1 Environmental Sustainability Practices

Since its establishment in December 2005, United Renewable Energy has taken pride in producing green products, whether in the manufacturing process, procurement, terminal handling or responding to governmental counseling programs. These specific actions have proven that United Renewable Energy is not only a producer of green products, but also a leading green company.

In response to climate change, United Renewable Energy's takes pride in the response planning goal of producing green products. Throughout the entire production process, we continue to refine our research and development processes, replacing high pollution with low pollution and reducing the use of chemicals; in the procurement of equipment, we continue to use high safety standards and pollution-free procurement as the benchmark; in the terminal handling of the process, we adopt the spirit of continuous improvement to reduce the emission of pollutants; at the same time, solar power is installed on the rooftop of the solar power plant to replace utility power, to implement energy saving and carbon reduction, and to slow down climate change.

Green Energy Products: High Quality Solar Energy Products

United Renewable Energy plays a part in Taiwan's high-quality green energy industry. Our business groups include solar cells, solar modules, solar systems, and new business groups (energy storage systems and hydrogen energy) and so on. United Renewable Energy's modular products have been awarded "Taiwan Excellent PV" by the Bureau of Energy, Ministry of Economic Affairs again in 2022, for the tenth consecutive year. In terms of overseas evaluation, United Renewable Energy modules have not only been certified by TUV Rheinland and TUV SUD of Germany for the latest and strictest international IEC tests, but also passed the listed certification for solar energy and clean energy products by UL of the United States and many other countries, showing once again that the quality of United Renewable Energy modules has been recognized by relevant organizations worldwide. United Renewable Energy has been consistently ranked by Bloomberg New Energy Finance as in Tier 1 Module Manufacturer List for 2022, and has been listed as a Tier 1 supplier since 2017, recognizing the outstanding performance of United Renewable Energy's module products in the solar power field.

Energy Management:

As the leading solar energy company in Taiwan, United Renewable Energy not only needs to generate profits, but also needs to set a high ethical standard for energy management, and energy saving is definitely in the DNA of United Renewable Energy. The roofs of United Renewable Energy's plants are equipped with large areas of its own solar modules, which not only generate electricity for the buildings in a non-polluting manner, but also reduce the temperature of the roof panels due to shading and thus reduce the air-conditioning load.

Terminal handling: Effluent and waste

United Renewable Energy believes that pollution prevention is one of the primary responsibilities of an enterprise, so it has built its pollution prevention system based on the ISO 14001 management system and promotes continuous improvement of environmental management programs with the PDCA management model, hoping to reduce the use of raw materials and energy resources at the root, and to reduce the amount of effluent and waste, expecting to achieve a win-win situation by taking into account both production costs and environmental protection.

7.2 Green Energy Products

United Renewable Energy is part of Taiwan's excellent green energy industry, with a business group that includes solar cells, solar modules, and a new business group (energy storage systems.) United Renewable Energy has been continuously recognized at the national level, and solar modules have been awarded Taiwan Excellent PV (2013-2022) for ten consecutive years (2013-2022) and continue to provide high quality, high standard solar modules.

Note: Please refer to the official website of United Renewable Energy for the details of green energy products.

Solar Energy Systems

To achieve the United Nations Sustainable Development Goal of ensuring affordable, reliable, and modern energy services for all by 2030, we have set short, medium, and long-term goals as follows:

■ Short-term goals (2021~2022):

Suitable solar power systems (rooftop, agricultural sheds and ground type) are built according to the market demand and utility power supply conditions. Solar power systems are mainly composed of solar cells, power regulators (including inverters, system controllers, and on-grid protection devices), wiring boxes, and storage batteries. According to the type of system, it can be categorized into utility on-grid type, off-grid type and on-grid with batteries type.

1. Stable power supply is available at the site:

Utility On-Grid System is used because it has a stable power supply and can use the solar power system as supplementary power supply, and the excess power supply can be sold back to the local power plant.

2. No utility power support at the site:

Off-Grid System With Batteries is used to store electricity with storage batteries and provide stable power under reasonable power load.

3. The site has stable power supply or intermittent power supply:

On-Grid System With Batteries is a hybrid system that uses a solar photo-voltaic system to generate and store electricity during the day and the utility power to supply electricity at night. The utility and storage batteries are used in combination to obtain stable power.

From 2022, our company has made comprehensive layout according to different site environment (ground type, roof type, all weather court, water surface type, agriculture, fishery and electricity coexistence...) All of them can provide the solar photo-voltaic module products to meet their environment. The products include large size "PEACH VLM" series, M6 and M10 modules with better power generation performance and better cost of electricity consumption in large power stations. The double-glass module "Glory PEACH" has better weathering structure, suitable for salt beach area and has high wind pressure and fire resistance. The "PEACH BiFi" series, with lightweight design and high performance on both sides, is suitable for decentralized power stations such as rooftop type.

As the voltage of the system power station increases, there is a higher voltage difference between the module and the ground, which affects the output efficiency of the double-sided module in the long term. In response to this, our company has launched a double-sided battery quality excellence program and won the support and subsidies from the Bureau of Energy, Ministry of Economic Affairs' Industry Energy Program, which aims to improve the battery quality and back power degradation phenomenon. Reliability testing will be conducted by the Industrial Technology Research Institute (ITRI), a third-party institute in Taiwan, to help verify that the product will create greater dual-sided power generation benefits for customers, and is expected to increase power generation contribution by more than 10%. The technology has been filed for patent protection in Taiwan and the U.S., and is planned to be officially launched with the new production line of large-size solar cells to seize the global solar photo-voltaic market.

United Renewable Energy's energy products are the most powerful and reliable products in their class in the industry of Taiwan. In response to Taiwan's dual-use land type, United Renewable Energy has developed full-transparent modules to achieve the goal of agriculture-based and green power adding value; and developed the world's exclusive easy-dismantled, which have also obtained international IEC product certification.

The Company holds 144 R&D patents as of 2022

■ Medium-term goals (2022~2025):

To create a customized and optimized solar system power station. Generally speaking, large-scale ground-mounted grid-connected power systems can be categorized into fixed and sun-chasing systems. Fixed systems are calculated and designed according to the location of the power plant to produce the maximum cumulative amount of electricity throughout the year; sun-chasing systems are rotatable and follow the trajectory of the sun to rotate the angle of the



system, increasing the power generation capacity by 20-30% compared to fixed systems. In addition, the sun-chasing system has a dynamically balanced wind protection capability, with a wind speed capacity of up to level 17 gusts, not simply resisting the wind force, but allowing the wind to pass smoothly in response to changes and reducing the possibility of structural damage. Because it can rotate at a full sunlight angle, it is less likely to accumulate dust or water, and the efficiency of power generation can be more stable. United Renewable Energy is currently focusing on fixed solar power systems. In the near future, United Renewable Energy expects to introduce more efficient sun-chasing solar power systems to meet the needs of countries around the world with different weather challenges and more efficient power generation.

Increase the cell area to further increase the frontal power generation. By introducing large size 166mm and 182mm single crystal cells, the maximum output wattage of the single cell module can be increased to the positive tolerance of the indicated value, and by increasing the output wattage of the single cell module, the BOS of the large scale site system can be reduced, thus reducing the cost of power generation. The module power can be increased to 460W and 550W.

The government is fully committed to promoting the solar photo-voltaic policy to prioritize the diversified use of land, with the Ministry of Economic Affairs, the Council of Agriculture and the Ministry of the Interior working together to promote the core values of "agriculture and fishery-based, value-added green power", using green energy resources to drive the upgrade and sustainable development of the fishing industry, creating a local employment economy, optimizing the environment for farming technology and sustainable land development and utilization, and promoting the coexistence and prosperity of the fishing industry with green energy. United Renewable Energy's 2022 fully-transparent module meets the requirements of "farming, power generation, and dual use of land" by combining solar photo-voltaic with agriculture (fishery), selecting suitable crops, creating a new generation of agricultural and fishery products, and to create a diversified value of coexistence and co-prosperity between agriculture (fishery) and green energy.

Retirement of solar modules has become a growing economic and political issue, and according to a study by the IEA (International Energy Agency), the world will accumulate more than 6 million tons of waste by 2030. The Environmental Protection Administration surveyed that Taiwan will accumulate more than 10,000 tons of waste (regular retirement or disastrous disposal) by 2025. In response to the international trend of net-zero carbon emissions, United Renewable Energy and ITRI are accelerating the development of easy dismantle solar modules to achieve product standardization, introducing new technologies and upgrading Taiwan-made high-quality products, leading the energy industry toward net-zero sustainable development, grasping new business opportunities in the global carbon reduction cycle, accelerating the research and development of related issues in technology for international marketing and market promotion, and providing The best solution to the solar module recycling issue.

We continue to improve the photo-voltaic conversion efficiency based on P-type PERC cells, and are simultaneously developing next-generation N-type high-efficiency solar cell processes (TOPCon and HJT). In recent years, our P-type PERC cells have reached 22.95% efficiency in mass production of M6 (166mm*166mm) large size cells through optimization of process parameters and application of new materials. In response to the global market's strong demand for high efficiency and high wattage, in the first half of 2022, we launched a new mass production line for large-size cells, with the introduction of large-size M10 (182mm*182mm) chips, the polarization of cell patterns, and the application of new technologies, we expect to launch the new M10 P-type PERC cells with a conversion efficiency of 23% in the second half of the year. The Company is capable to fully integrate cells and modules, we match different environment with appropriate cells and products according to characteristics, be it water surface, desert, snowland or rooftop. Our R&D team has been maintaining good cooperation with domestic and foreign academic and research institutions to obtain information on the development of various new technologies and equipment, and has established a close network with upstream key material suppliers to provide complete technical service and support to our downstream customers.

■ Long-term goals (2026~2036):

Promote local economy to improve life, global, environmental protection and carbon reduction, nuclear power plant retirement. With the widespread application of solar energy systems in local agricultural and livestock sheds, apart

from the income from the agricultural and livestock industry itself, the income from the value-added land, the income from the sales of electricity from solar power generation, and even the income from the resale of solar power plants can improve the existing quality of life and promote the local economy. In addition, the international trend of energy saving and carbon reduction and the issue of carbon trading have attracted much attention from all parties. By replacing the use of traditional fossil energy through the integration of solar power generation into the power grid, it has become an important source of carbon reduction performance recognized by the Kyoto Protocol and the European Union. In the future, Taiwan will most likely be regulated into the scope of greenhouse gas reduction control and carbon trading mechanism; therefore, the Environmental Protection Administration also published as early as September 10, 2010 Executive Yuan Environmental Protection Administration greenhouse gas advance project and offset project promotion principles, it is expected that carbon trading revenue will bring another wave of warmth to people's lives.

Unlike other types of large-scale power plants, solar power plants do not cause any environmental or noise pollution and can be safely located in any place. In recent years, United Renewable Energy has been dedicated to the planning and installation of solar power plants, and has achieved high performance and rating in countries around the world.

■ Solar Energy System Performance:

The Company is the largest developer and constructor of solar power systems in Taiwan, with a business model that focuses on system business and module branding to actively develop and construct solar power systems and provide asset management services for power plants. As for overseas, the Company has formed strategic alliances with several internationally renowned renewable energy asset management companies to sell projects to asset management companies after they have reached the construction stage (or even the completion stage), taking into account the Company's strengths in site development. This strategy has yielded immediate results, with over 600MW of accumulated solar sites completed worldwide. In Taiwan, as we have manufacturing plants, offices, or stationed offices in Hsinchu, Miaoli, Tainan, and Kaohsiung, we are actively participating in local school bidding projects in nearby counties and cities, and conducting local presentations and green energy education visits to further expand our system business in Taiwan by combining our strengths in system engineering and module manufacturing.

Accumulated total construction from 2019 to 2022

2019 Total construction / 18.87MW

Item	Solar energy installed area	Capacity (MW)
1	Tainan	2.06
2	Taoyuan	0.76
3	Kaohsiung	1.48
4	Hsinchu	8.00
5	Pingtung	3.71
6	Miaoli	0.50
7	Yunlin	1.28
8	Hualien	0.50
9	Nantou	0.10
10	Changhua	0.50

2020 Total construction / 19.89MW

Item	Solar energy installed area	Capacity (MW)
1	Taipei	0.41
2	Tainan	4.71
3	Kaohsiung	10.82
4	New Taipei	0.26
5	Hsinchu	1.16
6	Miaoli	0.27
7	Yunlin	0.95
8	Changhua	1.31