



## Chapter 3

# GREEN ENVIRONMENT

SPECIAL COLUMN: DEVELOPMENT AND SIGNIFICANCE OF GREEN BONDS - ENERGY TRANSITION TO LOW CARBON AND SUSTAINABILITY

3-1 GREEN FINANCE

3-2 GREEN OFFICE

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SPECIAL  
COLUMNDevelopment and significance of  
green bonds - energy transition to  
low carbon and sustainability

In 2019, the first foreign offshore wind power developer issued the NTD- denominated green bond on the professional board in Taiwan. Its parent company is Ørsted (Denmark), the world's largest offshore wind power company, which was formerly known as DONG Energy. The name was changed to Ørsted in 2017. For TPEX, it was the first NTD-denominated green bond issued by a foreigner on the professional board in Taiwan. For Taiwan, it is even more significant, as it means the transformation of the energy industry and enhanced sustainable economic developments. It is symbolic of the completion of strategic transformation from black energy to green energy and a step further towards the goal of 20% usage of renewable energy by 2025.

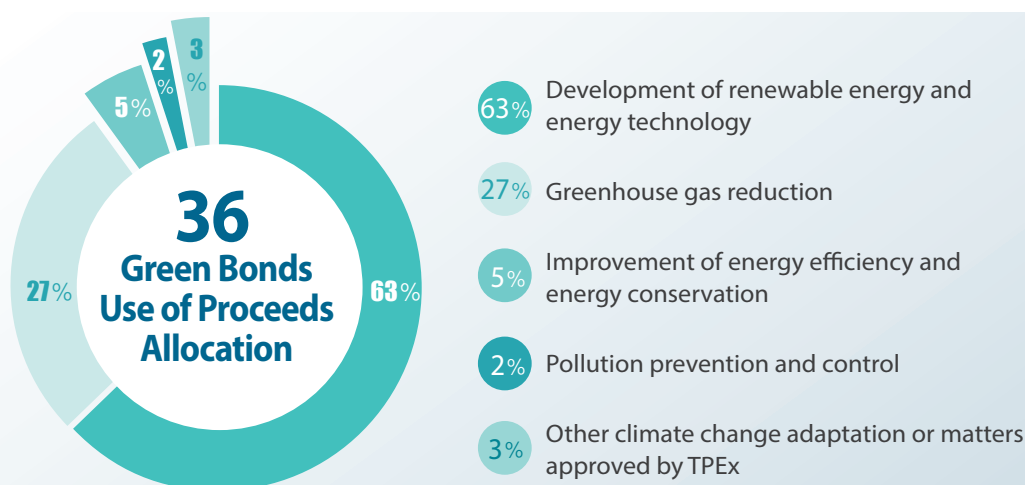
2017 was the year one for green bonds at TPEX. The bond issuance procedure, use of proceeds, utilization and management of funds, certification, and information disclosure, among other related regulations, were officially established. In order to promote developments on the green bond market, multiple market promotional briefing sessions were organized each year to encourage issuers to get involved in issuance and investment, and they also help constantly strengthen the issuance system on the green bond market. As of the end of 2019, total green bond issue number reached **37**, amounting to **NTD 100bn**, with **36** of them outstanding. These efforts are minimal contributions which TPEX has made to our green homeland, and they have been recognized internationally.

## Overview of the development of green bonds at TPEX



TPEX was eventually awarded as a Green Bond Exchange on March 20, 2018. This award is presented by the Climate Bonds Initiative and the London Stock Exchange on a yearly basis to countries, institutions, or instruments with special contributions to green bonds and is a symbol of honor for international green bonds.

The Operational Directions for Green Bonds that meet the Green Investment Project include **1. Development of renewable energy and energy technology, 2. Improvement of energy efficiency and energy conservation, 3. Greenhouse gas reduction, 4. Waste recycling or reuse, 5. Agricultural and forestry resource conservation, 6. Biodiversity conservation, 7. Pollution prevention and control, 8. Water resource conservation, purification, or reclamation, recycling, and reuse, and 9. Other climate change adaptation or matters approved by TPEX**, 9 in total. Most of the 36 green bonds that are currently in circulation involve the development of renewable energy and energy technology, or greenhouse gas reduction in nature, and answer exactly to the concerns of the international community regarding environmental protection and also the possible bottleneck that Taiwan might encounter in economic development. How to improve autonomy and diversity of energy and how to reduce greenhouse gas emissions in order to slow down climate change are the homework that Taiwan as an island needs to do. With the introduction and promotion of green bonds, it helps Taiwan transform to a green low-carbon economy, green investment, green consumption and life and will hopefully create a win-win-win situation for companies, investors, and the environment, leading Taiwan towards fulfillment of a vision where economic development can coexist with environmental protection.



Listing ceremony for the first NTD Foreign Green Bond issued by Ørsted Wind Power TW Holding A/S

# 3-1 | GREEN FINANCE

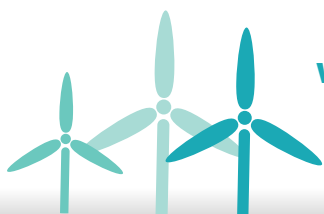
## Linking Capital Markets and Green Economy

Over the past few years, the world has grown concerned about environmental protection and green energy in light of crisis awareness and disasters brought about by global warming and climate change. In order to boost sustainable development for the economy and the environment, green finance is being promoted around the world in an effort to grow a global green economy. For this reason, the FSC introduced the Green Finance Action Plan that covers loans and credit, investment, capital market fund-raising, talent development, advancement of green finance products or services to deepen developments, information disclosure, and promotion of the green sustainability idea, seven domains in total.

In particular, for the development of green financial products, TPEX believes that it will not only enhance the awareness on the market about sustainable environmental development, but also help enterprises deploy green investments to cope with the significant impacts brought about by climate change in the future.

## Promotion of Green Bonds

Green bonds are the fastest growing green financial products globally now and the issue volume is growing each year. They are now an important bridge between the capital market and green economy, and will drive the development of green technologies and industries in Taiwan, while at the same time advancing sustainable environmental development. TPEX is exactly the steersman of the green economy momentum. To comply with government's Green Finance Action Plan and 5+2 Industry innovation policy, and to help green technology industries obtain mid-to-long-term funds, TPEX launched the Operational Directions for Green Bonds Under the FSC guidance and in line with international practices. These regulations establish a mechanism for TPEX trading and serve to provide enterprises with vehicles for green fund raising and to provide banks with sources of funds so that they can engage in green loans. The Directions also help the government guide economic transformation into green economy and towards low-carbon sustainable environmental developments.



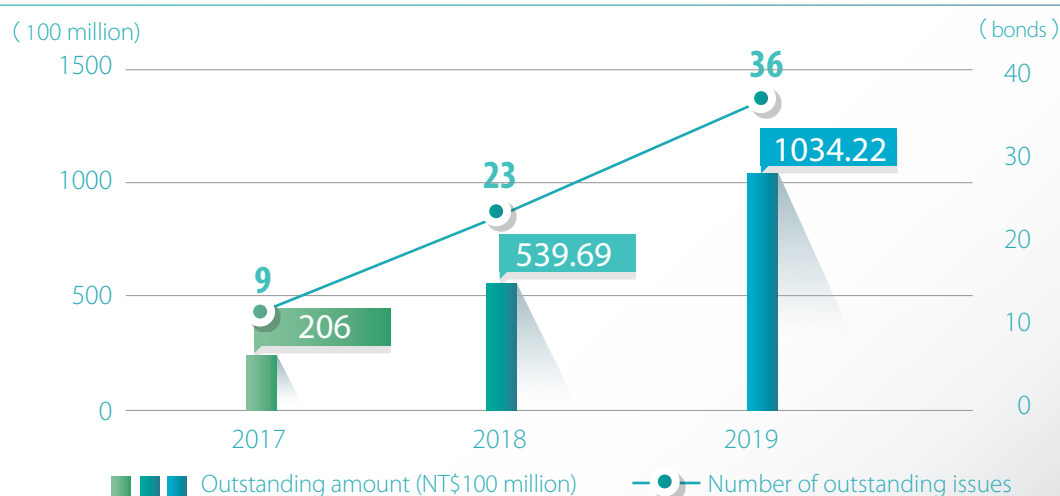
**Fourteen green bonds\* were issued in 2019,**  
**with the issue value totaling NTD 50.21 billion,**  
**a growth of more than 50% from 2018**

\*Note: One of them has been redeemed.



Under proactive promotion by TPEx, the overall green bond market outstanding amount reaching NTD 103.422 billion. In addition, there are a variety of issuers available, including domestic banks, foreign banks, supranational entities, and domestic and international producers. In terms of foreigners issuing NTD-denominated green bonds, in 2019, the Taipei Branch of Societe Generale, the Taipei Branch of BNP Paribas, and the subsidiary of Ørsted, Ørsted Wind Power TW Holding A/S, issued a combined 7 NTD-denominated green bonds, worth NTD 16.6 billion, which will be able to satisfy the investment financing needs of offshore wind power developers while investing in offshore wind power in Taiwan and will help with successful development of offshore wind farms in Taiwan to accordingly fulfill the goal of transforming the energy structure.

## Outstanding number and amount of green bonds , at the end of 2017-2019



In order to promote the visibility on the market for green bonds in Taiwan and its internationalization, TPEx held the 2019 Taipei Green Bond International Conference on November 6, 2019. Organizations that define green bond principles such as the International Capital Market Association (ICMA), the



2019 Taipei Green Bond International Conference

Climate Bonds Initiative (CBI), and green bond certification, release, and underwriting experts were invited to take part. Discussions in the conference included the developmental trends and challenges in the international green bond market and the experience of the offshore wind power generation industry in utilizing green finance tools. Representatives from the ICMA, CBI, and other foreign financial institutions all spoke highly about the developments and supervisory mechanism available in the green bond market of Taiwan. Participating green bond issuers and investors also indicated that such a system offers domestic and foreign enterprises a direct fund-raising and investment tool that helps fulfill corporate social responsibilities.



## Diversified Green Products

In order to maximize the scope of green bond products and to provide the market with more diversified green product fund-raising channels, TPEX relaxed the requirements of the Operational Directions for Green Bonds on January 19, 2019 and held briefing sessions in northern, central, and southern parts of Taiwan in April 2019. On the one hand, the system can help vitalize green bank loan assets to provide issuers with even more pluralistic fund-raising channels and can provide investors with more diversified green products to be chosen from. On the other hand, it is in favor of maximizing investments in the green industry and expanding the scale of the green bond market in our country.



## Green Finance Market in the Future

The green bond market in Taiwan is still growing development at the moment. For the time being, the goal is to continue creating a sound issuance and management system and continue holding briefing sessions to encourage domestic and international enterprises to issue green bonds in order to maximize the scale of the green bond market in Taiwan. In addition, simultaneous efforts are devoted to the promotion of diversification of issuers. In the future, social bonds and sustainable bonds will be developed further, too, reflective of the international market developmental trends and to meet domestic market demand so that more pluralistic sustainable fund-raising products may be provided for the investment and financing activities of enterprises to even more closely combine with ESG elements.



## 3-2 | GREEN OFFICE

### TPEX's Love for the Earth

As a global citizen, TPEX looks upon itself to build a green exchange with sustainable operation by integrating environmental protection in every aspect of operational decision-making, such as e-administration, environmentally friendly office equipment, energy conservation, and reduced paper consumption for its belief in environmental protection to take root while fulfilling the responsibilities of a friendly citizen.

As an exchange, TPEX does not engage in any operation that will significantly impact the environment, such as the use of raw materials, renewable raw materials, water recycling and utilization, sewage treatment, wildlife reserves or habitats, protected animals, destruction of the ozone layer, emission of substances, waste treatment, product package recycling, product/ raw material/personnel transport, among others, and is not involved in any complaint about environmental impacts. TPEX, nevertheless, tries its best to contribute to environmental protection and hopes to make a difference among enterprises.

### 3-2-1 Energy Management

Energy use at TPEX is simple. Energy consumption during operation mainly involves externally purchased electricity (non-renewable) to support electricity consumption in offices and the information center. Gasoline is used as fuel for official vehicles. TPEX consumed 759,116 kWh of electricity in total in 2019 and will continue to promote electricity conservation in the future. Besides periodic maintenance and service and inspections, ECO mode is applied while driving vehicles and carpooling is the fundamental rule. No private use is allowed. When employees go on a business trip, they are encouraged to take the public transportation system. Throughout 2019, a total of 6,189 liters of gasoline were consumed.





### Statistics of energy consumption

Type of Energy	Unit	2018	2019
Externally purchased electricity	kWh	721,517	759,116
	GJ	2,597.46	2,732.82
Automobile gasoline	liter	7,070	6,189
	GJ	230.89	202.12
Overall consumption	GJ	2,828.35	2,934.94
Energy intensity	GJ/ person	9.43	9.75

Note 1. The externally purchased electricity-related statistics only cover the data of the Guting Office in Taipei City.

Note 2. The thermal value provided under the emissions coefficient table Version 6.0.4 as announced on the website of the Bureau of Energy is adopted for the conversion; 3,600 (GJ/million kWh); automobile gasoline: 7,800 (Kcal/liter)

Note 3. 1 GJ=  $10^9$  joules; 1 Kcal = 4186.8 joules

Note 4. The mean number of employees is the average of the number in the beginning of the year and that at the end of the year; it was 300 in 2018 and 301 in 2019.

### Greenhouse gas emission

Greenhouse gas emission	Unit	2018	2019
Scope 1	tCO <sub>2</sub> e	16.16	14.03
Scope 2	tCO <sub>2</sub> e	384.57	404.61
Overall emissions	tCO <sub>2</sub> e	400.73	418.64
Emission intensity	tCO <sub>2</sub> e/person	1.34	1.39

Note 1. For the greenhouse gas emissions, the operational control law is adopted for the inventory check. The calculation goes: activity data\* emission coefficient\*GWP value (the emission coefficient is based on the EPA's greenhouse gas emission coefficient management table Version 6.0.4 and the GWP value is quoted from the fifth assessment report of the IPCC (2013)). Greenhouse gases include CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O

Note 2. The externally purchased electricity in Scope 2 was calculated with the electricity emission efficient of 2018, 0.533kg CO<sub>2</sub>e/kWh.

Note 3. The greenhouse gas emission intensity covers Scope 1 and Scope 2 emissions.



### A small step at TPEx means a lot for environmental protection

- ✓ Set the indoor AC temperature at 26 to 28 Celsius degrees and shut down the AC in unused rooms (such as conference rooms).
- ✓ Adequate illumination in office areas and communicate the idea: when not in use, save the juice.
- ✓ Precisely shut down respective electric appliances, equipment, PC power, and remove unnecessary plugs before leaving the office.
- ✓ Shut down the power for public equipment and unplug the plugs before leaving the office.
- ✓ The last person to leave each department shall check if the power to all public equipment within the department has been precisely shut down.
- ✓ Shut the glass door that connects externally on each floor (that is, the elevator corridor) to avoid AC air leaks and unauthorized access by external people which could jeopardize safety at work.
- ✓ Periodically care for the AC equipment, clean and maintain it in order to enhance its operational efficiency, and save electricity consumption.
- ✓ Use T5 energy-saving lights to reduce heat and the consumption of electricity.
- ✓ Replace indicators at fire exits, evacuation direction indicators, and fire prevention indicators with LED lights.
- ✓ Divide zones for accountability. Shut down unnecessary lighting when not in use.
- ✓ Set transaction machines on electricity conservation mode. They can enter the low-energy-consuming dormant state after having stopped for 5 minutes.
- ✓ Before a long vacation, shut down the power for electrical devices or equipment in order to reduce waste during standby.

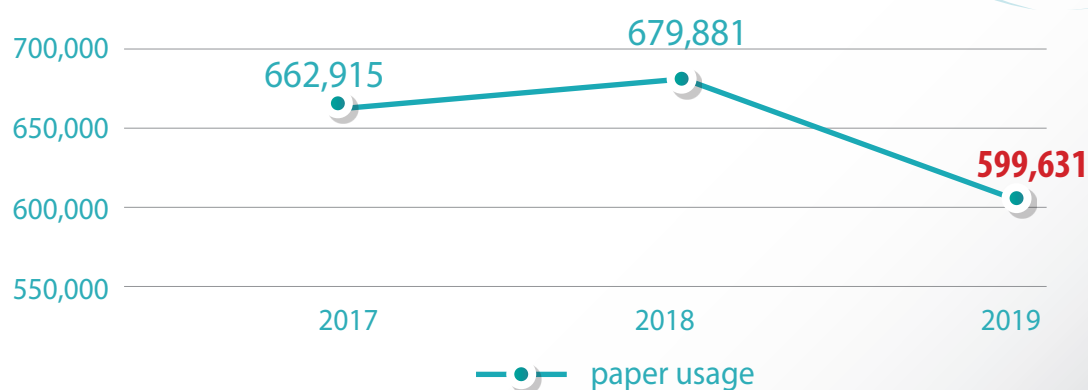


## 3-2-2 Paper Managements

TPEX treasures paper and traces how paper is used on a monthly basis at each department, and encourages that electronic official documentations be used, while at the same time urging companies on the Main boards and the emerging stock board to join in the electronic official documentations exchange system in order to reduce the transmission of hard copies.

The amount of paper used in printers throughout 2019 dropped **11.8%** from 2018.

Statistics of paper used in printer (piece)



TPEX has been promoting digitalization in all respects and E-filings programs since 2015, and has completed the configuration of the system and revised related regulations. Filings from companies on the Main board and the emerging stock board have gone online to replace the current paper-based procedure, which not only fulfills energy conservation and carbon reduction, but also significantly reduces the time and operational cost for the issuer associated with the delivery to improve information declaration efficiency.

### E-filings that are now available for companies on the Main board and the emerging stock board

Include common stock trading, re-named new stock trading, listing of new stocks after capital increase, treasury stock write-offs, private placement common stock filing, applying to join as a recommending securities firm and resigning from serving as a recommending securities firm, among others, more than 30 items in total.







## 3-3 | CLIMATE GOVERNANCE

### 3-3-1 Promoting Climate Change Management

On January 17, 2019, the World Economic Forum released the Global Risks Report 2019, where extreme weather events (such as floods and storms, among others) and failed mitigation and adjustment measures against climate change were pointed out according to the global risk awareness survey results from 1,000 experts and decision-makers to be possible primary risks of 2019. Climate change-related risks, in particular, have been considered as the biggest global crisis for four years in a row. Therefore, governments are growing serious about the related impacts brought about by climate change. Despite possible negative financial impacts for enterprises brought about by climate change, opportunities were hidden in the climate change trends for another wave of growth. Therefore, TPEx looks at climate change management of listed companies as a relatively important issue to be addressed. In September 2019, the Taiwan Stock Exchange jointly held the Science Based Targets Initiative (SBTi) and Sustainable Supply Chain Forum with the Sustainability Label Alliance to draw the attention of domestic enterprises to international emission reduction and sustainability trends and to help enterprises set energy saving and carbon reduction goals. In addition, through step-by-step guidance provided in climate-related disclosure regulations, enterprises are able to take risks and opportunities brought about by climate change seriously and help with market information transparency so that the securities market can continue to develop towards the goals.



## 3-3-2 Reinforced Climate Disclosure

The Financial Stability Board (FSB) officially released the Task Force on Climate-related Financial Disclosures (TCFD) in June 2017.

TPEX started to perform business inventory checks and risk identification for its own part of climate change in 2019, which covers direct or indirect physical risks, policy or regulation risks, impacts brought about by transforming technical or market demand, and reputation risk caused by extreme weathers, reinforced its climate change governance and evaluation, and established its climate governance and management goals through the data collected as mentioned above in order to reduce related risks and keep track of potential green business opportunities.



Presentation of TCFD climate-related financial disclosure in Traditional Chinese version

To help enterprises in Taiwan to successfully connect with the international society in climate risk assessment and management, TPEX helped Ernst & Young with the translation of TCFD climate-related financial disclosure proposals into Traditional Chinese and held the Presentation of TCFD climate-related financial disclosure in Traditional Chinese version jointly with Ernst & Young and the Taiwan Stock Exchange on October 2, 2019 in order to help domestic enterprises understand important international standards for the disclosure of climate information and to encourage companies to spontaneously pay attention to climate change-related issues. In addition, some of the articles of the Rules Governing the Preparation and Filing of Corporate Social Responsibility Reports by TPEX-Listed Companies were amended and announced on January 2, 2020. TPEX-listed companies are asked to disclose the following information in their CSR Report:

- 1. Governance of climate-related risks and opportunities.**
- 2. Actual and potential climate-related impacts.**
- 3. Procedures to identify, evaluate, and manage climate-related risks.**
- 4. Indicators and goals used to evaluate and manage climate-related issues.**

TPEX will continue to reinforce the related disclosure of climate change issues in its CSR reports in order to lead enterprises to take climate change seriously and to boost their capability in coping with climate risks and plan to discuss the possibility of maximizing the scope of the CSR report to be certified by a third party so that the quality of the disclosure in a report can be enhanced and it will help drive enterprises to value and do something about climate change and also cooperate adequately with related authorities in organizing climate change-related workshops.