# 5. Environmental Protection

Main Issue 1 Service Carbon Footprint Inventory
Main Issue 2 Greenhouse Gas Inventory

## Management Approach

GRI 103-1 GRI 103-2 GRI 103-3

**Sustainability Principles**

The Service Industry can Care for the Earth Too

**ISO 50001**
Energy Management Systems verification

**10%** reduced, per-real-estate-transaction carbon emissions

**1%** reduced, per-capita carbon emissions from electricity

## Material Topics and their Meaning to Sinyi 305 Emissions

In the face of climate change and daily environmental deterioration, Sinyi Realty believes the best response is to use in society what we take from it. At the same time as pursuing reasonable profits for our real estate brokerage services, we should also value the resources the planet provides us and do all we can to promote innovative green services. In addition to raising awareness among consumers of carbon reduction and energy saving, such efforts also help us reduce our operating costs and strengthen competitiveness, making a concrete contribution to the sustainable development of Sinyi Realty.

## Sinyi's Major Contributions toward the SDGs

13 CLIMATE ACTION

### Take urgent action to combat climate change and its impacts

This goal is focused on improving education, raising awareness and enhancing the capacity of people and institutions in terms of reduction of the relevant risks of, adaptation to, reducing the impact of, and providing early warnings regarding climate change. Sinyi Realty strives to reduce our carbon footprint and energy consumption, as well as viewing it as our responsibility to promote concepts of environmental consciousness. As such, improving education, raising awareness and enhancing the capacity of people and institutions in terms of reduction of the relevant risks of, adaptation to, reducing the impact of, and providing early warnings regarding climate change should also be work which we strive to accomplish.

## Material Topics : 305 Emissions

### Responsibilities

Green Management Group, Total Ethical Management Committee

### Policies

1. ISO 14064-1 Greenhouse Gas Inventory and PAS 2050 Carbon Footprint Inventory
2. ISO 50001 Energy Management Systems
3. Carry out annual planning and management in line with material environmental issues laid out by the Green Management Group

### Commitments and Actions

**Commitments**

1. Reduce per-real-estate-transaction carbon emissions by 3% in 2017 (baseline year: 2015)
2. Reduce per-capita carbon emissions from electricity by 10% by 2025 (baseline year: 2015)
3. Implement environmental protection education and promotion

**Concrete Actions and Results** Accomplish Ongoing

| 2016 Goals | 2016 Actions | Status |
|---|---|---|
| • Reduce service carbon footprint | • Apply for and receive carbon label and draft world-first real estate operation services product category rules (PCR)<br>• Continue innovative green services, including digital newsletters, Line@ account, etc. | • Developed complete PCR and obtained carbon label<br>• Reduced per-real-estate-transaction carbon emissions by 10% (baseline year: 2015) and achieved target ahead of schedule |
| • Refine energy management systems | • Carried out ISO 50001 Energy Management Systems verification | • Obtain ISO 50001 certification |
| • Implement environmental protection education and promotion | • Launch Sinyi School lessons on environmental awareness<br>• Sinyi environmental volunteer activities | • Held total of 19 Sinyi Lecture Hall lectures on environmental awareness, with total of 2,674 participants<br>• Held total of 17 environment-related Sinyi Volunteer activities, with total of 967 participants |

### Future Strategic Goals

Sinyi Realty considers the sustainable operation of the company and the sustainable development of the environment to be of tremendous importance, and as such we have set out three major strategies to help Sinyi become a model of sustainability in the real estate industry.

1. Leading the industry in benchmarks, marking a milestone in green real estate brokerage globally
2. Melding sustainability into the DNA of our staff and using green energy to create win-win situations
3. Promoting green issues and shouldering more social responsibility

In 2016, Sinyi Realty accomplished our goal of reducing our per-transaction level of carbon emissions ahead of schedule, and as such we have set new goals, aiming for a further reduction of 5% by 2020 (baseline year: 2016, measured by $kgCO_2e$ for each real estate service transaction), as well as continuing to pursue reductions in our energy consumption.

| Future Goals | Achievement Deadline |
|---|---|
| • Reduce per-real-estate-transaction carbon emissions by 2% (baseline year: 2016) | 2017 |
| • Reduce per-capita carbon emissions from electricity by 1% year-on-year | 2017 |
| • Reduce per-capita service carbon emissions by 5% (baseline year: 2016) | 2020 |
| • Reduce per-capita carbon emissions from electricity by 10% (baseline year: 2015) | 2025 |
| • Implement green environmental education | Ongoing |

## 5.1 Understanding of the Impacts, Risks and Opportunities from Climate Change GRI 201-2 SDG 13

Climate change is directly related to the sustainable development of every country and to humanity's ongoing existence as a species, and as such it is the most pressing challenge facing the global community and will have a direct impact on people's everyday lives. At the end of 2015, the 21st Conference of the Parties (COP 21) was convened in Paris, France, where the Paris Agreement, a topic of much global interest, was passed. This global agreement on global greenhouse gas emissions aims to have each country put forward its own emissions reduction plan and goals, encouraging each to take its share of the responsibility for mitigating the problem of climate change.

While the real estate industry is not a major producer of carbon emissions and regulations, agreements, and laws regarding greenhouse gas emissions generally don't address our industry, nonetheless as an industry with small consumption but substantial marketing, we have begun to attract more attention in this regard. As such, Sinyi Realty has in recent years not only established a basic foundation in carbon reduction internally, we have also begun to actively promote green services in the hopes of having a positive influence on the industry as a whole.

Sinyi Realty considers the sustainable operation of the company and the sustainable development of the environment to be of tremendous importance, and as such we have set out three major strategies and concrete courses of action: 1) leading the industry in benchmarks, marking a milestone in green real estate brokerage; 2) melding sustainability into the DNA of our staff and using green energy to create win-win situations; and 3) promoting green services and shouldering more social responsibility.

| Setting a milestone in green real estate brokerage industry | Melding sustainability into the DNA of our staff | Promoting green issues |
|---|---|---|
| ● The world's first passes the PAS 2050-carbon footprint verification in real estate industry.<br>● The world's first passes the ISO 14064-1 GHG verification in real estate industry.<br>● The world's first obtains ISO 50001 certification in real estate industry.<br>● Made the world's first Product Category Rules of real estate operation industry.<br>● The Taiwan's first obtains the carbon footprint label issued by Environmental Protection Administration, Executive Yuan in real estate industry. | ● Set up cross-sectoral Green Management Group<br>● Building energy management system to realize service carbon footprint management.<br>● Developing the promotional propaganda messages and paperless green marketing tools.<br>● The new service concept to promote Green Home.<br>● Using green products in branches.<br>● Having an eco-friendly office. | ● Environmental education and care lectures.<br>● Subsidy the "We are One" environmental project.<br>● Promote the local green travel.<br>● Build community in green.<br>● Import ISO 20121 sustainable event management.<br>● Respond to environmental policy.<br>● Participate in civil, government and international environmental activities. |

## 5.2 Service Carbon Footprint

Sinyi Realty has long been active in managing our greenhouse gas emissions as our customers demand we develop a variety of innovative green services. In order to improve the reliability of our greenhouse gas emissions quantification, we have implemented a systemic analysis and quantification of the environmental and economic benefits of our innovative green services, not only helping in planning sustainable development strategies, but also enabling us to pass PAS 2050 assurance in 2014. In 2016, we drafted the world's first real estate business services product category rules (PCR), as well as completing our application for carbon labeling and receiving carbon footprint assurance in 2016.

### 5.2.1 Drafting World's First Real Estate Business Services PCR and Applying for Carbon Label SDG 13

A carbon footprint is the sum total of greenhouse gas emissions produced directly and indirectly in the lifecycle of a product or activity, including the extraction and manufacture of raw materials, assembly, transportation, all the way to usage and waste processing or recycling.

In view of the lack of PCR documentation pertaining specifically to real estate business services, Sinyi Realty set out to draft the first such rules in the world, providing a resource for others in the industry to refer to when calculating the carbon footprint of real estate business services. Following the Environmental Protection Administration's Guidelines for Carbon Footprint PCR Drafting, Citation, and Amendment, we invited domestic experts and stakeholders in the real estate business services field (including real estate agents, brokers, associations, and businesspeople) convening meetings with stakeholders and collecting opinions for the amendment of our draft PCRs. Not only have we established a model for real estate business services globally, we have also helped harness Sinyi Realty's influence for the positive. After our Real Estate Business Services carbon footprint PCRs were passed, they were announced on the Taiwan Product Carbon Footprint website.

### 5.2.2 Service Carbon Footprint Inventory

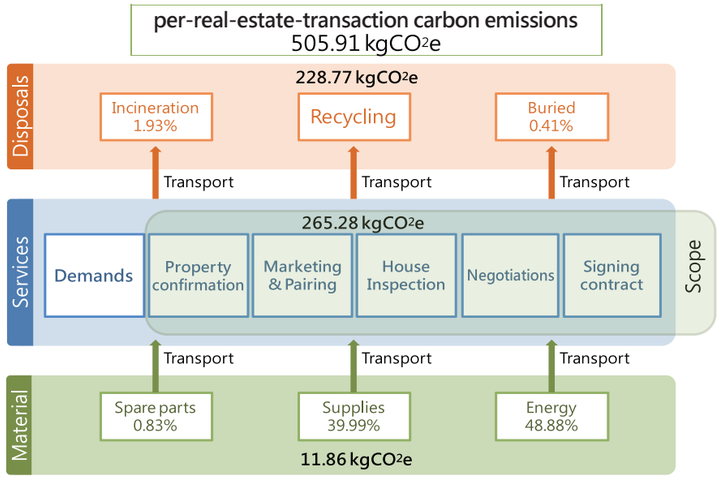
In 2016, we made use of PAS 2050:2011 for inventory, with reference to the EPA's Guidelines for Calculation of Carbon Footprint of Products and Services and to ISO/TS 14067:2013; due to differences between these three sets of standards, there were some conflicts in the course of inventory and calculation. Given this, this research took PAS 2050:2011 as the primary guideline source for primary activity data requirements, threshold of exclusion, cut-off criteria, data validity, and information preservation. Where main assessment criteria were not required, we then referred to the ISO/TS 14067:2013 specifications.

Our inventory of each real estate agency service began with real estate purchases, sales, and rental demand and went through the entire service process to final contract signing. Emissions of greenhouse gases thus produced and released into the atmosphere then serve as reference data for future efforts and plans to reduce GHG emissions. This inventory includes all GHGs set out in the IPCC 2007 Fourth Assessment Report, including carbon dioxide, methane, nitrous oxide, fluorocarbons, perfluorinated compounds, perfluoropolyethers, hydrocarbons, and other compounds controlled by the Montreal Protocol.





【Service Map of Each Real Estate Brokerage Service】




1 : Production demands made with commissioned actors are considered personal behavior of clients and thus not within the scope of the inventory

2 : Should an aforementioned service not provide service items, it is unnecessary to include it within the scope of the inventory

Through our carbon footprint inventory, we found that the greatest percentage of our carbon footprint in transactions was in the form of paper dispatches - approximately 40% - and as such we have made reducing paper-based advertising materials a primary innovation target. Innovations developed through this model have not only reduced operating costs, but also contributed to society through the reduction of carbon emissions per transaction - a win-win strategic model. Under this strategy, Sinyi Realty launched digital dispatches, a Line@ account, and Top EDM, leading the real estate industry into a new, reduced-paper era and again writing a new innovative page in the real estate industry's history.

PCR stakeholders meetings

Environmental Protection Administration's announced PCRs - Real Estate Operation Services

In order to further unveil the carbon footprint of each real estate transaction, we further applied for carbon labeling*, helping consumers better understand our efforts to reduce carbon emissions and thus building trust in our brand. At the same time, this has also enabled us to analyze the carbon emissions of each stage in our service processes, finding the points of maximum consumption and facilitating the development and achievement of new green goals. In 2016, we have already successfully obtained Real Estate Trading Agency Services carbon labeling (Carbon No. 1616812001), and in 2017 this label will be displayed in each branch and in all marketing materials.

*Carbon footprint labeling (also known as carbon labeling or carbon emissions labeling) is a labeling that applies to the emissions of a company, its production processes, products/services, and individuals, indicating that all stages of the life cycle of a product or service, from obtaining of raw materials through processing, distribution, sales, end-user, and disposal/recycling, has had its GHG emissions calculated in terms of kilograms of carbon dioxide equivalent. From the Taiwan Product Carbon Footprint website.

Carbon label disclosure diagram for Sinyi Realty branches

※ "Real Estate Operation Services" carbon footprint PCRs can be found at the EPA's Taiwan Product Carbon Footprint website at :
https://cfp.epa.gov.tw/carbon/ezCFM/Function/PlatformInfo/FLPCR/FLPCRDoneList.aspx

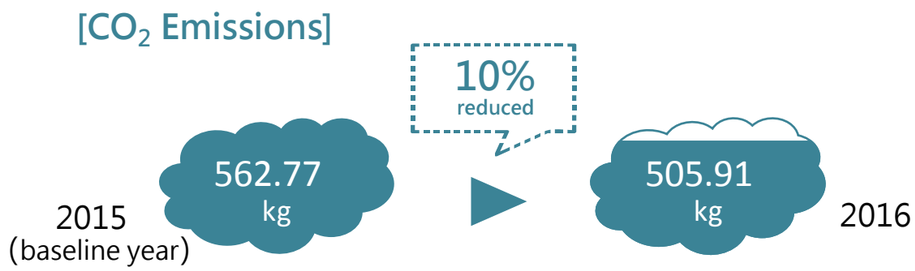
※"Real Estate Brokerage Services' carbon labeling product information :
https://cfp.epa.gov.tw/carbon/ezCFM/Function/PlatformInfo/FLabelProduct/FLProductInfoDetail.aspx?SerialNo=C20160822109

## 5.2.3 Service Carbon Footprint Management Performance

In 2015, we calculated carbon emissions for each of Sinyi Realty's real estate brokerage services, from the acquisition of raw materials to final service, finding a per-service average of 562.77 kgCO2e. We found that advertising was the source of the greatest proportion of our carbon footprint and had the greatest impact on the environment. As such, we set about starting from the source of the greatest emissions, developing innovative green approaches including digital newsletters and a Line@ account, digitizing the main sources of paper consumption and thus reducing per-transaction carbon footprint, doing what we can to reduce our impact on the environment.

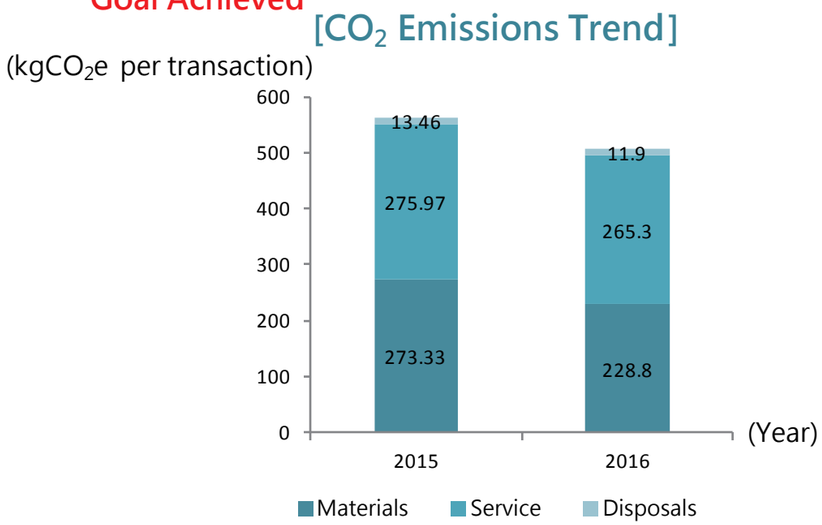
The results of our 2016 inventory show that per-real-estate-transaction carbon emissions were 505.91kgCO2e, of which the raw materials phase accounted for 228.77 kgCO2e (45.22%), the service phase 265.28 kgCO2e (52.44%), and the waste disposal phase 11.86 kgCO2e (2.34%). Compared with 2015 figures, **we have achieved a total reduction in carbon emissions of 10%, accomplishing our 2017 reduction goal of 3% well ahead of schedule** (baseline year was set as 2015).

**Sinyi Realty Service Carbon Footprint (2015 vs. 2016)**




**Original Goal : reduce service carbon footprint emissions by 3% in 2017**

**Goal Achieved**




As such, in 2017 we redefined our goal, aiming for a further reduction of 5% by 2020 (baseline year: 2016, measured by kgCO2e for each real estate service transaction), and we hope that our continued efforts in this direction will bring positive change in terms of creating a "low carbon society."





## 5.3 Greenhouse Gas Inventory

GRI 305-1 GRI 305-2 GRI 305-3 GRI 305-6 GRI 305-7 SDG 3 SDG 12 SDG 13

### 5.3.1 Energy Resource Management

**Introducing Japanese Ubiteq Energy Management System at Main Building**

As the global economy continues to grow, energy demands follow suit, which means energy costs have continued to rise. This has a fair impact on the economic development of nations, and coupled with the pressure to reduce carbon emissions in the face of climate change, energy conservation has become an important development issue internationally. In order to more fully exercise our commitment to corporate social responsibility, Sinyi Realty has introduced the Ubiteq Be Green Next (UGS) energy management system, with planning beginning in August 2012 and the system going into use in Q2 2013.

Implementation Method : Introduce visualizable services and transparency in energy information regarding air conditioning and lighting systems to optimize energy usage.

**Energy-saving, Green Mark Certified Products Used at Branches**

- Purchasing Green Mark or Energy Label IT equipment
- Using green building materials or Green Mark certified materials
- Renting Green Mark certified photocopiers
- Using environmentally friendly toner cartridges
- Using environmentally friendly variable frequency drive air conditioners at all operating locations
- Installed energy saving lights
- Reducing lighting usage and using high natural illumination in operating location designs
- Regularly inspecting electrical equipment

(1)Time-based power pricing: Having commissioned specialists to collect and analyze the average electricity usage of each branch location over the course of a year and calculate the optimal capacity contract, we applied to Taiwan Power Company for a time-based capacity contract to reduce electricity expenses.

(2)Regular inspection and maintenance of equipment: Every month, branches have their lighting facilities, circuit breakers, distribution boxes, water supply pipes, signage, and air conditioning facilities inspected by a professional contractor. In addition to ensuring that electrical facilities are safe, this also reduces unnecessary consumption of electricity by facilities operating at sub-optimal levels.

Replacing energy inefficient embedded lights with LED lamps at all Sinyi Realty branches


Putting up signs at all Sinyi Realty branches noting that "This Location uses LED Lighting"

**Implementing ISO 50001 Energy Management Systems**

In 2016, Sinyi Realty introduced ISO 50001 Energy Management Systems (including at both head office and showroom locations). During this, we not only reviewed our related energy policies and management systems, but also undertook a full-scale review of our energy and air conditioning equipment in the hopes that through the PDCA process we would be able to hone our energy management effectiveness and be better positioned to achieve our energy and cost reduction goals.

Measuring efficiency of chillers and cooling towers

Sinyi Realty Energy Policies

Sinyi Realty implements ISO 50001 education & training (May 2016)

Throughout our energy management inventory and equipment checks, we found that the air conditioning systems in our head office accounted for the bulk of our energy consumption, with chillers and cooling towers particular sources of potential energy savings opportunities. As such, in 2016 we set about establishing an energy baseline and indicators as set out below:

1. Head office and all branches shall take 2016 electricity usage as baseline, pursuing annual reductions of 1% henceforth
2. For head office's air conditioning chillers, we shall take 2016 electricity usage as baseline, pursuing annual reductions of 1% henceforth

With regard to electrical and air conditioning systems, we are undertaking transient state measurements and conducting preliminary analyses of the consumption and usage status of said systems. Using that, we then put forward directions for improvement and efficiency evaluations. Our short-term goal is to assess several energy-saving proposals, including action plans for improvement into our ISO 50001 Energy Management Systems year by year. In the long term, we will focus on assessing equipment operational efficiency and the development of high-efficiency equipment, making more efficient use of energy.

## 5.3.2 Greenhouse Gas Inventory GRI 305-4 GRI 305-5 SDG 13

In terms of energy information, we are actively introducing GHG inventory and management approaches. In 2014 and 2015, we undertook GHG inventories of our head office, and in 2017 **we expanded 2016's inventories to all branches, carrying out full GHG inventory and management across Sinyi Realty**.

### Sinyi Realty (Head Office and Branches) Greenhouse Gas Inventory

In accordance with ISO/CNS 14064-1 requirements, the company's inventory covers direct GHG emissions (Scope 1), electricity indirect GHG emissions (Scope 2), and other indirect GHG emissions (Scope 3). In 2016, Sinyi Realty's total GHG emissions were 6,292.351 $tCO_2e$. Employee business travel-related emissions for the year totaled 138,026.81 kgCO2e, including global aviation and Taiwan High-Speed Rail travel; the aviation footprint is calculated in line with the mechanisms set up by the International Civil Aviation Organization (ICAO), while the land travel footprint covers both HSR and taxi travel. Scope 1-3 emissions and total emissions for the seven major greenhouse gases are as below:

**Sinyi Realty Greenhouse Gas Inventory Boundaries and Results**

| Category | Equipment | Raw Materials | Results ($tkgCO_2e$) |
|---|---|---|---|
| Scope 1: Direct Greenhouse Gas Emissions | | | |
| Stationary Combustion (Fuel burned by fixed equipment) | Restaurant Gas Stoves | LPG | 0.245[0.004%] |
| | Emergency Generators | Diesel Biodiesel | 0.555[0.009%] |
| Process Emissions (Owned or controlled by company) | N/A | N/A | 0 |
| Mobile Combustion (Covers fuel burned by controlled transportation equipment, including cars, trucks, trains, aircraft, and ship transport) | Patio Heaters | LPG | 0 |
| | Business Vehicles | Automotive Gasoline | 19.509[0.31%] |
| Fugitive emissions (Intentional or Unintentional) | Septic Tanks | Liquid Manure | 434.148[6.9%] |
| | Air Cooling Equipment | HFC-134a/R-134a, tetrafluoroethane HFC-134a/R-1 Coolant - R410a, R32/125 (50/50) | 18.793[0.299%] |
| Scope 2: Electricity Indirect Greenhouse Gas Emissions | | | |
| Greenhouse gas emissions produced by electrical, thermal, steam, or other fossil-fuel-derived energy usage | Other Unclassified Equipment | Other Electricity | 5,681.074[90.285%] |
| Scope 3: Other Indirect Greenhouse Gas Emissions | | | |
| Other Indirect Greenhouse Gas Emissions | Staff Commuting | Fuel | 0 |
| | Outsourced Work (Maintenance, Outsourced Purchasing) | Fuel/Acetylene | 0 |
| | Waste Disposal/Incineration | Fuel/Biogas | 0 |
| | Outsourced Transportation (Incl. Raw Materials, Fuel, Products, Waste Products) | Fuel | 0 |
| | Business Travel | Fuel | 138.027[2.194%] |
| **Total** | | | **6,292.351[100%]** |





**Total Emissions of Seven Major Greenhouse Gases by Sinyi Realty (Scope 1 and Scope 2)**

| Greenhouse Gas Emissions ( t $CO_2e$/year) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $CO_2$ | $CH_4$ | $N_2O$ | HFC | PFCs | $SF_6$ | $NF_3$ | Total | Biogenic Emissions Equivalent |
| Emissions Equivalent ( t $CO_2e$/year) | 5,700.5594 | 434.3150 | 0.6556 | 18.7927 | 0.0000 | 0.0000 | 0.0000 | 6,154.323 | 0.0000 |
| Percentage by Gas Type (%) | 92.63% | 7.06% | 0.01% | 0.31% | 0.00% | 0.00% | 0.00% | 100.00% | - |

## 5.3.3 Greenhouse Gas Reductions Performance

**Sinyi Realty (Head Office and Branches) Carbon Emissions from Electricity** ✔ Accomplish

Sinyi Realty uses per-capita carbon emissions from electricity as an organizational carbon management performance indicator. In 2015, we set a new green target using 2015's per-capita emissions as a baseline percentage and aiming for a 1% reduction each year, with the ultimate goal being a further 10% reduction by 2025. **2016 carbon emissions reduced by 1.06% on the baseline, achieving our goal.**

The total yearly emissions for Sinyi Realty (including both head office and all branches across Taiwan), according to Scope 2 disclosures, are as below :

| Item/Year | 2014 | 2015 | 2016 |
|---|---|---|---|
| Total Annual Electricity Consumption (kWh) | 11,584,554 | 10,839,135 | 10,739,269 |
| Annual Carbon Emissions from Electricity Consumption (kgCO2e) | 6,047,137 | 5,723,063 | 5,681,074 |
| Sinyi Realty Headcount | 4,059 | 3,909 | 3,922 |
| Per-Capita Carbon Emissions from electricity (kgCO2e/person) | 1,490 | 1,464 | 1,449 |
| Annual Increase (Decrease) (%) | - | -1.73% | -1.06% |

Note 1 : In 2014, in accordance with Bureau of Energy announcements, electricity emissions factor was 0.522 kgCO2e/kWh, 0.528 kgCO2e/kWh in 2015, and 0.529 kgCO2e/kWh in 2016.
Note 2 : Greenhouse gas emissions were calculated in line with the GWP values used in ver. 6.0.3 of the Environmental Protection Administration's Greenhouse Gas Emissions Factor Management Chart.
Note 3 : GWP values are mainly drawn from the IPCC's 2006 Fourth Assessment Report.

## 5.4 Water Resources

Sinyi Realty's water usage is not large and is not a material issue for the company. We disclose our water resource management related information on our corporate sustainability website and invite all interested stakeholders to check that site for details.

For more information : water resources
http://csr.sinyi.com.tw/en/environment/water-resources.php

## 5.5 Waste Management

Sinyi Realty's waste management is not a material issue for the company. We disclose our waste management related information on our corporate sustainability website and invite all interested stakeholders to check that site for details.

For more information : Waste Management
http://csr.sinyi.com.tw/en/environment/waste.php