



Environmental Sustainability

Employees and Business Partners

Voices | There is only one Earth. The opportunity for future generations and all creatures to live should be cherished.

Commitment | Electricity consumption of 2012 will be reduced by 12% on the basis of the 2007 level; approximately a reduction of 110,000 tons of CO2 emissions.

Index Category	2009 Targets	2009 Performance	2010 Commitment	Page
 WBCSD's manifesto of Energy Efficiency in Buildings	To follow	Enforced ✓	To continue	P36
 The first telecom services provider that sets energy-saving targets	To achieve	12% of reduction ✓	A reduction of 12% from the 2007 level	P33
 The services provider that has the highest expenditure on green procurement	To execute	NT\$ 206 million ✓	Continued execution	P37
 The telcom services provider that recycles the most mobile phones in number	To achieve	39,807 mobile phones ✓	Continued execution	P37
 The first telecom services provider that take initiative in supply chain management	To achieve	Enforced ✓	Continued execution	P38
	<ul style="list-style-type: none"> ● The Annual Enterprises Environmental Protection Award by the Environmental Protection Administration, Taiwan ● The Outstanding Enterprises and Organizations in Green Procurement Award by the Environmental Protection Administration, Taiwan ● Clean Community Award by Business Council for Sustainable Development-Taiwan ● Best Green Strategy for a Data Center by Hitachi Data Systems (HDS) 			

Management Greenhouse Gas Inventory and Electricity Management

Following the initiative of “The GHG Emissions Inventory Project” in 2008, we continued to work on verification of the 2008 emission statistics in 2009, and were awarded with the verification statement by the SGS Taiwan.

Inventory results

After inventory and verification of statistics, our total emissions in 2008 amounted to 946,020.45 t-CO₂e, which is higher than the level provided by system measurements in last year’s report. The total of 2009 GHG emissions reached 926,063.03 t-CO₂e by system measurements. This resulted from a continuous growing need for the telecom services and introduction of the next-generation telecommunications and internet facilities. Therefore, growth in electricity consumption in each telecommunications point leads to a slight increase in GHG emissions.

Results of the inventory and verification show that externally purchased electricity constitutes the main source of GHG emissions. Thus, the main strategy to cut our GHG emissions is to take actions in managing electricity use and cut the electricity consumption.

Emissions of the 6 Greenhouse Gases in 2008



Greenhouse Gases	CO ₂	CH ₄	N ₂ O	HFCs	PFCs	SF ₆	Total emissions of the 6 GHG
Emissions (t-CO ₂ e/yr)	938,837.24	2,019.91	548.33	3,345.79	5.52	1,263.65	946,020.45
Percentage of the total emissions	99.24%	0.21%	0.06%	0.35%	0%	0.13%	100.00%

Analysis of Chunghwa Telecom’s GHG emissions



Ranges	Sources of the GHG	Level of GHG emissions	
		2008 (verified)	2009 (system measurements)
Scope1	<ol style="list-style-type: none"> 1. Use of gas and diesel fuel of the business cars 2. Kitchen and lavatorial facilities 3. Emissions of the septic tank 4. Emissions of the extinquisher and refrigerant 	31,721.54	28,679.81
Scope2	<ol style="list-style-type: none"> 1. Externally purchased electricity for office buildings, switching offices, and FTTx facilities 	914,298.91	897,383.22
Total amount of emissions		946,020.45	926,063.03

Note: “Verified” means that the values are verified statistics of emissions by the third independent party. “System measurements” means the values acquired from Chunghwa Telecom’s “Environmental Sustainable Development Management System.” The disclosed GHG emission statistics will be verified the next year, and the previous year’s statistics would be modified.

Energy- Saving Targets

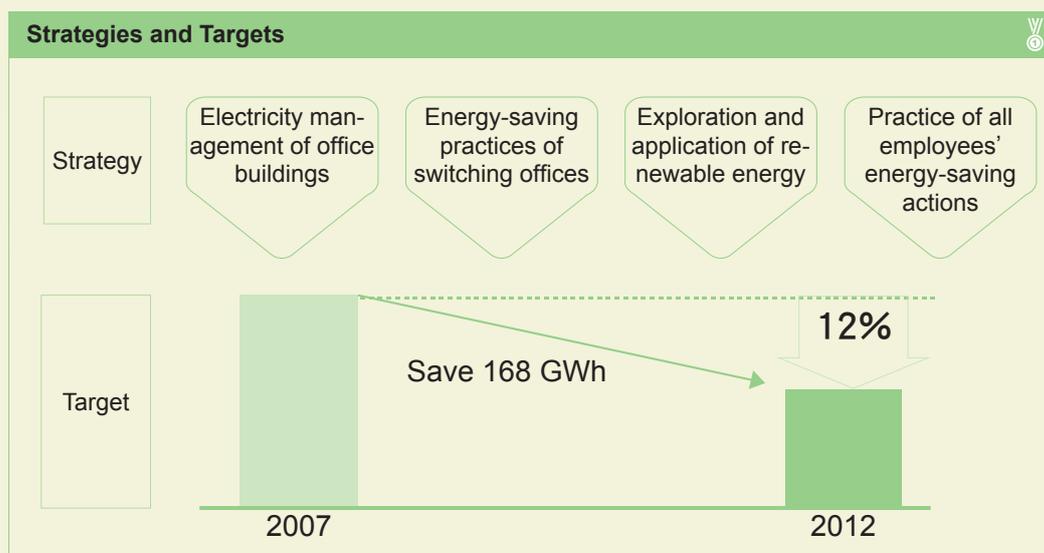
We announced specific energy saving targets in 2009. We promised that excluding the growth in business due to the introduction of the next-generation internet facilities, the electricity use in 2012 will be reduced by 12% from the 2007 level. The reduction is equal to 168 million GWh of electricity and approximately 110,000 metric tons of CO₂.

For the switching offices that consume more electricity, we plan to adopt the iEN to control the air conditioning of the switching offices; for telecommunications facilities such as electricity, switches, transmitters, mobile, internet receivers, we adopt energy-saving methods like renewal, replacement, consolidation, and optimizations; as for procurement, we will choose facility providers that meet international green energy standards, so that we can reduce the electricity consumption of switching offices. With the above action plans, we intend to reduce the electricity use of switching offices by 138 GWh in 2012 from the 2007 level. For administrative office buildings, we apply the iEN on current office buildings first and use the smart energy-saving system as well as corporate internal management platform, plan to save electricity by 30 GWh by the end of 2012. The energy saving ratio reaches 7.85% and we will take the challenge of 10%.

Effects of Energy Management

With continuous promotion of energy-saving practices for internal switching offices and office buildings, as well as rising awareness of employees and exclusion of the increased amount of electricity due to introduction of the next-generation facilities, the total electricity consumption was cut by 12,063,008 KWh in 2009 as compared with 2008. We found this extraordinary.

Results of 2009 Energy Use Management	
Year	Electricity use (KWh)
2008	1,343,339,812
2009	1,331,276,804
Difference	-12,063,008



Management Environmental Sustainability Management System

The telecommunications industry generates low pollution, but we are aware that energy and resources consumed in the process of operation would still impact the environment. Therefore, we established sound management procedures and built environmental awareness, taking active initiatives that were good for the environment.

Environmental Management System

Our Southern Taiwan Business Group took the lead in integrating the environmental management system ISO 14001:2004 into the operation of the company in 2008. With good trial experiences in implementation, we decided to help each department with integration of the management system step by step. After the Mobile Business Group acquired their certificate in 2009, all of the business institutes that occupy more than 90% of the revenue of the company already acquired the ISO 14001.

While introducing the system, we emphasized the engagement of employees and cultivation of expertise. Take the Mobile Business Group for example. In 2009 with active participation of all of the employees, there were more than 200 people that received the training of ISO 14001; a total of 4 internal promotions were held, and participating employees accounted for more than 300 person-times. Besides, 138 employees were awarded the certificates of "Implementing an ISO 14001 Environmental Management System" and 127 employees were awarded qualified "Internal Auditors." With the back-up of complete knowledge and experts, we can take proper and correct actions.

Water Resources Management

Global climate change has a lot to do with water resources. Noting the change in the extreme weather, we started to include water resources into the management. Besides including leakage into the detection function in the products, we also include the water consumption of the company into the environmental sustainability management system, managing and analyzing with the informationalized interface. We also continue to promote water-saving practices such as recycling and reuse of the rainfall and household wastewater.

Recycling of the Rainfall



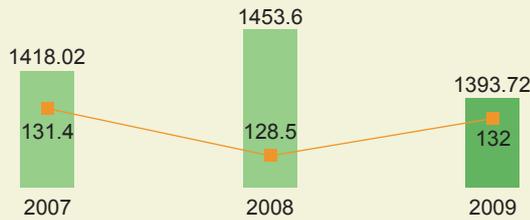
In order to provide good-quality connection along the coastline, we set up facilities upon the He-Tien Hill in Hualien. To solve problems with air conditioning of switching offices and water for daily use, we collect rain in the most natural way: filters are installed in rain drainage in the buildings; storage tanks were dugged out underground for use during maintenance.



An Overview of Environmental Impacts

INPUT

Electricity ■ MWh ■ Eco-Efficiency Ratio

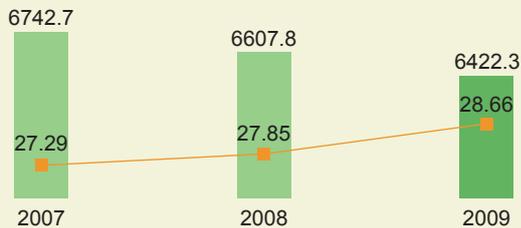


Note1: Electricity includes the electricity consumption of the introduced next-generation telecom facilities.

Note2: To provide good-quality services, 12,473 sets of FTTx facilities were lately acquired, which slightly increased the overall electricity consumption.

Note3: Eco-Efficiency Ratio = revenue of 2009 / electricity consumption.

Petroleum ■ 1m³ ■ Eco-Efficiency Ratio



Note: Eco-Efficiency Ratio = revenue of 2009 / petroleum consumption.

Diesel fuel ■ 1m³ ■ Eco-Efficiency Ratio



Note: Eco-Efficiency Ratio = revenue of 2009 / diesel fuel consumption

Energy Consumption ■ GJ ■ Eco-Efficiency Ratio
(Electricity + Fuel)



Note1: Total energy consumption (GJ) calorific value = total electricity consumption (GJ) calorific value + total fuel consumption (GJ) calorific value

Note2: Eco-Efficiency Ratio = revenue of 2009 / energy consumption

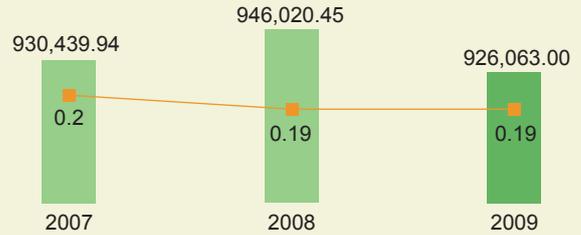
Water Consumption ■ 1000m³ ■ Eco-Efficiency Ratio



Note: Eco-Efficiency Ratio = revenue of 2009 / water consumption

OUTPUT

GHG emissions ■ t/CO₂e ■ Eco-Efficiency Ratio



Note1: GHG emissions of year 2009 will be verified in 2010.

Note2: Eco-Efficiency Ratio = revenue of 2009 / GHG emissions

Waste ■ tons ■ Eco-Efficiency Ratio



Note: Eco-Efficiency Ratio = revenue of 2009 / amount of waste

Amount of Recycled Mixed Hardware

Types	2007	2008	2009
Battery (uni)	3,315	3,006	5,867
General cables (metric tons)	5,018	3,219	3,267
Waste hardware (metric tons)	1,137	875	855
Jelly filled cables (metric tons)	825	817	460

Note: Batteries should only be discarded if they are no longer usable after five years of use. The number of recycled batteries is associated with the amount of construction that year, and does not serve as a performance indicator.

Number of the Recycled from Internet Customers

Types	2008	2009
ATU-R (uni)	380,213	695,999
VTU-R (uni)	57,735	145,394
MOD-ST (uni)	129,084	210,295

Note: ATU-R stands for ADSL Transceiver Unit, remote terminal end. VTU-R is short for VDSL Transceiver Unit Remote.

Responsible Management

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Address Telecom Green Buildings Action

Chunghwa Telecom has more than 1,800 operation offices across Taiwan. We hope that by effectively increasing the energy efficiency of buildings, we will reduce the operational costs, enhance the production power of employees, and reach the energy-saving targets.

Increasing the Energy Efficiency in Buildings

In 2009, we started to focus on increasing the energy efficiency of construction like office buildings. Setting targets in creating zero energy consumption to minimize environmental impacts, we tried different solutions and deployed actions to increase the energy efficiency of buildings by improving systems, constructing green buildings, and adopting the innovative behavior management, and etc.

The Energy Saving Auditorium

In 2009, making “environmental protection and energy-saving” as the theme, we renovated the outlook platform and skylight in the auditorium of the Chunghwa Telecom Laboratories. With the energy-saving design, the auditorium can cut approximately 5,760 kWh of electricity per year, which saves about NT\$20,000 and reduces GHG emissions by 4000 kg. Even though the direct effects are limited, the message of energy saving for users of the auditorium will perform multiplying effects. This renovation project received positive feedback from the Environmental Protection Administration, and the auditorium was designated as the venue for the “2009 Corporate Environmental Protection Award” Seminar.

The Ecologically Engineered Switching Office

One of the switching offices of Chunghwa Telecom is located in Mt. JiJida in Zhongliao Township, Nantou County. It is a nexus of telecommunications in the central Taiwan area. In September 2008, Typhoon Sinlaku stroke Taiwan with violent rain, collapsing the retaining wall of the office and breaking the road by the down slope. We immediately took emergency actions to ensure the safety of the office, and decided to adopt the ecological engineering method to rebuild the retaining wall on the slope. Meanwhile, we engaged factors such as greening and integration of views in the reconstruction of permanent retaining walls. This construction work was completed in June 2009, and it successfully passed the test of Typhoon Morakot.

Pledging to the Manifesto of “Energy Efficiency in Buildings”

In 2009, as a Taiwanese member company, we pledged to the “Manifesto for Energy Efficiency in Buildings” initiated by the World Business Council for Sustainable Development (WBCSD). We will voluntarily put the manifesto into practice.

Response to the Manifesto for Energy Efficiency in Buildings

WBCSD Manifesto for Energy Efficiency in Buildings	Chunghwa Telecom's responding actions
<ul style="list-style-type: none"> To create a baseline of the company's commercial buildings and set time-based energy and/or CO2 reduction targets in line with transformative change. 	<ul style="list-style-type: none"> We already disclosed our preliminary target of carbon management in the 2008 CSR report: GHG emissions in 2013 would be mitigated to the level of 2008. We also set targets in reducing the energy consumption.
<ul style="list-style-type: none"> To publish a company policy for minimum energy performance levels in the company's commercial buildings. 	<ul style="list-style-type: none"> The chapter of environmental sustainability in the CSR report clearly discloses our carbon management policy. Currently we are promoting the assessment of energy efficiency in buildings and improvement projects.
<ul style="list-style-type: none"> To define and carry out the company's audit program and implementation strategy to meet energy targets for its commercial buildings 	<ul style="list-style-type: none"> “The Evaluation on Energy Saving Performance” is conducted in each business group and operation office regularly; among all, the electricity use and energy conservation practices in the offices are included in the performance review.
<ul style="list-style-type: none"> To publish annually buildings' energy use, CO2 emissions and progress against reduction targets, in the companies' respective CSR or other report. 	<ul style="list-style-type: none"> “GHG Emissions Inventory Projects” are conducted regularly every year. Meanwhile, through the “environmental sustainability management system,” we can know well and disclose the situation of CO2 emissions.
<ul style="list-style-type: none"> To further promote building energy efficiency among suppliers, employees, and other stakeholders through advocacy, marketing activity, R&D, education and training. 	<ul style="list-style-type: none"> Regular activities include “Energy-saving training,” publication of “energy saving brochures,” as well as promotion posters and slogans for energy saving of buildings. Energy-saving practices and experiences are shared on the CHT interactive platform Consumers are encouraged to use electronic bills and others. “The Evaluation on Energy Saving Performance” and educational courses are conducted in each business group and operation office. It is planned that the concept of increasing energy efficiency will be communicated and promoted to suppliers since year 2010.

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Address Green Procurement and Renewable Energy

Another advantage of Chunghwa Telecom of promoting environmental sustainability is that we budget for the procurement, so that we can promote development of the green industry as a customer. Besides, we take advantage of Chunghwa Telecom’s buildings, actively developing and adopting renewable energy; therefore, we can ensure energy conservation, carbon reduction and provide continuous telecommunications services even during the power failure.

Green Procurement Benchmark

In 2009, the amount of our green procurement was NT\$206 million. According to the Environmental Protection Administration, there were a total of 20 companies whose expenditure on green procurement exceeded NT\$20 million. Consolidating all the branches, Chunghwa Telecom was ranked the first in the tertiary sector, and the third among all. All of Chunghwa Telecom’s operation offices have signed the consent form of green procurement, actively participating in green procurement-related activities promoted by local governments. If the expenditure on green procurement was sorted by administrative districts, Taipei City with NT\$109 million was the most, Taoyuan County with NT\$27.84 million came the second, and Kaohsiung City with NT\$20.22 million was the third.

We also actively responded to the green store policy promoted by the Environmental Protection Administration, becoming the first private company that joined the green stores as an employee cooperative, and encouraging employees to consider green products first. Our efforts won us positive feedback from the Taipei City Government as the benchmark of “private enterprises and organizations in green procurement,” and as the promoting green store in “bettering marketing channels and procurement information of environmental products.”

Expenditure on Environmental Protection

The total of the expenditure on environmental protection in 2009 was NT\$468.5 million. We encouraged development of the green industry with tangible actions.

Amount of the Expenditure (Unit: billion NTD)		EN30
Categories	Amount	
Decontamination	0.026	
Scrap paper	0.002	
Waste	0.07	
CSRES	0.06	
Sanitation	2.46	
Green procurement	2.06	
Treatment of discarded cemet electricity poles	0.007	
Total	4.685	

Solar Power Supply System

In 2009, we built the country’s first solar power supply system that supplies power for cellphones, e-bulletin board, and telecommunications, and etc. The generated power not only can be supplied for facilities, but also serve as a support during power failure. The promise of “no power, but you can still call” is fulfilled. In order to increase the management efficiency, our solar power supply system has a visualized interface that enables the superintendent to monitor daily solar radiation, the temperature of solar panels, the temperature, output electricity, warnings and etc. immediately online. Both the Fangshan switching office of the International Business Group as well as the Hueilai Switching Office of the Southern Business Group won “2009 Golden Sun Shooter Award—excellent demonstration of solar power applications.”

We have established 20 sets of “the solar power supply system,” whose total capacity was 92.7kWp and 128 sets of the solar water heater, whose total area of the heating modules were 483.52m². With devices of solar power supply system and other energy-saving designs, we can have effects on energy conservation in switching offices and buildings.



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Response Environmental Protection Actions and Ethical Consumption

Chunghwa Telecom hopes to mitigate their environmental impacts together with the customers by encouraging its employees to take part in environmental protection activities and to decorate the office with plants. During the past three years, we have worked hard on promoting integration of bills and e-bills, and effects have shown. In late 2008, we started to promote the recycling of cellphones, and through the cooperation with a subsidiary company Senao International Co., Ltd., we have recycled approximately 40,000 waste cellphones.

Coastal Cleanup on Earth Day

On the eve of 2009 Earth Day, Chunghwa Telecom initiated a series of beach cleaning activities, protecting the seashore from the north to the south. In the north, Mr. Siao-Tung Chang, the General Manager, led 250 people, consisting of employees and their families from the Headquarters and Shilin Operation Office. They cleaned the beach along the Shitsao Coast in Laomay Village, Shihmen Township, Taipei County. In the Taoyuan, Hsinchuh and Miaoli district, the Telecom Laboratories joined the Coast Guard Administration, Executive Yuan in the spring beach cleaning activity in the Yong An Snow Forest in Sinwu Township, Taoyuan County. The Hsinchu Operation Office took part in the beach cleaning activities along the Ciding coast. The Tainan Operation Office participated in the beach cleaning activities held by the Environmental Protection Bureau, Tainan City. To show the commitment to protecting the environment with energy-saving practices, on the day of April 22, the light was turned off in all of the offices for an hour at noon.

The Clean Neighborhood Actions

We actively engaged ourselves in the EPA-promoted corporate action plan "the Clean Neighborhood," working together on cleaning the neighborhood and committing ourselves to environmental protection in the community. In January 2009, the environmental volunteer service team was officially formed. Taking the responsibility of a big neighbor, employees are expected to be more concerned about their neighbors and communities and to maintain the quality of the environment spontaneously. With actions, we greatly increased the efficiency in cleaning and maintaining the sanitary of each community and were awarded "Clean Community Award" by the Environmental Protection Administration.



Bill Integration and Electronic Bills

To promote the integration of bills, we decided to start with the phone bills because they consumed the most paper. By the end of 2009, 86% of customers have already integrated their bills. This saves us 240 million pieces of paper per year, which is equal to saving 20,000 trees and a reduction of 4000 tons of CO₂ emission. To further our action in going paperless, we started the service of online billing in August 2005; customers can make online inquiries, pay online, and analyze the bills online, and etc. By the end of 2009, e-bill has been provided for 2.83 million cellphone numbers. This saves 1.62 million pieces of paper, equal to saving 4,400 trees, and a reduction of 79 tons of CO₂ emissions.

Recycling Waste Mobile Telecommunication Products Project

Mobile telecommunications technology advances rapidly, and innovative products are always available in market. After waste mobile phones are recycled and treated, we can avoid the toxic substances contained in the waste ones to contaminate the environment in the process of incineration or landfill. Besides, some substances in the waste mobile phones can be reused, and we can reduce the consumption of the resources and energy on the Earth.

On December 30, 2008, we signed the "Memorandum for Collaboration on Recycling Waste Mobile Telecommunications Products" with the Environmental Protection Administration, Executive Yuan. Regardless of the brand and types, people can bring their waste mobile phones and accessories such as batteries, and rechargers to the 319 service centers and 210 stores of the Senao International Co., Ltd, a subsidiary company of the Chunghwa Telecom. In 2009, we recycled 39,807 waste mobile phones; 19,120 kg of batteries and accessories. This is the most effective mobile phone recycling project across Taiwan.

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Target

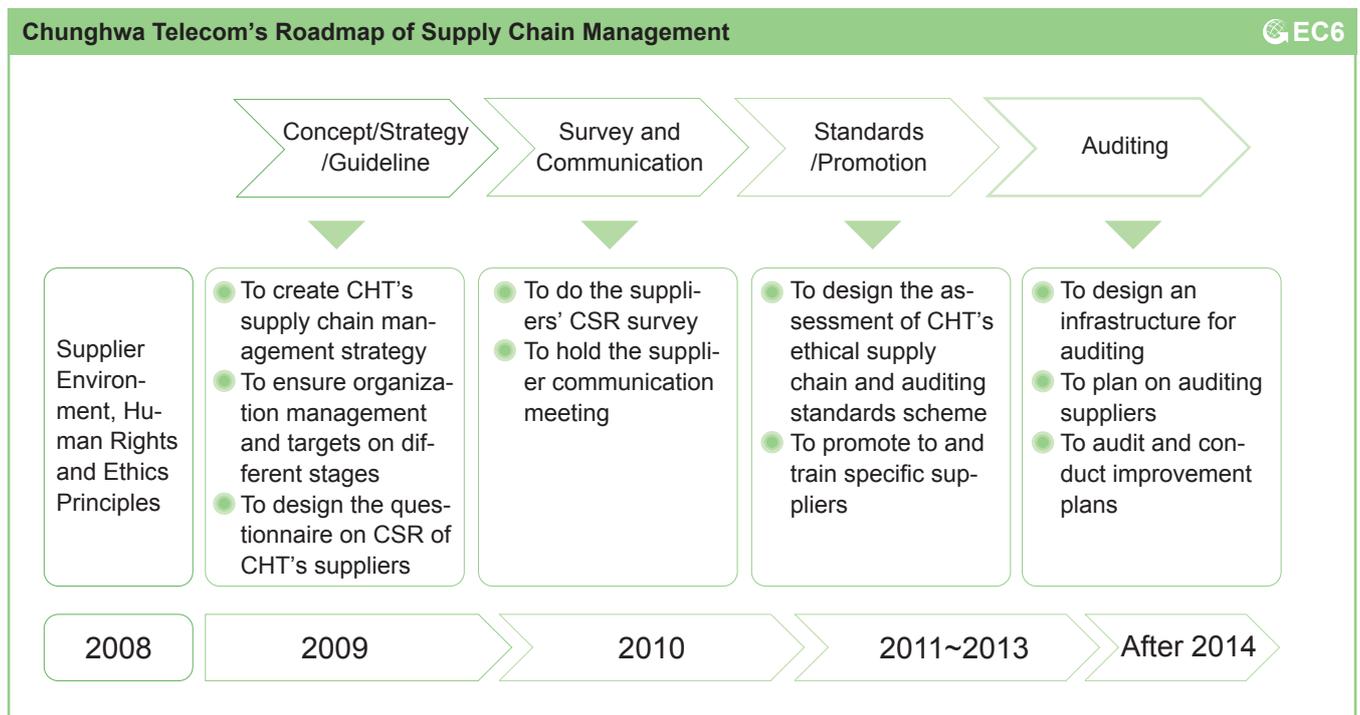
Ethical Supply Chain Management in the Telecommunications Industry

Chunghwa Telecom purchases products, services, constructions from domestic and international suppliers, which include Internet facilities, information facilities, cables, marketing and design, and the waste treatment. There are a great number of both purchases and suppliers, which also means that we are influential enough to influence our suppliers to take corporate social responsibility together.

Roadmap of Supply Chain Management

Chunghwa Telecom is the first company that made supply chain management policy in the domestic telecommunications industry. In 2008 we officially declared the "Supplier Environment, Human Rights and Ethics Principles." Besides asking suppliers to comply with domestic labor and environmental regulations on the basis of the procurement requirements, we called on the three main departments-the internet, the supply, and the administrative management- to complete the questionnaire "Survey on Chunghwa Telecom's Supplier Corporate Social Responsibility" based on the "Electronics-Tool for Accountable Supply Chains" (E-TASC) developed by the Global e-Sustainability Initiative GeSI in 2009. Permitted by the CSR committee, the "Chunghwa Telecom Ethical Supply Chain Management" action was officially launched.

Since 2010, starting with suppliers that we have a big portion of procurement from and that are influential to the society and environment, we will send questionnaires and hold a suppliers' general meeting. In addition to understanding our suppliers' current CSR performance (labor rights and environment in particular), we would like to let suppliers understand our CSR strategy and practices by communicating and interacting with them. Through our influence, we hope to deepen the roots of CSR in Taiwan.



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