

2014

Sustainability Report



CPC Corporation, Taiwan

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Editing Principles

About this Report

This CPC 2014 Corporate Sustainability Report (CSR) is the sixth such report for us. Through publishing the report, CPC would like to present to the general public and the stakeholders our determination of fulfilling the role as being a corporate citizen and to share the achievements of CPC's endlessly pursuing sustainable development. For the special CSR achievements in 2013 are shown in the Special Edition section. Other CSR information is presented in three main chapters corresponding to CPC specific characteristics, namely, Shouldering Responsibility, Working Together for a Greener Earth and Refueling for Taiwan. Combining related data and statistics, we would like to demonstrate our sustainability actions in terms of economy, environment and society.

To give the general publics and stakeholders a better understanding and an effective communication channel for CPC's work and effort on CSR, we have built a special CRS section in CPC official website. In that section, besides provide downloading of this report, we regularly update the goal, strategy and achievement of our sustainable development. Also, for immediate response and reports regarding to the public concerned CSR issues and CPC related important news events, please visit our official website for more information.

In this report, Chinese Petroleum Corporation, Taiwan will be simplified as CPC, Taiwan CPC, the company or us. Other critical wording, phrases, abbreviations, or proper nouns will be described in notes shown in the corresponding page.

The Editing Group and the Review and Authorizing Procedure of the Report

CSR editing group : To finish the editing of the report, "2014 CSR special editing group" has been formed with vice president being the convener, the director of Department of Planning as the executive secretary, and the members including representatives from all business divisions, all research institutes, and all aide departments.

Review and authorization procedures : Department of Planning is in charge of overall information and data collection, integration, and the editing of the preliminary draft for the report. According to their duty and expertise, members of editing group proofread and revise the draft. Meanwhile, an independent third party was working on the external checking and auditing for the report. The revised edition then was sent back to the editing group for further review and revision for the final edition. Adding artistic and graphic work, the report would then be sent to the President, and the Chairman of the Board for the final authorization.

Statistics Basis and Verification

Most of the statistic data for this report comes from CPC's internal data collection, research and inquisition. For the financial data, it is public information audited and verified by Deloitte & Touche. Some of the statistic data is cited from public information from government websites, for example, Environmental Protection Administration, and Ministry of Labor, both under the Executive Yuan. All the numbers are presented in the most common way of description. Data of greenhouse gas emission, ISO 14001, OHSAS 18001 are checked and verified by Bureau of Standards, Metrology and Inspections, Ministry of Economic Affairs. Compared to 2013 CSR, there is

no noticeable difference between the baseline number and data boundary.

To have better comparability and credibility for this report and to further act as the important tool for CPC continuing push for the management of sustainable development, all the information in this report are verified by world renowned British Standard Institution (BSI), and the editing framework and procedure fits GRI G3.1 A+ level and AA1000 Accountability Principles Standard. BSI verification report can be seen in appendix and it is presented in international general index. If there is any estimation, it is mentioned in the chapter notes.

Scope of Report

Data duration : Mostly based on what happened from Jan. 1 to Dec. 31, 2013. To have a more complete description, some part of the content includes things happened before Jan. 1, 2013 or after Dec. 31, 2013, and so do the future principles, goals and plans.

Scope of statistical data : The scope of the report covers CPC Headquarter, and the related operation system and activity. The information related to environment is mostly the work of Taoyuan, Dalin, and Kaohaiung Refineries and Linyuan petrochemical complex.

For the data and items not presented in this report and the related content provided in the report, please visit CPC official website for more information.

Referred Guidelines and Principles

- Global Reporting Initiative (GRI) guidelines for sustainability reporting G3.1 (Some of them follows version GRI-G4, and are identified and described in GRI reference index)
- GRI complementary guide for oil and gas industry
- AA1000 Accountability Principles Standard (2008 version)
- ISO 26000 Guidance on Social Responsibility
- UN Global Compact
- OECD Guidelines for Multinational Enterprises
- Earth Charter

Published Time

Corporate Sustainability Report is published annually.

Current edition : July, 2014

Previous edition : July, 2013

Next edition : July, 2015



2007



2009



2011



2012



2013



2014

Our Ultimate Commitment

Consistent Progress Towards Joining the First Rank of International Energy Conglomerates

The global economy is still recovering from recession and energy prices are at a high level. This, together with a plentiful supply of petrochemicals due to both expansion of production capacity in Asia and the development of coal-processing technology in China, has put CPC in a difficult situation. Nevertheless, CPC consistently works at structural change, raising the level of managerial efficiency and developing new markets to serve as a solid foundation for becoming an international energy conglomerate of the first rank. We will work tirelessly to reach this ultimate goal.

In the context of a global consensus on the need for energy conservation, a reduction in carbon emissions and the development of green energy, CPC - as Taiwan's leading energy company - will abide by its mission: to provide high-quality lifestyle resources; to ensure Taiwan's energy security; to promote economic prosperity; to develop clean energy sources and a safe and stable supply of oil and gas; and work with vigor towards a high value-added, low-carbon, environmentally-friendly and energy-saving industrial community and society. In doing so, we make the following promises to all stakeholders:

Upgrade Management Efficiency to Achieve Better Operational Results

In response to public expectation of improvement in the way that CPC is managed, we will take on all kinds of challenges, one being: to formulate a corresponding strategy that includes measures to increase income and decrease expenditure - such as (1) making assets yield value; (2) broadening diversification of business activities; (3) enhancing the efficiency of exploration and production; (4) increasing the profit on sales of refined oil; (5) making adjustments to external trade business for flexibility; and (6) reducing business overheads and human resources costs. In short, we will commit to better performance by management and a more robust business model.

Strengthen Core Business Competencies to Establish the Capacity for Sustainability

In **exploration and production (E&P)**, we will be active in both the acquisition of exploration interests and the actual drilling and testing of domestic and overseas wells; also in speeding up E&P business development - all with the object of maintain a steady supply of oil. We would like to achieve self-ownership of at least 10% of all our oil sources by 2019. In **refining**, we plan to expand the capacity of our Dalin refinery, as the Kaohsiung refinery will soon be shut down, and collectively invest in the production of high value-added petrochemicals with downstream business partners. As for **natural gas**: we will diversify our natural gas sources to ensure a secure supply; we will carry through the investment and development of the Taichung LNG terminal phase II project; and plan construction of the third LNG terminal. In **refined oil sales**, we intend to expand the scope of the business by building and managing complex, flagship gas stations that will provide more varied and more upmarket services to our customers.

Fight for Energy Conservation and Reduction in Carbon Emissions As Ways to Lessen Pollution of the Environment

We at CPC recognize the threat posed by global warming and put our best efforts into improving on our manufacturing


processes and introducing advanced energy conservation technology to reduce carbon emissions. The resulting carbon reduction accumulated since 2005 has reached 2.2 million tons out of the goal of 2.3 million tons by 2015. On the matter of environmental pollution: we will place tight controls on the discharge of pollutants and religiously follow-up on any violation of environmental regulations. We will set up corrective and preventive measures to decrease the occurrence and intensity of environmental disputes.

Ensure 100% Occupational Safety to Achieve a Score of 0 Workplace Accidents

Occupational safety is the ground-base of sustainable management and also one of CPC's core values. This makes achieving the ultimate goal of "100% occupational safety, zero workplace accidents" - and hence gaining the public's complete trust - its most important task. To that end we try to build up employees' consciousness of dangers in the workplace and request that they base their working practice on Standard Operating Procedure (SOP). However, and unfortunately, two fatalities occurred in 2013; we have conducted a thorough investigation of those two accidents and will use the findings in building up a far-reaching occupational safety system that is effective in both theory and practice. It is on that basis that employees' full awareness of occupational safety will be finally established.

Preparing for the Manpower Gap and Activating Succession Planning

Within a decade, we will have to confront the difficult situation brought about by a wave of retirement and the consequent shortage of talent. Our human resources policy therefore now places equal emphasis on both talent quality and quantity in order to establish a comprehensive talent bank. We ask senior and middle managers to be active in unearthing and promoting talent. We aim at motivating employees to take responsibility for their own career progression and, through diversified job rotation and multi-skill training, to try to overcome the limitations of single-skill expertise and become all-around talents. Looking to the future, we will institute the generational passing-on of critical business experience to give sustainable management a stronger foundation.



CPC Corporation, Taiwan
Chairman of the Board

Sheng C. Lin

President

Paul L. W. Chen

Push for Privatization to Eliminate Constraints on Management

As a state-owned enterprise CPC is often subject to regulatory constraints that may lose it some business opportunities, with a consequent severe impact on our competitiveness and operational effectiveness. State ownership makes it hard for CPC to break free of those regulatory limitations so as to enable substantive structural reform. Privatization, therefore, is the only way to go in order to rationalize the company's operational systems and mechanisms. However, the first priority in the privatization process will be to take due consideration of the rights and interests of CPC's employees and so win both their support and that of other stakeholders.

R&D in High Value-Added Products Will Forge a First-Class Brand

In alignment with government policy for promoting high value-added petrochemicals, CPC will maintain its R&D in two crucial areas: the potentially commercial valuable applications of heavy oil; and the effective utilization of carbon as an energy storage material capable of enhancing the convenience of 3C products. We will apply our powerful R&D capability to leading CPC-associated petrochemical firms in developing high value-added petrochemicals and technology, to help in upgrading the domestic petrochemical industry and to building "CPC" as a first-rank international brand in petrochemicals.

Use the Strength of the NPOs in Building a Harmonious Society

We will continue working with charitable organizations such as the Eden Foundation and Huashan Social Welfare Foundation to initiate activities in support of social concern and health promotion. We will combine the power of companies and NPOs to alert the public into paying attention to underprivileged groups - such as children living in remote areas, people who are physically and mentally challenged and senior citizens living alone - so as to set an example that will spur more companies into collectively helping Taiwan's society. We hope to work with all stakeholders in creating a warm, loving and harmonious society.

This is the sixth CPC annual sustainability report. We are excited that our *2013 sustainability report* won the award for best in the manufacturing group of the "2013 Taiwan Top 50 CSR Awards". Besides that, CPC was also a three-time recipient of the "Corporate Sustainable Development Performance Awards" held by the Taiwan Institute for Sustainable Energy-namely, for Sustainable Innovation, Innovative Communication and Social Harmony. All of these awards make CPC even more firmly determined to maintain a CSR culture and to instilling the CSR way of thinking and actions into our major business activities. Looking to the future, CPC will maintain cooperation with its stakeholders in gathering together a robust and sustainable force to drive the company onward and make steady progress towards its goal of being among the Global Top 150 energy companies. We are thankful for the support and goodwill of all our stakeholders. Let's work together for our beautiful home -Taiwan.

01

Shouldering Responsibility

Adhere to Frugality and Efficiency and Prevent Corruption



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2013

Management Goals and Achievements

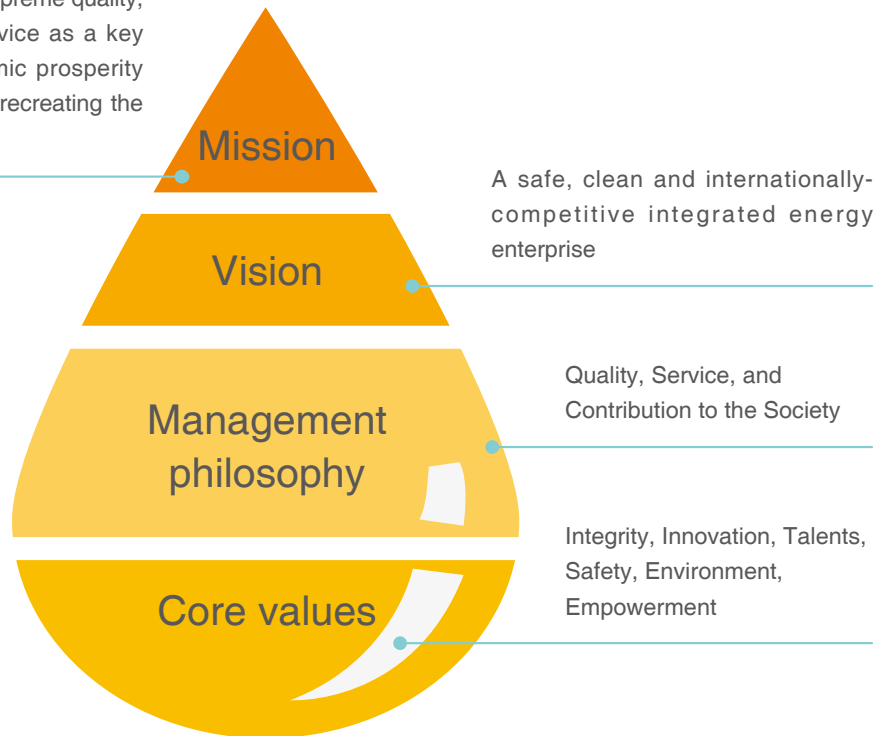
- CPC CSR 2013 not only won the best in manufacturing industry award from “Taiwan Top 50 CSR awards”, but also the “sustainable innovation award”, “innovative communication award” and “social harmony award”.
- Fitch Rating affirms “A+” rating for CPC in May, 2014.
- Ranking in the Fortune Top 500 jumps from 350 in 2011 to 300 in 2014.
- CPC obtained the score of 96.4 in the 2013 MOEA company governance evaluation.
- Pushed for plan to increase NT\$ 2.83 billion income and reduce NT\$ 790 million cost.
- Successfully obtained 8 new mining fields in USA, Australia, Burma, and Nigeria. (CPC is working with international oil exploration company in 25 mining fields in 10 countries.)
- Acquired oil and gas fields including Australia Prelude development project (Australia Ichthys gas field project is expected to be completed in 2014) and Nigeria Agadem field.

1.1 CPC Current Status

1.1.1 Management Objectives

CPC's management objectives and core values are the essential guides for every CPC employee. Every CPC employee will firmly strive to achieve the objective and accomplish the mission of CPC.

To provide our customers with supreme quality, reliable energy supply and service as a key contributor to Taiwan's economic prosperity and to polish the CPC brand in recreating the operational peak



1.1.2 Introduction

From CPC being incorporated to 2013, it's been 67 years. As a government-owned enterprise and the key public service provider, we have been working diligently, facing countless obstacles and challenges, assuming the obligation of supplying sufficient natural gas, petrochemical and refined oil products for the general public. Lately we have been aggressively pushing for strengthening operation performance. Even though there is still room for improvement, the accomplishment for the productive operation is proven clearly. (Please refer to the operation achievement section of this chapter for more information.)

CPC's competitiveness is limited by the "Budget Act", the "Government Procurement Act", the "Administration Law of State-Owned Enterprise", and thus, our decision making and operation procedures are facing enormous hindrance and general public's questioning. Through privatization, CPC can prevent the political and elective factors which interfering our operation and thus greatly elevate the efficiency. The main reason for privatization is to instill the ideas of productivity and performance to let CPC more flexible and rational. During the process, we need to take good care of employees' benefits and related rights. We will actively hold the seminars and meetings to communicate with the employees. We expect to complete the procedure of the privatization by 2017. After privatization, we will still keep leading Taiwan petrochemical industry, continuing supply safe and stable clean energy after privatization.

CPC not only bears the responsibility of enhancing operation efficiency but also the tremendous obligation of supplying and developing national energy resources. With the gradually depleting fossil fuel, we will bravely face the predicaments and challenges, fearlessly keep charging forward, and firmly take on the role of being the main clean energy producer and supplier and courageously strive to create a triple-win situation among "environmental protection, economic development and society concerning" We want to become not only the competitive, international energy conglomerate covering the business of exploration, oil and natural gas, petrochemical, high-tech, but also the most valuable growing and the CSR exemplar company.

Global Corporation Ranking

CPC's global corporation ranking jump from rank 434 in 2010 to 300 in 2014, leaping of 134-place in 5 years. In the future, CPC will keep innovating and working hard to achieve the goal of becoming the global top 150.

2011~2014 CPC Global Ranking					
Company \ Year	2011	2012	2013	2014	
CNPC	6	6	5	4	
Sinopec	5	5	4	3	
CNOOC	162	101	93	79	
CPC	350	337	305	300	
FPCC	410	408	379	385	

Data comes from Fortune Global 500

CPC Corporation, Taiwan

Incorporated date / June, 1, 1946

Capital / 130.1 billion

Revenue / 1.19 trillion

Chairman / Sheng-Chung Lin

President / Paul, Lie-Way Chen (2013.09.17)

Number of employees / 14,819 (2013/12/31)

HQ / No.3, Songren Rd., Sinyi District,
Taipei City 110, Taiwan (R.O.C.)

Biggest share holder / MOEA 100%

Management Team



Vice President
Ming-Huei Chen

Vice President
J. S. Yang

President
Paul, Lie-Way Chen

Chairman
Sheng-Chung Lin

Vice President
Ray-Chung Chang

Vice President
Cheng-His Liu



Main Business and Products

Main Business	Main Products
Exploration, development, refinery, storage and transportation and sales of oil and gas	Oil products, (gasoline, diesel, fuel oil and aviation fuel), LPG, gas supplied to households and industries
Production and supply of petrochemical raw materials	Petrochemical raw materials such as, alkene products (ethylene, propylene and butadiene) and aromatic hydrocarbons (benzene, para-xylene and ortho-xylene) and solvent products
R&D and sales of bio-tech products	Dietary products and bio-tech cosmetic products and drinks

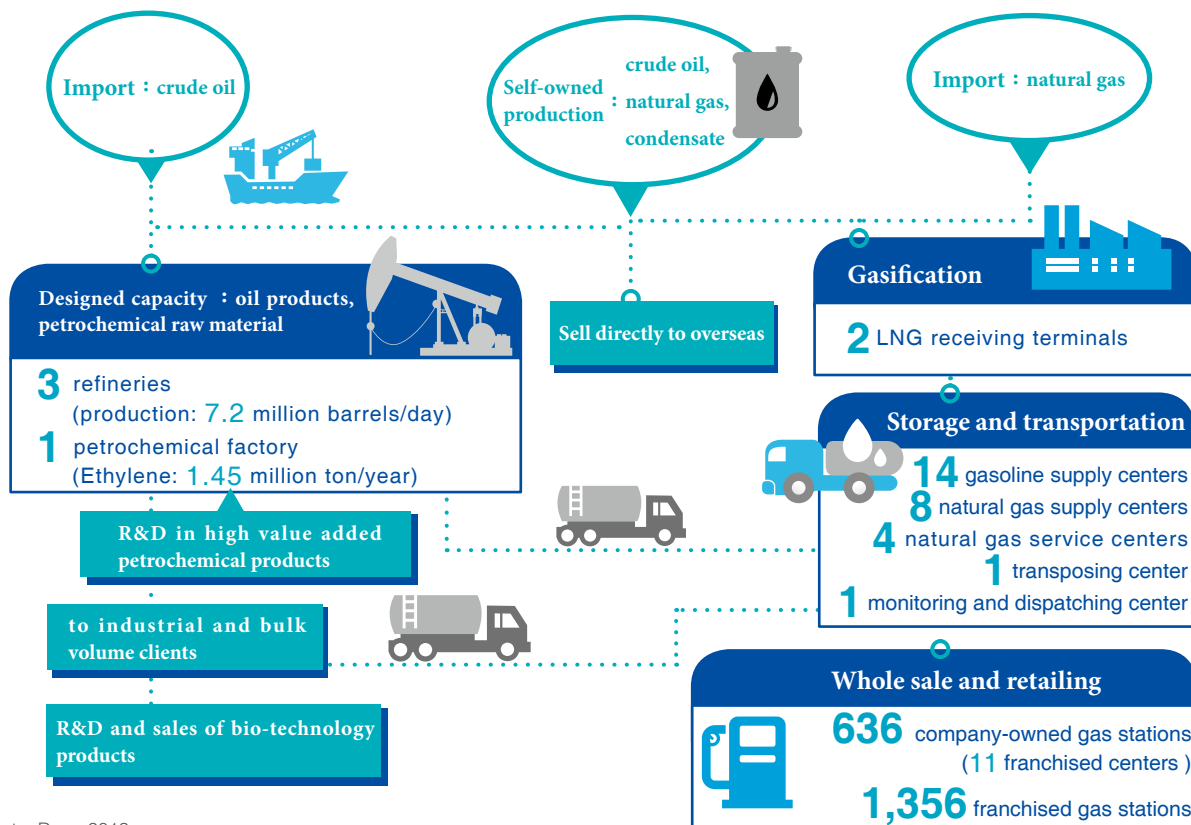
Our main business includes exploration, development, refinery, storage, transmission, and sales of oil products and natural gas and production and supply of petrochemical raw materials, with facilities distributed all over Taiwan.

In 2012, we worked with pan-CPC petrochemical companies to set up Material Testing & Certification Center and Green Technology Research Institute to actively develop high value-added petrochemical technology and products.

To diversify our business, CPC has established the Bio-technology Business Center under the Refining Institute to lead the R&D of bio-tech, and appointed the Operating Team of Bio-tech Product under the Solvent & Chemical Business Division to be in charge of the sales of bio-tech products.

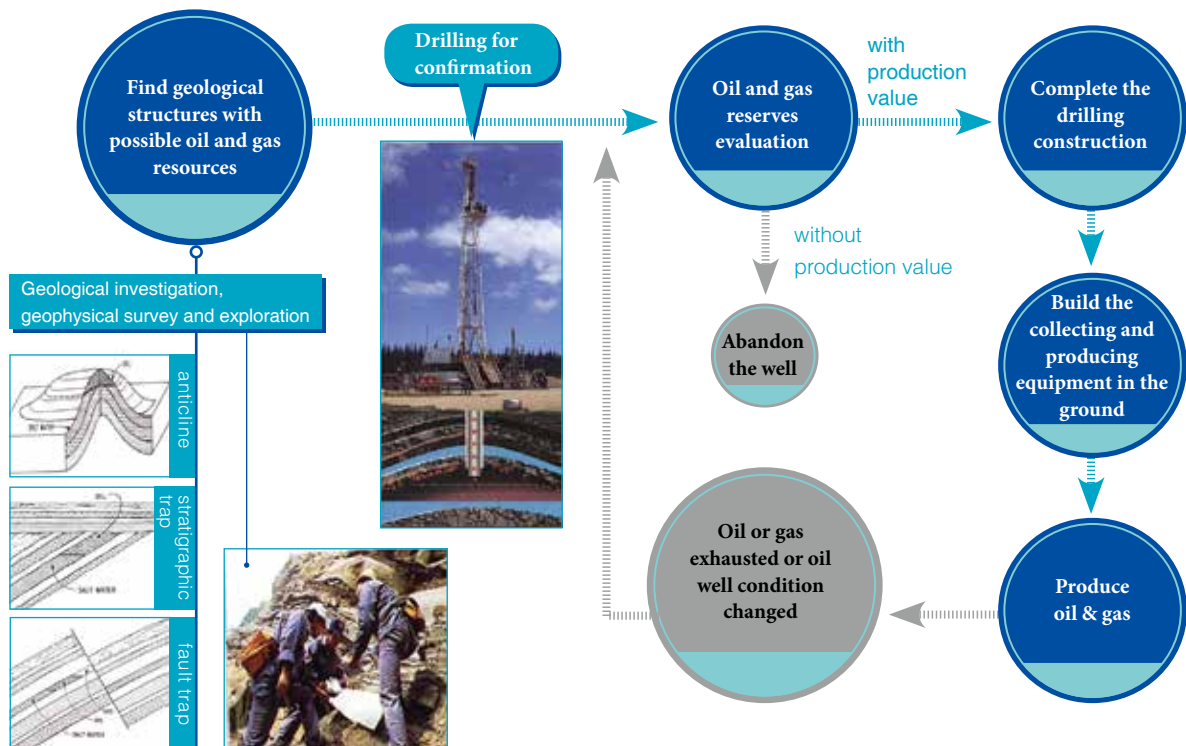


General Description of Main Business

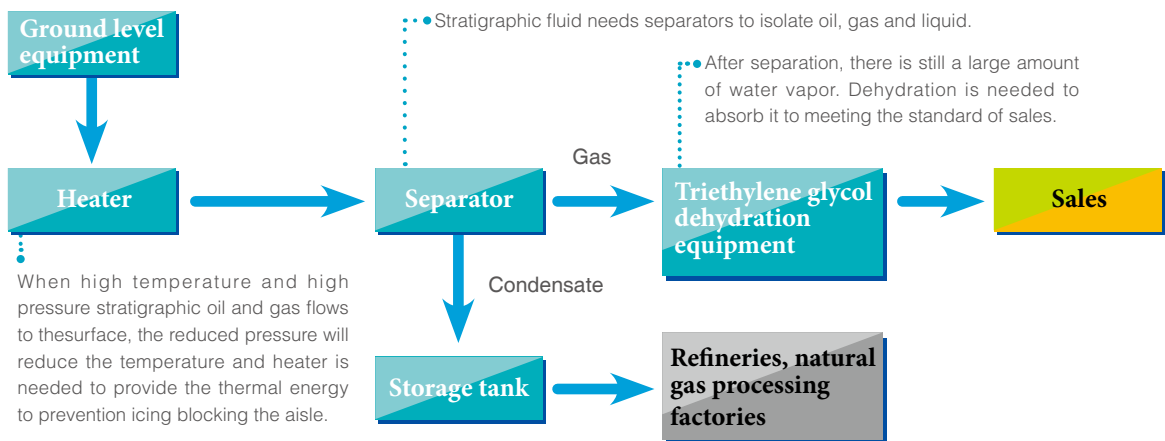


Date: Dec., 2013

Oil & Gas Production and Processing



Oil and Gas Production and Processin



1.1.3 Operation Locations

Domestic

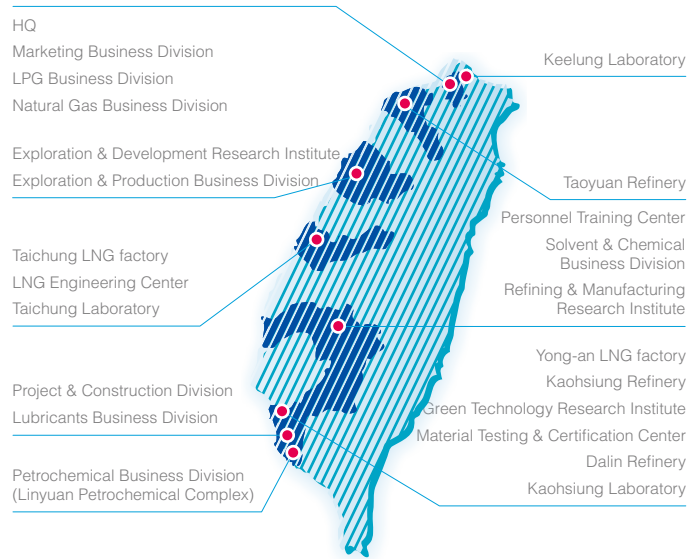
- 3 refineries (in Kaohsiung, Taoyuan and Dalin)
- 1 petrochemical factory in Linyuan
- 2 LNG receiving terminals (in Yong-an harbor and Taichung harbor)
- 8 natural gas supply centers, 4 natural gas service centers, 1 transposing center (built 8-shape of gas transportation network with 1,892 km of total length of pipes)
- 14 gasoline supply centers

Overseas

Under the Overseas Petroleum and Investment Corporation (OPIC), CPC work with local governments, government-owned petroleum companies and international renowned companies for exploration and production, and extending the foreign operational locations range from the countries in the Americas, Asia-pacific and Africa.

In 2013, the exported amount of oil products is 5.8074 million liters with majority of it selling to Southeast Asia countries like Singapore, Indonesia, Malaysia, Vietnam and Philippine, and to Mid-East countries like Saudi Arabia and United Arab Emirates. There are also some products exported to Sri Lanka, New Guinea and Fiji. The export market is expanding annually.

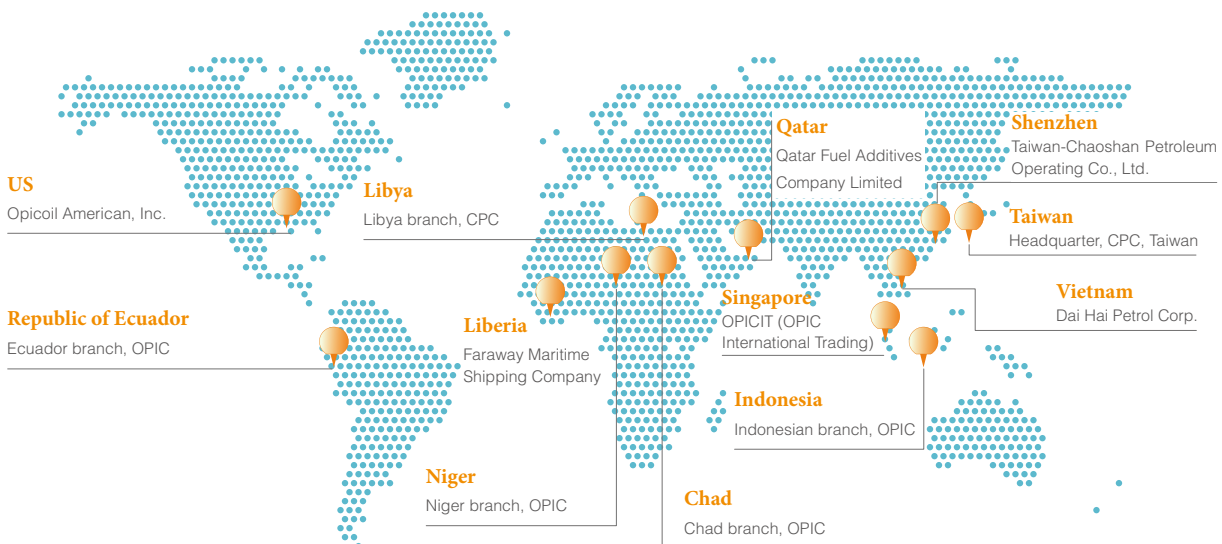
Domestic Operation Locations



1992 gas stations (market share: 79%)

14 gasoline supply centers

CPC Overseas Affiliates and Cooperating Company Locations



1.2 Operation Achievement

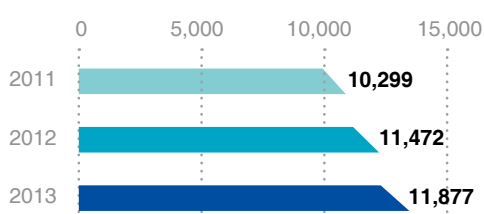
1.2.1 Financial Achievement

Considering stable consumer price as the top priority, the Government limited and constrained gasoline and diesel price and thus, domestic gasoline and diesel price did not reflect the rising crude oil import cost. CPC lost NT\$ 138.7 billion. In 2009 and 2010, CPC worked hard on cost control and productivity improvement and turned the previous loss into profit. However, in 2011 and 2012, government went back to regulate gasoline and diesel price and CPC lost NT\$ 38.7 billion and NT\$ 33.7 billion respectively. With the decrease of oil price compensation in 2013, CPC's finance turned loss into profit again. However, the profit in 2013 was limited to only NT\$ 3.8 billion, as Kaohsiung refinery gradually shutdown and the higher depreciation of the new units. (Regarding to the detail information of company management and operation achievement described in Shouldering Responsibility Chapter, please refer to CPC 2014 annual report)

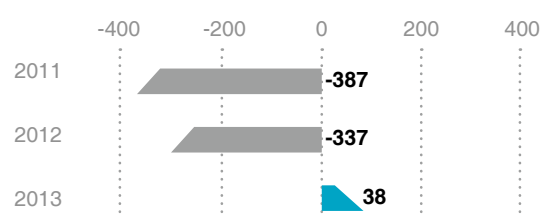
Fitch Ratings has affirmed on 27 May 2014, CPC Corporation, Taiwan's (CPC) Long-Term Foreign Currency Issuer Default Rating (IDR) at 'A+', National Long-Term Rating affirmed at 'AAA(twn)'. The Outlook is Stable.

Financial contribution in 2013 is **NT\$ 125.5 billion**

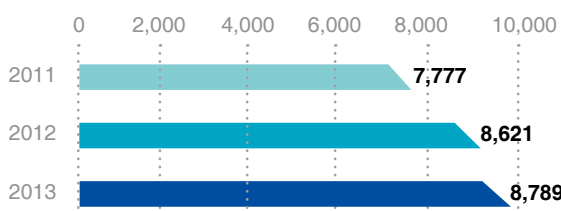
Revenue in hundred-millions TWD



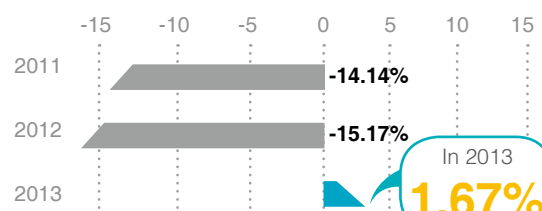
Profit before Tax in hundred-millions TWD



Total Assets in hundred-millions TWD



ROE %



Note: All numbers are audited. Since 2013 our financial statements have been reported on the basis of International Financial Reporting Standards (IFRS). For comparability of financial achievement in 2012 and 2013, we adjusted the 2012 audited numbers according to IFRS.



Government Finance Aids

In 2011, the government provided NT\$ 911 million of the finance aid to CPC. With the investment tax credit for 2012 and 2013 is NT\$ 0, CPC did not take any finance aids from the government in 2012 and 2013. Government (MOEA) owns 100% share of CPC.

Government Finance Aids

Year	Government Finance Aids (NT\$)
2011	910,644,538
2012	0
2013	0

The numbers above are audited. There is no investment tax credit since the regulations are changed.

Achievement in Operation Improvement 2013

Activation of lowly utilized land to increase benefit and utilization, for example, the land in Longjiang Rd. of Taipei City obtained NT\$ 860 million of royalty by licensing only the superficies, and the land besides DAXue Rd. of Hsinchu City was sold by tender with NT\$ 270 million, and the land in Chengde Rd of Taipei City was sold by tender with NT\$ 420 million.






Actively acquiring wells with commercial value to increase self-owned reserve: in 2013, we gained 8 wells in Australia Prelude, Burma D, Nigeria Agadem, and US, which would greatly increase self-owned reserves.

Keep pushing for cost-saving and income broadening programs, investigated and implemented cost saving and benefit enhancing measures: in 2013, we achieved NT\$ 2.83 billion in extra income and saving of NT\$ 790 million.

Reduce or delay non-essential investment to reduce budget: CPC has stopped joint investment plan of Jatropha curcas planting and F structure oil and gas well investment in the off-shore of Kaohsiung. Total saved investment budget is NT\$ 21.3 billion.

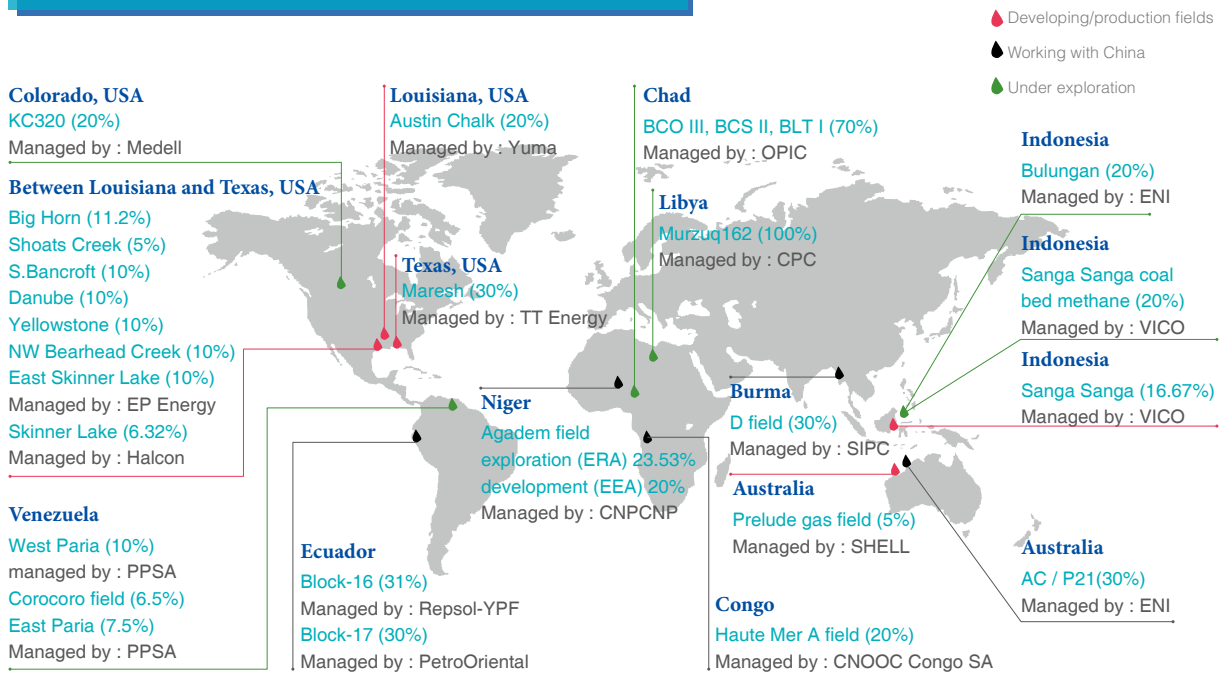
1.2.2 General Operation Summary

Operation Achievement in 5 Core Businesses

Operation Achievement in 5 Core Businesses			
Item	2011	2012	2013
Exploration 	Acquired 6 US oil fields	Acquired 4 US and 1 Congo oil fields	Acquired 5 US oil fields, and one each in Australia, Burma and Nigeria
Refinery 	Upgrading refinery structural upgrade	Kept upgrading refinery structural (Mass production of Alkylation unit). / Signed joint venture of INA production plan for FCC C4	<ol style="list-style-type: none"> 1. Keep developing refinery structure improvement plan 2. Push for high value-added oil product: keep working on joint investment of catalytic cracking of C4 (INA) project and working with downstream company for feasibility study of producing styrene with recycled catalytic cracking tail gas
Petrochemical 	Upgrading #3 Naphtha Cracker upgrading, signed C5 hydrocarbons joint production program	<ol style="list-style-type: none"> 1. Kept upgrading Aromatic Hydrocarbons series plant upgrading 2. Worked on Third Naphtha Cracker upgrading and Taiyao Petrochemical Material Company 	<ol style="list-style-type: none"> 1. New NO.3 Naphtha cracker operates in full capacity, provides products to downstream customers sufficiently 2. Proceed Aromatics hydrocarbon refining structure improvement continuously 3. Introduce and develop new process technology, include new investment of high value petrochemical products
Sales and Marketing Oil Product 	Reader's Digest Trusted Brands for the 11 th year in a row	Reader's Digest Trusted Brands for the 12 th year in a row	Reader's Digest Trusted Brands for the 13 th year in a row
	Next Magazine's the most votes and the first place in service category for gas station for the 6 th year in a row	Next Magazine's first place in service category for gas station for the 7 th year in a row	<p>Two first place prizes in Next Magazine's service category: Best gas station and best service</p> <p>Management Magazine "2014 Consumers Ideal Best Survey": first place in gas station</p> <p>Common Wealth Magazine "2014 Gold Service Award": Gold medal in the utilities category</p>
Natural Gas 	Signed 20-year LNG supply agreements with RL3 of Qatar	Signed two LNG long term purchasing contracts with Ichthys and Shell and would import LNG from Australia and elsewhere	<ol style="list-style-type: none"> 1. Sold natural gas of 16.565 billion m³ in 2013, 3.5% increase compared with 2012 2. Concluded and signed a first US LNG HOA with GDF SUEZ

To increase self-owned energy resources and stabilize crude oil and natural gas supply, CPC aggressively works on oil and gas exploration and production domestically and globally. In 2013, we acquired 5 US oil fields, and one each in Australia, Burma and Niger. Up till the end of 2013, we have been working with international oil companies in 10 countries with 25 wells in exploration and production. Up till the end of 2013, we successfully obtained new fields for exploration and production as shown in the following figure.

CPC Overseas Oil and Gas Fields Location Map (10 countries 25 fields)



Production of Sales of Main Products

CPC owns 150 million barrels of oil equivalent of potential oil and gas reserves, and the production of oil products and natural gas in 2013 is 11 million barrels of oil equivalent. Lately, we are increasing refinery capability to satisfy the market demand and to maximize profit for refinery. In 2013, the amount of refined crude oil achieves 22.65 million kiloliter.

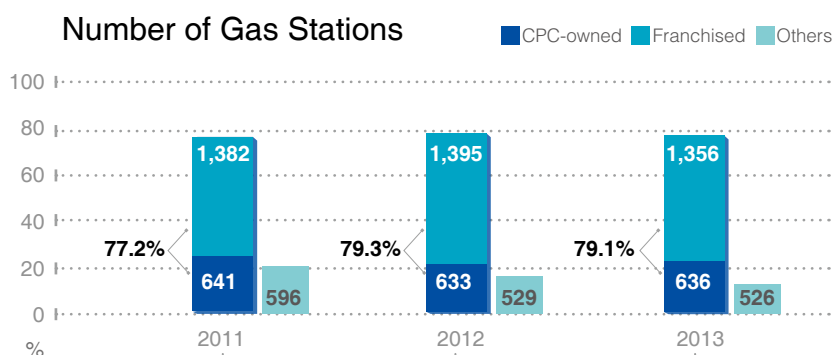
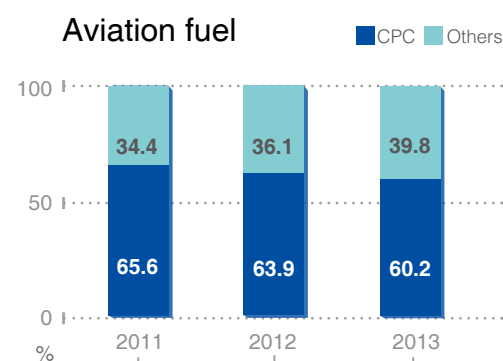
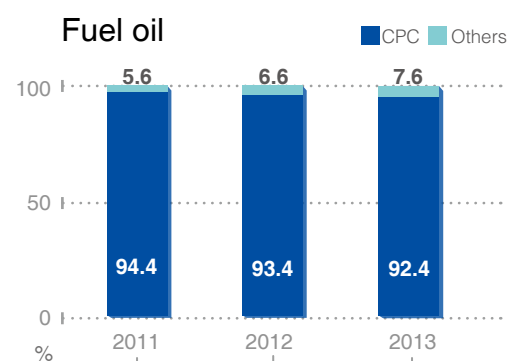
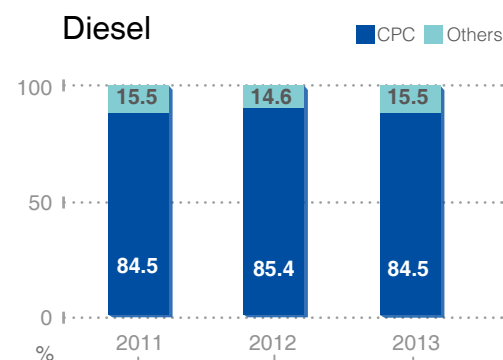
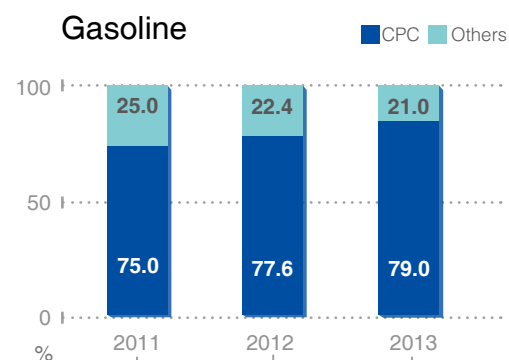
As for natural gas production, we adopt the techniques of low pressure production, water blocking, and well fixing in restoring domestic production to stabilize natural gas production. In 2013, the domestic production of natural gas (including regeneration gas) is 510 million m³. Because of the need for clean energy in Taiwan, the sale of natural gas is increasing annually and reached 16.6 trillion m³ in 2013.

CPC's gasoline, diesel and fuel oil have over 70% of market shares, thus, as the major supplier for the oil products market in Taiwan. The total sales of oil products in 2013 are 35.86 million kiloliter, 2.33 million kiloliter above that of 2011. In 2013, the sales of LPG are 789 thousand tons, which decrease 48 thousand tons compared to that of 2012.

Main Products Performance			
Item	2011	2012	2013
Refined Crude Oil (in ten thousand kl)	2,455	2,674	2,265
Production of Natural Gas (in hundred million m ³)	4.2	5.0	5.1
Sales of Oil Products (in ten thousand kl)	3,353	3,466	3,586
Sales of Natural Gas (in hundred million m ³)	153	160	166
Sales of LNG (in metric ton)	764,724	837,608	789,397
Number of Gas Stations (including franchised one)	2,023	2,028	1,992

Note 1: Sales of oil products includes petrochemical products and multilateral trade
 Note 2: Sales of LPG comes from the final account report in 2013

Market Shares for Oil Products and Gas Stations



1.2.3 R&D

For years, CPC has been working hard on reducing operation cost and increasing revenue with profound results. In the future, besides working with divisions to improve exploration and refinery technology, all the research institutes will need to establish self-owned key technology, enhance high value innovation as the essential R&D strategies. We will annually increase the R&D expense, add facilities and hire professional Masters and Ph. D. and we expect the ratio of the forward looking and foresight R&D expense in 2016 to be 50%. In 2012 and 2013, CPC invested NT\$1.76 billion and NT\$ 1.57 billion in R&D, respectively.

Responding to global development on high value, low carbon emission technology, we set up Green Technology Research Institute and New Materials Trial Production & Certification Center in March 2012 in Kaohsiung, to work on research for green energy technology including green energy, material technology, bio-technology and environmental protection technology. These two institutes will focus on R&D of green energy and biomass and the expansion of CPC's petrochemical manufacturing capability.

Major R&D Items

Researches of Conventional and Non-Conventional Crude Oil and Natural Gas Resource Evaluation

- Chad BCOIII field structure analysis: seismic data for structure analysis, seismic inversion and amplitude variation with offset related attributes analysis and well logging data analysis to increase the amount of crude and gas reservation.
- Domestic land and sea area resource evaluation to help Exploration & Production Business Division for solving drilling and production technical problems.
- Researches on speeding up exploring the edge of old crude and natural gas well in Southwest Taiwan Strait, 3-D seismic survey to verify new target from the old edge of the existing wells and establishing new exploration targets.
- Joint research with Taiwan-Chaoshan: Reached an agreement among industrial, academic, and research institutes via utilizing seismic data to establish new geological thinking and 3-D seismic survey to explore new targets.
- Studies on non-unconventional energy exploration including shell gas in US and Canada, coalbed methane in Asia-Pacific, oil sands in Canada, development of geothermal geology and geothermal energy, non-associated gas and methane hydrate.
- Studies on R&D and application of new exploration technology: asset evaluation technique for crude and gas fields, increasing production for crude and gas reserves, field production simulation, development design and production planning research.

New Product Development

- Refining & Manufacturing Research Institute is actively working on new products, new technologies and on-site technical services, and on the development of lubricants, bio-tech products and special chemical products to increase profit.
- Worked hard on manufacturing process improvement and new conservation technology development, for example, utilizing catalytic distillation for hydrolysis of methyl acetate, developing propylene oxide manufacturing process, using extractive distillation technology to produce absolute alcohol, i.e. BXT process, using infrared IR thermal imaging to enhance evaluation of equipment and pipes safety, Spraying heat resisting, high radiation emissivity and high thermal conductivity coating material to the inner surface of the heating furnace to effectively increase the thermal conductivity for the furnace to reduce energy consumption.
- Established petrochemical product group to develop high performance and high value-added petrochemical derivative products, for example, adamantane and its derivatives, dicyclopentadiene (DCPD) manufacturing process and the development of non-crystalline carbon material.

Application of Environment Engineering Techniques

- Establishment and application of environmental remediation and forensic fingerprints technology.
- Investigation and evaluation of geologic hazard potential and seabed geologic safety.

Development in Carbon Captures and Storage (CCS) Technology

- Finished pilot experiment simulation and monitoring for CO₂ storage geology.
- Completed pilot experiment of CO₂ for ground level equipment set up and dry run in Yonghe Mountain.
- Set up the monitoring stations to measure CO₂ density and keep on the monitoring work.
- Worked with ITRI to build real time monitoring station for soil in shallow level, groundwater, surface deformation and minor earthquakes.
- Finished dynamic simulation of CO₂ injection and storage in Yonghe Mountain.
- Concluded CCS-EGR evaluation for increasing natural gas production.
- Accomplished investigation for public's recognition and acceptance on CO₂ storage and planned public education seminar.

Biomass and New Energy Research

- CPC has 6 commercial photovoltaic systems, including polycrystalline silicon and CIGS thin film systems, and reside in gas stations in Kenting and Linlue of Pingtung county, Ershui and Shetou of Changhua county, Makuang, and Douliu of Yunlin county. In 2013, the accumulated electricity generated is more than 230 thousand kwh, and reduces 123 metric tons of CO₂ emission. (Note: the number is based on 0.532, the electricity carbon emission factor published by Bureau of Energy)
- Engaging in transesterification with bio-grease (solid catalyst, and super critical fluid technology), hydrogenation technology for bio and green diesel manufacturing, and isomerize green diesel for bio aviation jet fuel.
- Using biomass energy (for example, crushed seeds of *Jatropha curcas* and microalgae) to produce biofuel and chemicals. In the future, we will invest in searching of algae that can degenerate cellulose and make bio-alcohol to keep providing high quality fuels for domestic market.





Patent Achievement

With its core Capability, Green Technology Research Institute is working through strategic alliance to speed up the establishment of green energy core technology and is increasing the production of commercializable products and technology. It is expected to produce 3 to 5 patents or commercializable product and technology.

Up to the end of 2013, CPC has owned 141 patents (excluding expired or no longer maintained ones), In 2013, we applied for 15 patents, and were issued 13 patents.

1.2.4 Affiliated Business and Investment

CPC set up "Guidelines for Joint Venture Investments" to establish investment control mechanism and increase company benefit. CPC has 15 affiliated businesses and investments by the end of 2013, including 10 domestic and 5 overseas ones. The total investment is NT\$ 13.775 billion, and in 2013, the profit generated from which was NT\$ 1.185 billion and thus the return on investment was 8.6%. CPC has joint venture investments domestically and globally. Here is a list of companies in which CPC holds 20% or more shares.

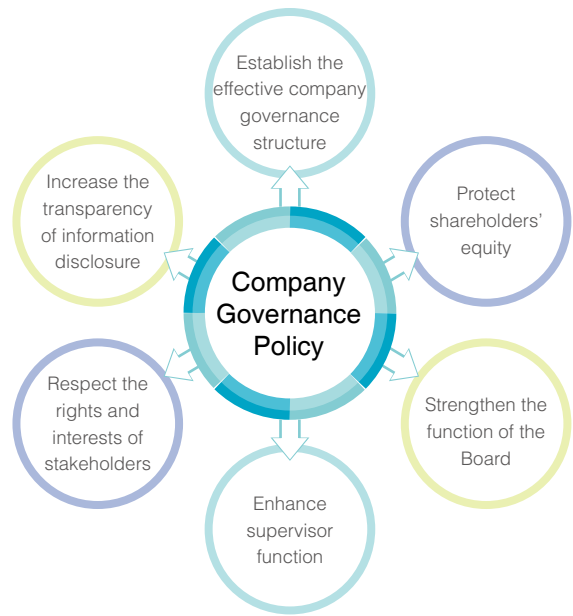
2013 Business Investment with over 20% Share Holding			
Company Name	Percentage of Share Holding	Relationship with CPC	Realized Profit/Loss (million)
China American Petrochemical Co., Ltd. (CAPCO)	38.6%	<ul style="list-style-type: none"> Purchase PX material to produce PTA and purchase natural gas, diesel, and fuel from CPC 	-775.54
CPC-Shell Lubricant Co., Ltd. (CSLC)	49%	<ul style="list-style-type: none"> Purchase VGO from CPC as fuel Provide blending lubricant services for factory operation for CPC CPC offtakes base oil and lubricant 	-307.63
Kuo Kuang Power Co., Ltd. (KKPC)	45%	<ul style="list-style-type: none"> Purchase natural gas from CPC Rent land from CPC for factory 	252.88
Chun Pin Enterprise Co., Ltd. (CPEC)	49%	<ul style="list-style-type: none"> Provides import and export oil storage for Northern Taiwan for CPC 	42.31
Global Energy Maritime Co., Ltd. (GEMCO)	48%	<ul style="list-style-type: none"> No transaction in progress 	-11.73
Kuo Kuang Petrochemical Technology Co., Ltd. (KKPTC)	43%	<ul style="list-style-type: none"> No transaction in progress 	-0.07
Taiwan Advanced Materials Corp. (TAMC)	49%	<ul style="list-style-type: none"> Rent land from CPC for factory CPC also provides technical support for the factory construction 	-11.57
Dai Hai Petrol Corp., Ltd. (DHP)	35%	<ul style="list-style-type: none"> No transaction in progress 	1.38
Qatar Fuel Additives Co., Ltd. (QAFAC)	20%	<ul style="list-style-type: none"> No transaction in progress 	1422.95
Faraway Maritimes Shipping Co. (FMSC)	40%	<ul style="list-style-type: none"> In charge of transporting LNG purchased from Indonesia 	284.11
NiMic Ship Holding Co., Ltd. (NSHC)	45%	<ul style="list-style-type: none"> Under which there are 4 100% owned subsidiaries, with total of 4 ships in charge of transporting LNG purchased from Qatar 	221.49
NiMic Ship Management Co., Ltd. (NSMC)	45%	<ul style="list-style-type: none"> In charge of the management of the above 4 ships of NSHC 	5.81

1.3 Company Governance

To establish the awareness of adhering to clean and honesty and refusing any corruption, CPC invited General Director of Agency Against Corruption, Chu, Kung-Mao, to give us a speech on "From the correct legal concept to the new thinking of being honest and clean". The host lead all the participants in vowing "corruption would destroy our image and we would adhere to being clean and honest" and signing the affidavit. We hope every employee would remember our core value and be sure of honest and always "adhere to clean and honesty and refuse any corruption.

CPC participated in the "2013 Company Governance Evaluation for the State-run Enterprise of Ministry of Economic Affairs". The assessed items are "The effectiveness of the law and regulation framework to state-owned enterprise", "the role of government as the entity owner", "protecting the shareholders' benefits", "the relationship between the stake holders", "transparency of information disclosure", "and the BOD's responsibility as a government owned entity", "internal audit system" and "accounting system". It was done in document and onsite evaluation. CPC was credited with the score of 96.4(full score of 100).

CPC was credited with the score of **96.4**

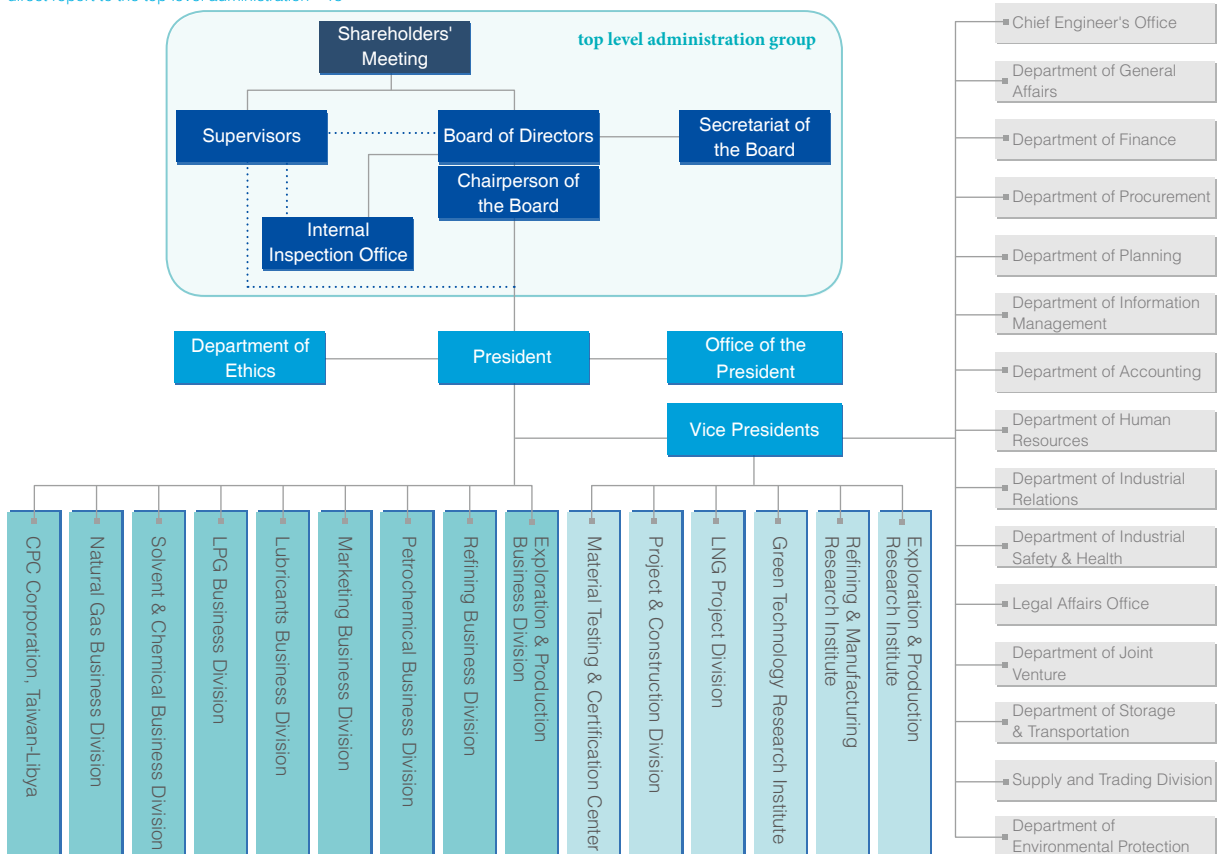


1.3.1 Management Structure

CPC Organization Chart

staff under top level administration : 17

direct report to the top level administration : 15



2013.09

Organizational Overview

- In 2013, Department of Personnel was renamed to Department of Human Resources.
- The internal business is already classified into different divisions. Through the calculated pricing transfer, the cost and efficiency of each division is more productive and transparent.
- The major business scope of CPC includes importing, exploration, development, refinery, transmission, storage and sales of domestic oil and gas and the supply and production of petrochemical raw material. Our organization includes eight divisions, namely, Exploration & Production Business Division, Refining Business Division, Petrochemical Business Division, Natural Gas Business Division, Marketing Business Division, Lubricants Business Division, Solvent & Chemical Business Division and LPG Business Division. The business of each division is described below.

Devison	Simple Business Description
Exploration & Productionw Business Division	Exploration and development of oil and gas in land and sea and geothermal energy in Taiwan and exploration of overseas oil and gas resources and the related engineering business.
Refining Business Division	Three refineries in Kaohsiung, Taoyuan and Dalin, are continuous production base of oil refinery and petrochemical production.
Petrochemical Business Division	Management and planning of petrochemical business, working with up- and down-stream manufactures for vertical integration.
Marketing Business Division	Sales of domestic gasoline, diesel, aviation fuel and fuel oil.
Natural Gas Business Division	Providing natural gas for domestic power generation, industrial clients, and general customers.
Lubricants Business Division	Production and sales of all kinds of lubricants.
Solvent & Chemical Business Division	Production and sales of solvent products and bio-tech products.
LPG Business Division	Production and sales of LPG.

Board of Directors

The Board of Directors at CPC is the decision maker of top strategy and policy. It consists of 13 directors with profound industrial and academic experience, in which, there are two independent directors and three directors who are the representatives chosen from the labor union. Else, there are three supervisors. Among those, there are 2 females, which is 13% of the total of 16 members. Chairperson, Sheng-Chung Lin, is in charge of company operation and management. Board meeting convenes monthly, and there are 12 regular and 2 interim board meetings in 2013.

Whenever a director having a conflict of interest in the voting of a proposal, he or she needs to excuse himself or herself from the voting, and cannot vote on behalf of other directors as well. Both of the names of excused directors and the content of the proposals should be recorded in the meeting record and be revealed in the annual "BOD operation information". In the Board meetings, independent Supervisors can proposal their professional suggestions regarding to company strategy decisions based on the objective position. When, in a Board meeting, any proposal is discussed, all the discussions, opinions and arguments provided by each director should be documented in the official meeting record. According to the "Regulation Governing Establishment of Internal Control System by Public Companies", the "Operating Procedures of Leaning of Fund", and the "CPC Operating Procedure of Endorsement and Guarantees", when related proposals are discussed in a Board Meeting, the pro or con opinions from Independent Directors should be clearly recorded.

On behalf of the Board, the chairperson and the president supervise and enforce the strategy, planning, execution, and performance evaluation of the "Sustainable Management Committee". Besides annual company social responsibility execution report, top management team regularly report to the Board with topics ranging from evaluation of risk and opportunities, international standard following, and code of business conduct guidelines. CPC also sets "the list of work matters that should be reported to the Board", which states clearly the authorization and responsibility between the Board and management team, and with it, CPC reviews the expanded authorization and enforce the auditing and control mechanism. CPC conducts annual performance evaluation based on "Regulations for Performance Evaluation of State-Run Enterprises" to urge the progress of business development forward. Besides business operation and financial aspect, CPC conducts annual performance evaluation based on company governance, and corruption risk management. In terms of environment aspect, we emphasize on the achievement of environment protection, work accident occurrence, renewable energy usage and climate change adoption. In terms of social aspect, sustainability report is the major item.

Members of CPC BOD			
Title	Name	Current Job / Major Experience	Note
Chairperson	Sheng-Chung Lin	Chairperson, CPC Deputy Minister, Ministry of Economic Affairs (MOEA)	Assigned by MOEA
Standing Director	Paul, Lie-Way Chen	President, CPC Chairperson, CAPCO	Assigned by MOEA
Standing Director (Independent Director)	Chi-Yuan Liang	Chairperson, Chung-Hua Institution for Economic Research (CIER) Chair Professor of Management, National Central University	Assigned by MOEA
Independent Director	Chuh-Yung Chen	Professor, Department of Chemical Engineering, National Cheng Kung University	Assigned by MOEA
Director	Wang-Hsiang Hwang	Deputy Minister, National Development Council	Assigned by MOEA
Director	Shin-Cheng Yeh	Deputy Minister, Environmental Protection Administration	Assigned by MOEA
Director	Tung-Yi Lee	Professor, Department of Geoscience, National Taiwan Normal University	Assigned by MOEA
Director	Yi Chou	Associate Professor, Department of International Business Administration, Chinese Culture University	Assigned by MOEA
Director	Yaw-Chung Liao	Counselor, Executive Yuan, and Director, Department of Economics, Energy and Agriculture, Executive Yuan	Assigned by MOEA
Director	Mei-Ying Huang	Professor, Department of Economy, National Taipei University	Assigned by MOEA
Director	Chin-Lai Huang	Supervisor, Refining Business Division, CPC	CPC Labor Union Representative
Director	Jyh-Wei Sun	Oil Transportation Technician, Taichung Division, Marketing Business Division, CPC	CPC Labor Union Representative
Director	Kwung-Shing Wu	Geologist, CPC Exploration Business Division	CPC Labor Union Representative
Supervisor	Ter-Shing Chen	Administrative Deputy Minister, Ministry of Science and Technology	Assigned by MOEA
Supervisor	Chiao-Tao Hsu	Deputy Director, Department of Accounting, Central Bank of the Republic of China	Assigned by MOEA
Supervisor	Chi-An Wu	Director, Department of Personnel, MOEA	Assigned by MOEA

Note: In Sep. 2013, Mr. Paul, Lie-Way Chen succeed Mr. Arthur Hsiang-Yun Kung as Standing Director

Age Range for the Board Members

1 between
45~49 years old

9 between
50~59 years old

5 between
60~65 years old

1 between
66~69 years old

Capability of Board Members

In addition to being integrity, honest, trustworthy, and with profound experience, the board members should keep improving their expertise besides their professionalism. They can choose the courses in any subject related to company governance, for example, finance, risk management, marketing, business, legal, accounting, corporation social responsibility, or internal auditing, responsibility regarding to financial reports. The training hours required for the board members refer to "Directions of the Continuing Education Implementation for Directors and Supervisors of Public Company". The training of newly elected ones should have at least 12 hours for the first year and at least 3 hours since the next year. Re-elected ones should also have annually at least 3 hours of training during the term of office.



Policy of Reward for Board Members, Supervisors and President

Salary and benefit policy for the board directors and supervisors should follow the article 32 of "CPC Articles of Incorporation". Also, it should abide by MOEA rules. The monthly salary for board members and supervisors is NT\$ 10,400 and NT\$ 30,000 for independent directors. However, independent directors cannot be eligible for company profit sharing plan. The board directors and supervisor remuneration is given according to article 4 of "The Guidelines of Salary Management for the Utilities of Ministry of Economic Affairs" as stated in the following. The salary of the chairperson and president of the MOEA owned company should be decided by MOEA according to company size, management target achievement, and management efficiency with different level of performance evaluation results. It should be reported to Executive Yuan as official record for future reference.



Mail box for the Supervisors and Service

The service mail box is for any employee, stockholder, and stakeholder to express the opinions, criticism and suggestions about our company business directly to the supervisors, the chairperson, the president, the Ethics office, and the directors of managing department. Through this mail box, we can handle any issues in real time. The website for supervisor and service mail boxes is http://www3.cpc.com.tw/service_super/service_super.htm. Please use it whenever suitable.



Authentic Internal Audit

As a state-owned enterprise, CPC's internal audit system must be comprehensive and effective. Besides getting checked and approved by certified accountants and Financial Supervisory Commission, R.O.C, CPC needs to be supervised by State-owned Enterprise Commission, MOEA, R.O.C and National Audit Office, the Control Yuan. The internal audit system is getting more thorough.

Working directly under Board of Directors (BOD) and based on risk evaluation of company's sustainable operation, Internal Auditing office is in charge of planning for the following year's internal audit operation and helping the BOD and top management to check and review the shortcomings of internal auditing system, assess operation effectiveness and efficiency and properly provide improvement advices. CPC really emphasizes on respecting the professionalism and independence of internal auditing office and the staff and fully authorizes their regular and special auditing works. They would check the weakness of the management and provide improvement suggestions and keep tracking the issues until they are fully resolved.

1.3.2 Adhere to Honesty and Ethic Value

Operating with Integrity and fairness is CPC the most fundamental responsibility and respect for all the stakeholders in terms of company governance. For CPC's board of directors and supervisors when working on their jobs, they should following "Managing Directions of choosing directors and other important managers for Public or Private Enterprises and Corporate Foundations, the Business entities of Ministry of Economic Affairs" and "Regulation rules for CPC's Supervisors" In "CPC's Work Rules" clearly regulate the ethics and responsibility of all CPC employees when conducting business. It covers the individual and group, and the company to the publics and stakeholders. Since 2010, we set up anti-corruption committee to enhance and fulfill corruption prevention measures. In addition to supporting Government's anti-corruption policy promotion, we build this concept into employee training classes.

Also, CPC follows the "Regulations for Performance Evaluation of State-Run Enterprises" to implement the annual performance appraisal for the highest level managers such as the chairperson and the president. For the rest of the independent directors, directors and supervisors, we also abide by related rules and regulations from MOEA and the final result are sent to MOEA. The assessed items include management directions, annual planning, internal audit and control, financial management, production management, human resources management, environment protection, occupational safety, company governance, corruption risk management, sustainability report and climate change adaptation.

1.3.3 Sustainable Management and Promotion

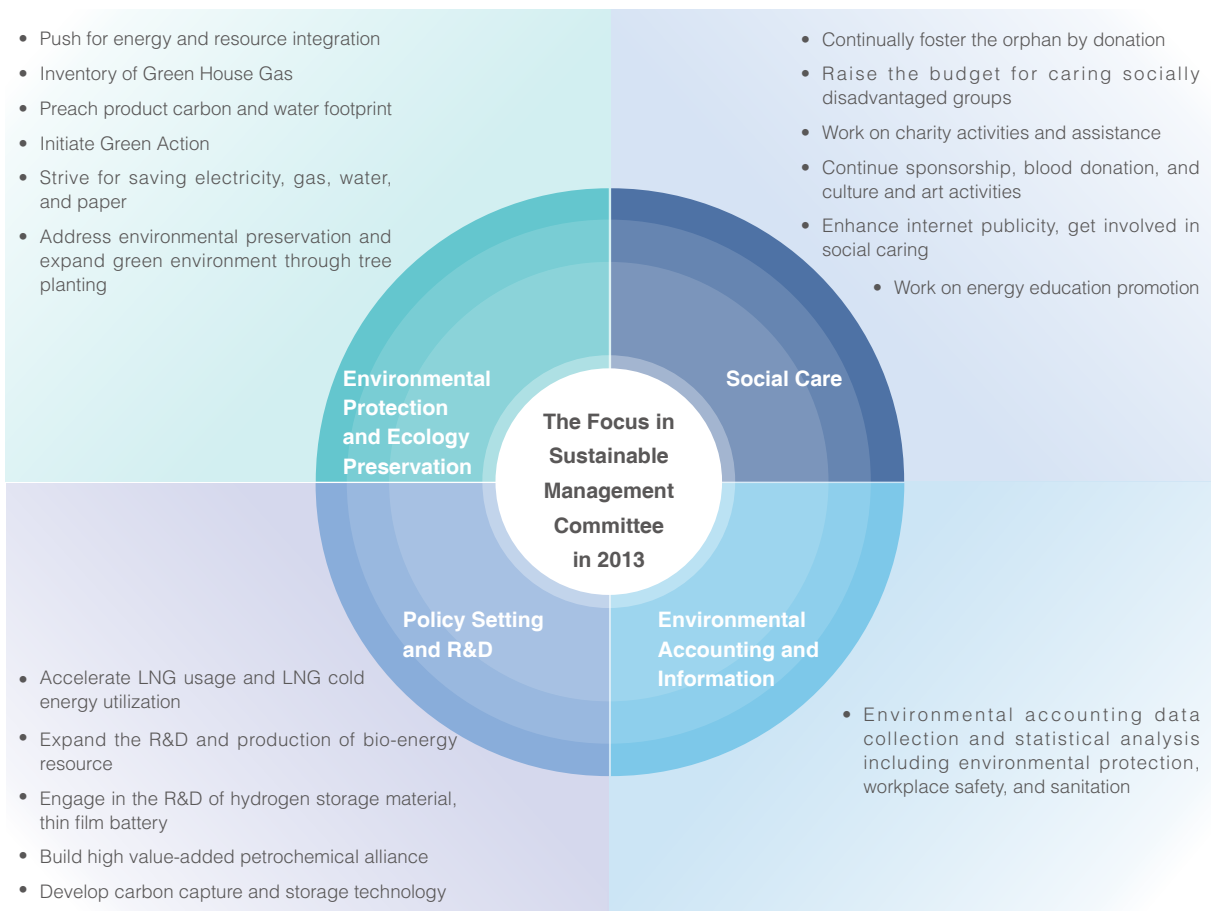
When perusing economy growth, CPC also takes into account of society, ecology development and preservation. We work hard on social justice, human rights, sanity and safety, community development, and environmental protection.

CPC's Policies in Sustainable Management

Follow government regulations and comply with international agreements	Focus on social responsibility and expand service scope
Enforce clean production and environmental protection	Establish environmental protection indexes and clarify information disclosure procedures
Use resources effectively and efficiently, and demand water and energy saving	Strive for research and development, explore management paradigm

Sustainable Management Committee

Sustainable management Committee is composed of high level managers from different departments and divisions. It focuses on ministering the strategy planning, and goal setting of sustainable management, and is further divided into four work groups, namely, "Environment & Ecology Conservation", "Social Care", "Policy and R&D", and "Environmental Accounting & Information". The chairperson is in charge of the committee, and the president is the deputy. Vice president and the chief executives of the five business divisions (i.e., Exploration & Product, Natural Gas, Refining, Petrochemical, and Marketing) are the directors.





World Business Council for Sustainable Development (WBCSD)

CPC has joined World Business Council for Sustainable Development (WBCSD) since 2016, the most influential cooperate alliance in the world.

1.3.4 Transparency of Information Disclosure

Besides following domestic regulations on transparency of information disclosure, we regulate "CPC spokesperson and deputy spokesperson operating procedure" to enhance the transparency and accuracy of information disclosure. Important information are posted real time on company website. All of the stakeholder concerned issues are revealed domestically and internationally both in Chinese and in English. It provides stakeholders complete and timely financial and business information.

The transparency of information disclosure actions are described in the following forms: regular information posting and announcement of the annual report. There are already six CPC corporate sustainability reports from 2007 to 2014. The CPC web site interaction and the real time reporting is one of the best among Taiwan companies. To communicate with the stakeholders and the public directly and timely, the chairperson has his own facebook.



1.3.5 Risk Management

CPC has set up the "Risk Management Committee" since March, 1998 to establish the measuring criteria for risk assessment and follow the procedure of Plan-Do-Check-Action (PDCA) to keep improving risk management. The chairperson is the steering committee members, and the president is in charge of the Risk Management Committee. All of the top level managers are the directors and the Department of Planning is the secretary unit. The committee is in charge of the policy, standard, procedure, and planning of the related issues of risk management for the whole company and holding the risk management meeting. The internal auditing office assists the Risk Management Committee to confirm the appropriateness and effectiveness of CPC's risk management system. Each unit would setup risk management group with the unit head being in charge of handling, pushing and monitoring risk management for the business of unit itself, and the unit head take the final responsibility.

Achievement in Risk Management

We identified 7 major risk items in 2013. All of them have been improved dramatically and the value at risk falls below tolerable level. As we can see that climate change could possibly affect the stability and safety on oil and natural gas supply, CPC in 2013, started enhancing the climate change adaptability for natural gas receiving terminals and transmission pipes. We also analyzed potential threats caused by geological disasters on oil tanks and established measures on oil and gas exploration equipment early warning systems for extreme weather. All of these are done to ensure reliability and operationability for energy supply and equipment.

7 Major Risks Items Identified by CPC in 2013

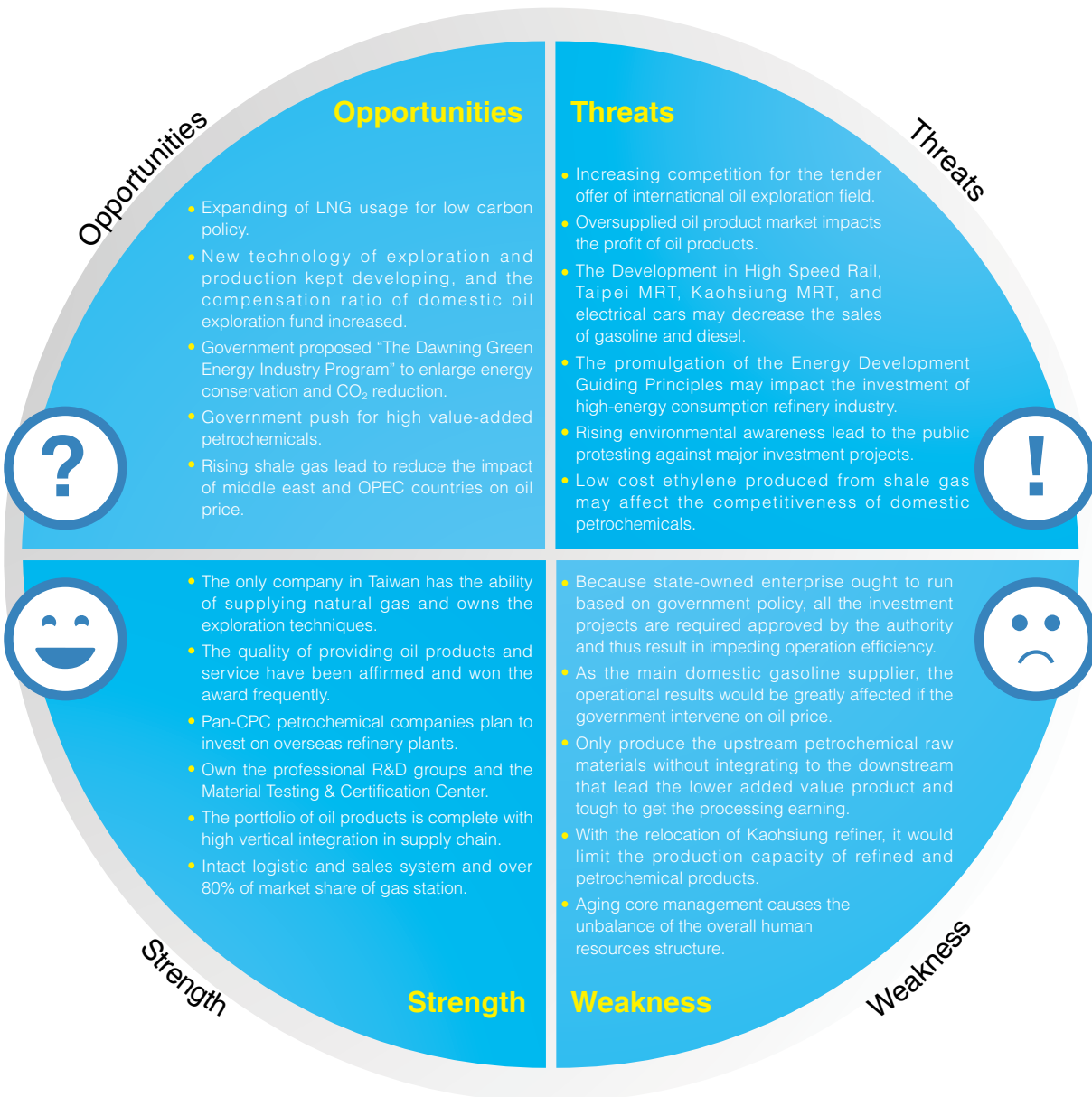
Risk Items	Corresponding Strategies
1 Risk of Oil Price Adjustment (General publics don't like higher prices)	<ul style="list-style-type: none"> Build a platform for two-way communication with the publics. Clarify and disclose the information needed for oil price adjustment to reduce the questions and doubts from the publics.
2 Shortage on Supply of Oil and Gas	<ol style="list-style-type: none"> Increase control on safe inventory. Cooperate with politically stable countries to participate in oil and gas exploration and production and field acquisition. Diversify oil and gas supply sources.
3 Financial Risk	<ol style="list-style-type: none"> Maintain normal operation and rationalize the adjustment of oil and gas price to avoid operation loss. Increase the ratio of long term debt to improve financial health.
4 Consolidate Market Share	<ul style="list-style-type: none"> Enhance operation efficiency and increase profit growth.
5 Risk of Relocating the Kaohsiung Refinery in 2015 (Impact domestic Investment)	<ol style="list-style-type: none"> Cooperate with Petrochemical Industry Association to postpone the relocation. Participate in the phase II land reclamation development project of petrochemicals storage and transportation center in the Kaohsiung port Intercontinental Container Terminal to acquire the land needed for relocation. Work along with the overall relocation plan and arrange the dispatching of work force.
6 Risk of Incomplete Operation Safety	<ol style="list-style-type: none"> Set up the group to check and analyze the potential risk. Enhance self-checking and external auditing in the factories. Implement workplace safety training and emergency response mechanism, and strengthen employees' awareness to work safety.
7 Negative Public Opinions	<ul style="list-style-type: none"> Carefully responding to negative public opinions, and timely clarifying to reduce the impact.

Checking and Auditing of Occupational Safety Risk Management

To detect and control occupational safety risk, CPC has built a "Checking System of Occupational Safety Risk" to predict and avoid the risks. The checking system will be conducted with walking Management by top management. The top management will irregularly checks for risks and boost employee morale. All mistakes will be tracked, ministered and managed, and the instructions of above vice presidents level and treatments will be reported and confirmed monthly.

Five checking groups are established based on different requirement for refinery, exploration, R&D, marketing and engineering. Else, experts are hired to make on-site checking at least twice monthly. All pros and cons will be entered into the MIS of occupational safety and the department of worker safety will be in charge of checking and management. The report will be reviewed and approved by the chairperson monthly and all mistakes will be consistently monitored until complete amendment.

1.3.6 Major Opportunities and Threats



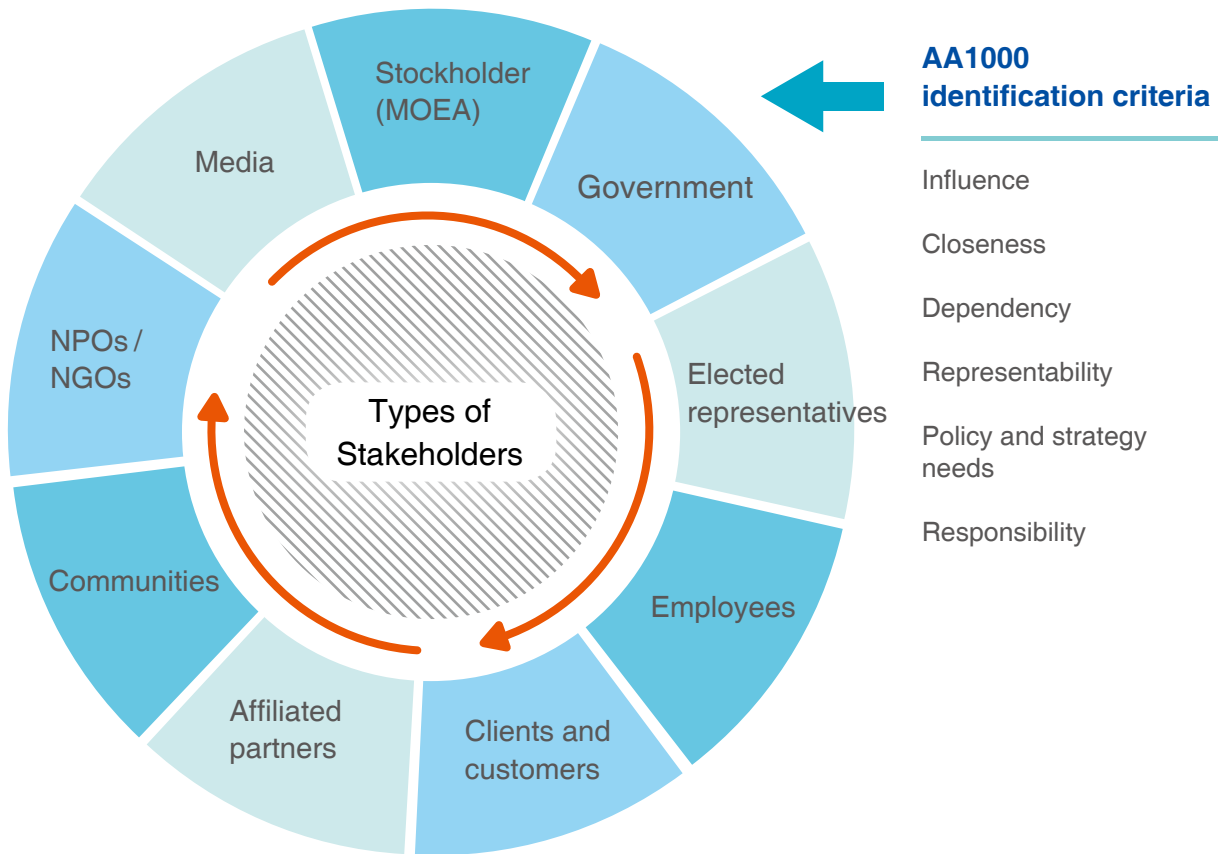
Countermeasures to Cope with Major Threats

- Enhance the cooperation with international and across strait exploration companies and upgrade the techniques
- Establish task force to be in charge of international exploration, oil field evolution and production planning
- Build up international oil field database system and properly adopt expert intelligence
- Reinforce the cultivation of talents in exploration and work on reorganization
- Expand international business and the oversea marketing of oil products and petrochemicals
- Implement the plan of increasing revenue sources and cutting cost, reduce refinery cost and energy consumption, and expand the diversification scope and profit sources of gas station business
- Actively push for new energy and high value-added investment projects
- Strengthen refinery structure and increase the quality of heavy oil cracking. Reinforce the flexibility of production, transportation and storage to maintain the optimal level of inventory. Replace to produce low value-added products with to produce high value-added ones
- Strive for deregulation












1.4 Stakeholders and Us

CPC runs business to fulfill the promises we made to the stakeholders, and respect and maintain their legal rights and interests. We have many kinds of communicating and complaining channels, and we adhere to the principles of honesty and respect to timely and positively handle each case. CPC's stakeholders are identified based on the criteria of AA1000 stakeholder identification. In doing so, the stakeholders of CPC are confirmed and classified with nine types: (1) stockholder (MOEA), (2) government, (3) elected representatives, (4) employees, (5) clients and customers, (6) affiliated partners, (7) communities, (8) NPOs/NGOs, and (9) media.



1.4.1 Communication with Stakeholders

With transparent and bilateral communication channels, CPC could understand the issues that stakeholders are concerned about and actively respond to the requests and use the requests as the reference to solidify our social responsibility.

Other Routine Communication with Stakeholders		
Stakeholders	Communication Channels	Frequency (yearly)
 Stockholder (MOEA)	<ol style="list-style-type: none"> 1. Stockholder meeting or extraordinary Stockholder meeting (According to the Company Act, the BOD is exercise the right on behalf of the stockholder meeting) 2. Participate in the public policy meeting 3. Official documents 	BOD meeting at least 12 times, at 6 times for others
 Government	<ol style="list-style-type: none"> 1. Hold charity events 2. Community communication meeting 3. Visits and subsidies (donations) 4. Participate in charity events and activities held by stakeholders 	At least 6 times
 Elected representatives	<ol style="list-style-type: none"> 1. Project / program reports 2. Coordination or negotiation meetings 3. On site checking and inspection 4. Personally visits 	At least 12 times
 Employees	<ol style="list-style-type: none"> 1. Labor union representative in the Board 2. Listen and communicate with labor union 3. Monthly publish Oil Communication 4. Website special area and reporting hotlines 5. Mail boxes of the chairperson and president 	At least 30 times, regularly or as needed
 Clients and customers	<ol style="list-style-type: none"> 1. Customer service satisfaction survey 2. Report the information of product quality 3. Disclose the pricing mechanism and product service on the website 4. Customer service hotline (1912) 	At least 12 times
 Affiliate partners	<ol style="list-style-type: none"> 1. Build related management systems 2. Meeting for suppliers (convened as needed) 3. Meeting for contractors (convened as needed) 	At least 5 times, regularly or as needed
 Community	Hold the good-neighborly activities, communities' communication meetings, and public service activities	At least 12 times, regularly or as needed
 Non-profit and non-government organizations	<ol style="list-style-type: none"> 1. Participate in external associations 2. Invite irregularly green groups attend the environmental or ecology seminars held by CPC 3. Participate in the symposiums or forums held by green groups, and listen to external voices and make good communications 	At least 10 times, regularly or as needed
 Media	Through press releases press conference to reply to media	At least 30 times, regularly or as needed

Events of 2013 Immediate Communication

In addition to the routine communication with stakeholders, CPC also pays attention to negative reports from media or events which the publics are concerning or questioning. Through monitoring daily the public opinions, CPC will stand by the principles of “honestly facing, actively reviewing and aggressively examining and improving” and immediately respond to the reports in balancing and reducing the negative effects. Related responses and replies will also be posted on the company website for more detailed disclosure, response and announcement.

Immediately Responded Events in 2013	
Date	Event Outline
Jan. 2	Explained the policy factors of performance bonus and the achievements of operation efficiency improvement
Feb. 18	Emphasized on the transparency of the floating gasoline price adjusting mechanism, and the relative low price compared with neighborhood countries
Feb. 19	Explained the power tripped event in No.5 Naphtha Cracker of Kaohsiung Refinery
Apr. 18	Reaffirmed the neutral, transparent and testable design of the floating gasoline price adjusting mechanism
Apr. 22	Explained the procurement case of the submerged pipelines inspection, maintenance and repair for Dalin Refinery
May 9	Explained the report about “CPC and Taiwan Power Company are corrected having improper good-neighbor expenses”
May 27	Explained the fire event of the low sulfur fuel oil unit 2 in Kaohsiung Refinery
June 25	Clarified the report about “the 100 thousand tons CO ₂ stored underground may induce earthquake”
Nov. 26	Explained the policy factor items and operation performance bonus in 2012
Dec. 1	Clarified the export sales of oil products weren't subsidized by its domestic sales
Dec. 2	Explained the price calculated method of the refueling machine and suggested consumer to refuel by designating number of liters
Dec. 3	Reaffirmed the gasoline prices are calculated according to the floating gasoline price adjusting mechanism
Dec. 5	Explained again the adjustment of gasoline price have considered caring the underprivileged
Dec. 6	Explained LPG price adjustment
Dec. 7	Explained LPG price adjustment reflected the international market price
Dec. 9	Held press conference to explain the reason of adjusting gasoline and gas price adjustment
Dec. 10	Explained the reason of the utility bill and public relation expense increased

Chairperson's Facebook and APP Download

Because of the enormous effect of internet media, we have built “CPC chairperson's facebook”. Through weekly publishing two articles, we expect to increase the public's understanding towards CPC. It is also another communicative method between CPC and stakeholders. In addition, CPC also provides the APP to help the consumers timely obtain the information about gasoline and gas station.



CPC Chairperson Sheng-Chung Lin FB

This is a warm and casual place with abundant of contents. We hope you can be closer to us by visiting here. If you have any question, we would love to hear it. If you have any criticism, we would like to review and improve it wholeheartedly. Please visit us anytime.

<https://www.facebook.com/cpc.com.tw>



1.4.2 Materiality Analysis

CPC takes an active attitude to communicate and respond with external voices and concerns via the media, web site, labor union, meetings, and the monthly publication of "Oil Communication".

Because of the basic requirement being cooperated with government policy, if there is any discrepancy between stakeholders and us, the CPC will try to get the most satisfied solution to reduce or eliminate the discrepancy and difference. For example, the biggest challenge is always that consumer expected oil product price and the international oil price ever increase. Also, petrochemical industry makes huge contribution to domestic economy, but environmental concerns is getting more attention. Those are the most important issues we should confront with by modest, professional, and balanced attitude.

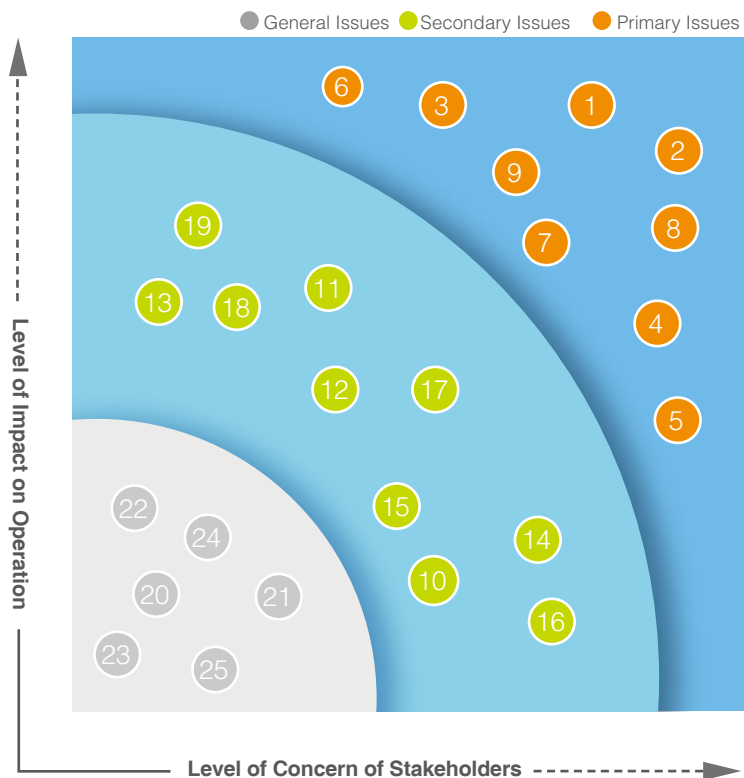
For all the questions and concerns, we will invite external experts to research the problems, pros and cons, and then make the best solution for the good of the both ends. We will fully understand the most concerned issues of the stakeholders, and keep enhancing company social responsibility in order to win the public's trust and respect towards CPC.

Management Procedures of the Most Concerned Issues of Stakeholders



Materiality Analysis

The representatives of internal department meet and discuss to clarify and arrange the important information in 2013. For identifying the major issues of sustainable management, we analyze media reports, international criteria, and global oil industry standards, and consult to external experts to evaluate the identified issues. For each issue, we analyze the materiality according to the level of concern of stakeholders and the level of impact on management, and portray the "matrix diagram of materiality" with the analyzed results. The issues having high level of concern and impact will have priority to be included into 2014 annual work plan. The information about the primary and the secondary issues are presented detailedly in this report, and the general issues are outlined only.



Primary Issues

1. Company governance
2. Providing safe and stable energy
3. Risk management of operation
4. Challenge of the fluctuation of international oil price
5. Exploring new energy (e.g., shale oil and gas)
6. Enhancing the mechanism of communication and interaction with the stakeholders
7. Enhancing the efficiency of R&D
8. Expanding overseas business
9. Training and incubating the talent

Secondary Issues

10. Managing risks of climate change
11. Obeying with regulations and clarify information disclosure
12. Increasing contribution to society
13. Fair competition in industry
14. Health, safety and retirement protection
15. Environmental protection action and responsibility
16. Ensuring human rights and relationship between management and labor
17. Customer service
18. The system of sustainable environment management
19. Internationalizing the results of R&D

General Issues

20. Employee benefits
21. Brand management and product usage promotion
22. Balance between work and daily life
23. Green purchasing
24. Green architecture
25. Green service

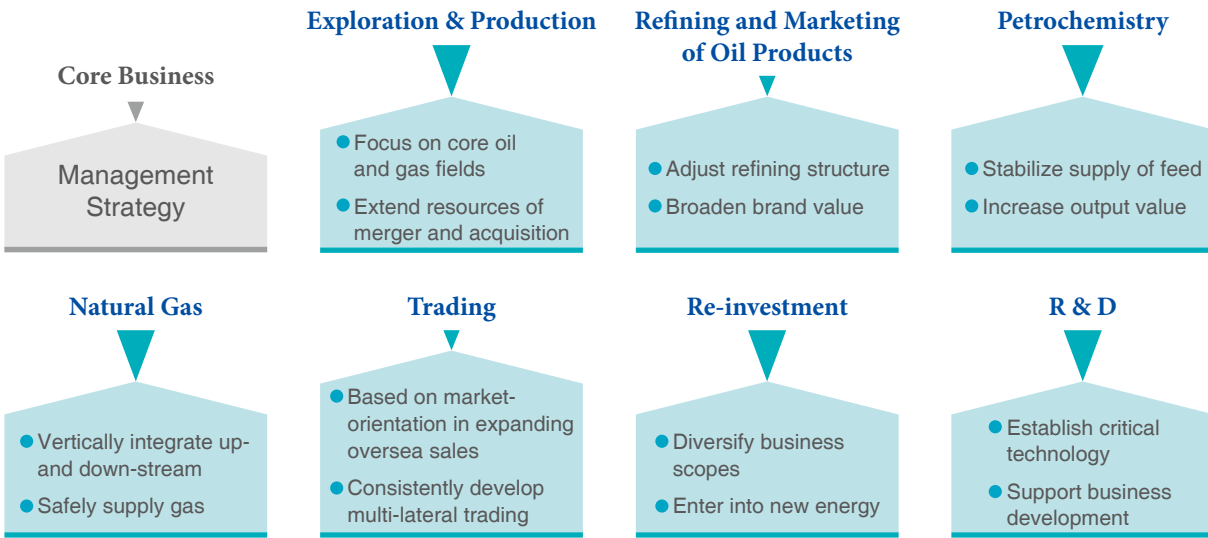
1.5 Outlook of CPC

Besides shouldering the responsibility of national energy policy, CPC is also in charge of steady supply for domestic oil products and gas. To pursue the company's sustainable development, the short- and medium-term goal first makes up for the accumulated losses, while the long-term goal focuses on "conserving energy use, improving energy efficiency, and ensuring energy supply". We will keep working toward our vision of being "the international energy conglomerate which business ranging from exploration, production of oil products and gas, and petrochemistry with high tech and competitiveness".

Strategic Goals of Future Development

CPC's Strategic Goals of Future Development	
Strategic Goals	Description
Promote Sustainable Development	<ul style="list-style-type: none"> • Fulfill corporate social responsibility • Reduce greenhouse gas • Push for work safety • Develop green energy
Enhance Operational Profit	<ul style="list-style-type: none"> • Push for management improvement and enhance productivity • Instantly grasp market information and flexibly adjust delivery and storage • Expand exporting market and enhance multi-lateral trading • Push for high value-added petrochemistry and increase output of high value-added products • Revitalize land and tangible assets
Adjust Management Structure	<ul style="list-style-type: none"> • Carry on relocating of Kaohsiung refinery • Adjust refining capacity, structure and plant allocation • Elevate self-R&D capability • Adjust production and sales planning based on marketing-orientation
Enter into International Market	<ul style="list-style-type: none"> • Diversify oil and gas sources • Broaden overseas oil and gas trading • Develop international exploration • Expand overseas operational locations
Broaden Brand Value	<ul style="list-style-type: none"> • Deepen brand value • Enhance advantages in market channel • Improve customer relationship management • Provide quality products and delicate service
Push for Privatization	<ul style="list-style-type: none"> • Enhance the communication and build the consensus • Make up accumulated losses, improve company operations, and create a favorable environment of privatization

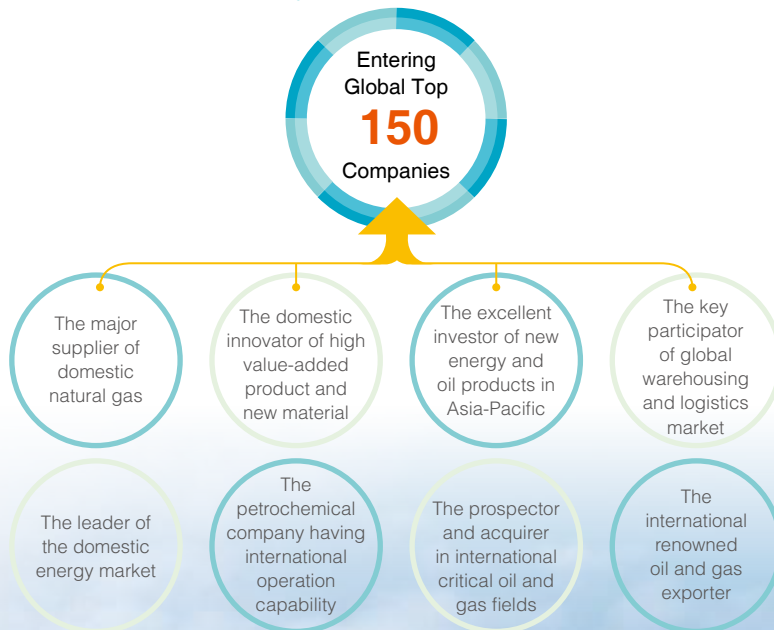
Core Business Management Planning



Entering Global Top 150 Companies

CPC promised to follow integrity company governance, to increase revenue, to devote R&D in enhancing technology, and to take strategic blueprint progressing toward “The domestic innovator of high value-added product and new material”, “the leader of domestic energy market”, “The prospector and acquirer in international critical oil and gas fields”, and “The petrochemical company having international operation capability”. We will strive to become the international renowned enterprise of the CSR exemplar, and set the objective of leaping into the Global Top 150 companies.

Being a international renowned enterprise of CSR exemplar
Becoming the Global Top 150 companies



02

Working Together for a Greener Earth

Clean Energy with a Low Carbon Future



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2013

Environmental Goals and Achievement

- Expansion of the LNG storage facility in Yong-an and Taichung Harbors is expected to increase 5 million tons of natural gas supply, which is equivalent to 16 million tons of CO₂ emission.
- 2009 CO₂ reduction goal of one million tons for CPC's CO₂ reduction plan has been reached one year earlier in 2008. The goal for 2015 is 2.3 million tons and in 2013, we already reached 2.21 million tons.
- In Feb., 2013 all plants established "equipment and facility improvement group" and from time to time, air pollution prevention meeting would be convened to check the achievement and refine the measures. Compared to 2012, sulfur oxide reduced by 2.7%, nitrogen oxide reduced by 9%, dust and particles by 13.6% and volatile organic compounds by 8.9%.
- Linyuan Petrochemical Complex completed the water footprint report for ethylene certified by SGS, on Sep. 13, 2013 and Solvent & Chemical Business Division also completed the water footprint report.

2.1 Green Management

Stable energy supply is our main responsibility. We strive to be a multi-dimensional enterprise with environmental protection in mind through actively improving petro product quality, pushing energy saving and carbon emission reducing, emphasizing on pollution prevention, enhancing source control, applying low pollution manufacturing process and state of the art pollution prevention facilities, acting on environmental protection commitment, build environmental monitoring systems and working on environmental protection education and training to protect and improve the environment, effectively communicate with general public, affirm our environmental protection responsibility and sustainable manageability.

Following the principles of “strictly abide by regulations and laws, gear toward international standard, prevent pollution, save energy and reduce carbon, keep improving, all staff join, take social responsibility and sustain development”, CPC’s “Environmental Protection Policy” is our highest principle in pushing for the environmental protection.



Major Tasks for Environmental Protection and Ecological Conservation in 2013

Major tasks for Environmental Protection and ecological conservation Group, Sustainable Management Committee.

- ★ Drive energy and resource integration
- ★ Inventory greenhouse gas
- ★ Promote product carbon and water footprint
- ★ Push for green actions
- ★ Advance 4 savings on electricity, gasoline, water and paper
- ★ Act on greener environment and environmental protection



Green Management Review and Improvement

In 2013, CPC got fined for 40 cases of environment protection violations with the amount of NT\$ 7.392 million. Also, there are 26 cases under appeal. There are 50 cases of air pollution cases, 5 water and soil pollution, 7 waste water, 1 waste dumping and 3 hazardous materials. Adhering to the regulation is the first step in pushing for environmental protection, and in 2013, we edited “reinforcing the fulfillment of environment protection regulations” act and set up environment protection data management system and environment protection checking group to enhance the fulfillment of the regulations. Air pollution is the majority of our violations, and thus, the main improving measures are emphasizing on VOC (Verification of Conformity) inspection, maintenance and repair on all equipment, following up on violation responsibility and related performance evaluation, thoroughly investigating reasons of violations and establishing improvement plans.

Major Improvement Procedures for Environmental Protection Violations

- Regularly hold “environment protection business meeting”
- Act on violation responsibility finding and related performance evaluation
- Edit “reinforcing the fulfillment of environment protection regulations” act
- Emphasize on following “waste water emission control procedure”
- Emphasize on VOC inspection, maintenance and repair on all equipment
- Follow on environment protection checking and auditing

Environment Protection Violation Cases

Year	Controlled Value	Numbers of Fine ¹	Total Amount ²
2013	<19	40	7.392 million
2012	<15	19	4.662 million
2011	<15	21	3.082 million

Note 1: The numbers and the amounts are the ones reported to State-owned Enterprise Commission, not including those under appeal.

Note 2: The controlled value is the average value of middle three of five which is lower than the previous five years.

2.1.1 Green Management in Action



Environmental Management System and Environmental Protection Auditing

From Dec. 1996 to Dec. 2013, there are 22 departments or divisions within CPC have been awarded ISO 14001 certificates for environmental management system, which were rechecked by The Bureau of Standards, Metrology and Inspection (BSMI), MOEA annually.

In 2012, to reinforce environment protection work for all divisions, we formed Environmental Protection Auditing Group consists of one representative each from Department of Environmental Protection, Marketing Business Division, Exploration & Production Business Division, Taoyuan Refinery, Kaohsiung Refinery, Dalin Refinery, Linyuan Petrochemical Complex and Refining & Manufacturing Research Institute. The chairperson is head of Department of Environmental Protection. In 2013, 11 units have completed the auditing.

2013 Audited Departments

- Synthesis Gas and Western Refinery Groups of Kaohsiung Refinery, Refining Business Division.
- Naphtha Cracker Unit 3, Linyuan Petrochemical Complex.
- Residue Oil Desulfurization Unit I, Dalin Refinery.
- Alkylation Unit, Refinery 3, Taoyuan Refinery.
- Wang-Tian Gasoline Supply Center, Taichung Department of Business.
- Jin-Shui district, Natural Gas Processing Plant, Exploration & Production Business Division.
- Taichung LNG Plant.
- Solvent & Chemical Business Division.
- Northern Warehouse for Finished Product, Solvent & Chemical Business Division.
- Shenzhen-Macau-HK Supply & Transportation Service Center, LPG Business Division.



Advancing Environmental Education Activity

To achieve corporation social responsibility, diversify environmental protection education, and broaden the participation, besides offering more environment protection education for internal employees and general public, we strive on teaching elementary school students on environment protection because the education and idea building should start young.

Internal Employees	In June 5, 2011, environmental Education Act takes into effect, and 4 hours annual education is needed for all employees.
	From 2012 to 2013, various and diversified education has been formed, with seminar, lecture, e-learning, outdoor visiting, video viewing and holding Cleaning Week to ensure everyone's participation.
	In Jan. 31, 2014, complete on line reporting for 2014 environmental protection education plan and achievement of education for 2013.
General Public	The Petroleum Museum with enormous education material and resources has been opened to the general public.
	Hold summer camp for elementary school on energy related issues and ensure education starts from young.
	Hold "Green Dragon Innovation Plan" for elementary schoolers.

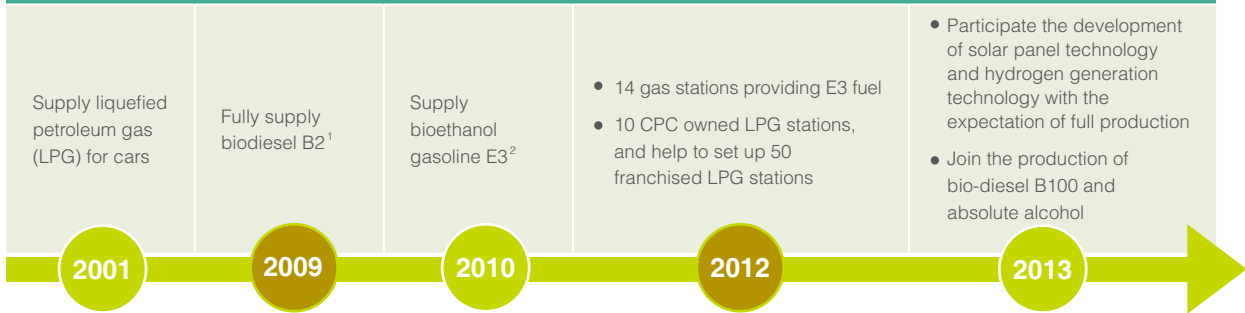


Developing Clean Energy

CPC actively provides environmental friendly gas products and expands applications for bio-fuel manufacturing and production to abide by national energy policy of "Green County" plan. Since 2010, CPC has provided B2 diesel with 2% of biodiesel added for the domestic diesel supply. With around 85 thousand tons of biodiesel consumption, this would save 240 thousand tons of CO₂ emission. To work with Bureau of Energy's pushing for more ethanol fuel, E3 ethanol gasoline is provided to 14 gas stations in Taipei and Kaohsiung.

To follow the "scope and schedule of ester mixing rate in vehicle diesel for oil refinery industry and importers" declared in May 5, 2014 by MOEA, our gas stations and supply centers would gradually replace with non-ester diesel. Supply centers has been fully providing non-ester diesel since June 1, 2014 and all gas stations would also be done by Aug. 1, 2014.

Green Energy Development Schedule



Note:

1: Generally speaking, 1% of biodiesel mixing with 99% of petrochemical diesel is called B1, and 2% of biodiesel mixing with 98% of petrochemical diesel is called B2, and so on.

2: E3 gasoline is gasoline with 3% of bioethanol mixing with 97% of 95 leadless gasoline.



Pushing for Environmental Training and Education

In order to enhance the environmental protection knowledge and skills, besides following environmental protection regulations, for the onsite personnel and professions, continuous training is needed to get the latest knowledge for better job performance. In 2013, there were 19 professional environmental protection training classes (with around 850 person-times) and multiple onsite professional environmental protection job trainings with total of 15,730 person-times.



Internal auditor training for greenhouse gas



Gasoline vapor recycle equipment operation

Achievement of Environment Education and Training

Environment Education Training Course, 2013	First level supervisor environmental protection training	
	Gas station manager environmental protection forum	
	Water pollution prevention forum	
	Carbon management training	
	Ground water pollution and soil pollution forum	
	Seminar and class for air pollution prevention control and practice	
	Greenhouse gas inspection and checking audit training	
	Energy saving and carbon emission reducing training and practicing	
	ISO 14001 environmental protection system auditing training	
E-learning for Environmental Protection Courses	Over 30 classes designed for employees' self-learning	

2.1.2 Environmental Cost and Efficiency

"Environmental accounting and information group" in Sustainable management development committee regularly send report to the committee for our environment account related statistics and expect stake holders to understand our environmental accounting cost in company operation, management, R&D, losses compensation and related tax and fee. According to the report, control and adjustment is implemented.

2013 Environmental Protection Cost

in ten thousand

Year	2011	2012	2013
Company Operation Cost ¹	311,435	370,194	261,469
Suppliers and Clients Related Cost ²	1,775	1,768	2,466
Management Activity Cost ³	15,973	24,580	25,991
R&D Cost ⁴	39,319	26,413	26,895
Society Activity Cost ⁵	13,075	13,505	14,747
Loss and Compensation Cost ⁶	401	164	615
Fee and Tax ⁷	169,374	263,037	268,481
Total	551,354	699,663	600,664

Note:

- 1: Cost on pollution prevention, global environmental protection and resource recycle.
- 2: Cost on green purchase and utilization on recycled resource, related cost on product service for environmental protection, packaging material cost with less environmental impact.
- 3: Cost on environmental education training, getting certification, environmental monitoring and measurement, taking care of impacts on environment, environmental protection insurance, government fees on air, soil, and water pollution, and other tax and fees.
- 4: Related cost on R&D for environmental protection products, reducing environmental impact for product sales and marketing, and environmental impact evaluation.
- 5: Cost on environmental protection, tree planting, environmental beautification, supporting environmental related charities, environmental groups, reports, environmental protection promotion.
- 6: Cost on environmental protection problem solving, compensation, fine, and law suits, city landscaping, environmental protection on residential area.
- 7: Cost on government fees on air, soil and water pollution and other tax and fees.

We added 2nd stage environmental accounting performance index and in 2012, for the first time, we calculated environmental efficiency on raw materials and energy needed for production to better understand the long term trend and use it for improvement to reduce environmental impact. In 2013, except for the increased usage for water and electricity and the increased amount of waste water for the expansion of 4 plants for Dalin refinery and dry run of the new Naphtha Cracker Unit 3 of Linyuan Petrochemical Complex, all the other material needed and the pollutant emission are better than that of 2012.

Efficiency Index on Environmental Impact

Name of the Index	2012	2013
Raw material needed (kl) ¹ / Petrochemical production (kl) ¹	0.084	0.074
Crude oil needed (kl) / Equivalent Distillation Capacity (kl) ²	0.229	0.201
Liquid energy needed (kl) ³ / Amount of refinery EDC and petrochemical products (kl)	0.004	0.004
Gas energy needed (km ³) ⁴ / Amount of refinery EDC and petrochemical products (kl)	0.019	0.018
Water needed (M ³) / Amount of refinery EDC and petrochemical products (kl)	0.243	0.260
Electricity needed (kwh) / Amount of refinery EDC and petrochemical products (kl)	10.265	10.828
CO ₂ emission (ton) / Amount of refinery EDC and petrochemical products (kl)	0.048	0.050
Wastes (kg) / Amount of refinery EDC and petrochemical products (kl)	0.242	0.220
Waste water (ton) / Amount of refined EDC and petrochemical products (kl)	0.094	0.100
Total amount of waste water (kg) ⁵ / Amount of refinery EDC and petrochemical products (kl)	0.006	0.005
Amount of VOC emission (kg) / Amount of refinery EDC and petrochemical products (kl)	0.030	0.028
Amount of air pollutant (kg) ⁶ / Amount of refinery EDC and petrochemical products (kl)	0.061	0.057

Note:

- 1: Petrochemical raw material needed = (naphtha + reformat + xylene mixture) needed. Amount of petrochemical product is the total converted EDC amount for ethylene, polypropylene, butadiene and benzene.
- 2: EDC (Equivalent Distillation Capacity). Standardized amount for different refinery process.
- 3: Liquid energy needed = (gasoline + diesel+ fuel oil) needed.
- 4: Gas energy needed = (natural gas + fuel gas) needed.
- 5: Total amount of water waste = total amount of (COD+SS+Oil) in water waste.
- 6: Amount of air pollutant = total amount of (SOx+NOx+TSP)

Environmental efficiency index is calculated with total amount of production or refinery as the denominator, and with amount of raw materials, energy needed, and amount of pollutant produced as the numerators. The smaller the number, the less the raw materials, the less energy, the less pollutants produced, the less the environmental impact.

2.2 Implementing Energy Management

2.2.1 Climate Change and Opportunities

The issues of global climate change and the depleting crude oil resource are getting more attention. Global extreme weather, especially, forges unbearable physical and financial losses for human beings. To reduce the impact caused by hazardous weather, CPC actively participate environmental protection and global warming issue. We are working with the government's greenhouse gas reduction policy, drive measures for energy saving, carbon emission reducing and environmental protection and want to do our part in keeping global sustainability.

CPC's Strategies in Adapting to Climate Change	
Establish Energy Saving Organization	<ul style="list-style-type: none"> ● Setup energy saving service group, headed by VP of Planning, in charge of pushing companywide energy saving and providing down-stream clients energy saving consulting and service. We would emphasize on researching and adopting new energy saving technology, establishing factory energy consumption index, setting goals, and enhancing follow up and control on the performance. ● We would setup technical consulting groups to provide energy saving service to all the divisions and departments.
Promote Energy Saving and Enhance Personnel Training	<ul style="list-style-type: none"> ● Build up energy saving concept for all employees, enhance energy management for all factories and increase energy saving for refineries and energy productivity. ● Hold healthy checkups for motorcycles and cars for gas saving, suitably turnoff lights and promote tree planting and sending saplings.
Participate Government Plan on Energy Saving, Carbon Reduction and Climate Change Adaptation	<ul style="list-style-type: none"> ● Follow on energy saving and carbon reduction action principles of Executive Yuan and engage preliminary trial plan on CCS (Carbon Capture and Storage) and proactively promote supply and application of natural gas. ● Abide by climate change adaptation action principles of Executive Yuan and build facilities for natural gas receiving terminals, oil refineries, and gasoline supply centers to adapt to the risk of climate change and be suitable for strategic adjustment.
Improve Refinery Structure and Increase Energy Efficiency	<ul style="list-style-type: none"> ● To reduce cost, increase energy efficiency, and reduce the environmental impact, use Best Available Control Technology (BACT) in refinery structure improvement. ● Introduce advanced energy saving technology, heat recycling for heating pipes, heat exchanger network simulator, new air pre-heater for heating furnace and oil pre-flash system, use Variable-frequency Drive for powerful motors, Coat heating furnaces with high radiation coating material, increase recycling for fuel gas, reuse mid-to-low pressure vapor and the recycle of water resource.
Complement and Integrate with Regional Energy and Resource	<ul style="list-style-type: none"> ● Working with factories in the Industry Zone to support each other on wasted heat energy recycling. Besides providing excessive fuel gas to others, we are buying steam produced by China Steel's furnace to reduce energy usage. ● In 2013, Dalin Refinery used 120 tons of steam produced by China Steel's furnace every hour, with annual carbon reduction of 285 thousand tons.
Push Research on Green Energy Related Technology	<ul style="list-style-type: none"> ● Establish Green Technology Research Institute to expand the cooperation between industry and university to engage in research on renewable and green energy related technology, for example, photovoltaic, biomass energy, LED lighting, biomass material to pursue the high value-added petrochemical industry trend and promote investment in green industry.
Exchange Ideas with International Organizations	<ul style="list-style-type: none"> ● World Business Council for Sustainable Development (WBCSD) ● CPC sent delegates to participate the First Taiwan Norway Economic Cooperation Meeting in Oct., 2010, and shared our effort on climate change and green corporation. ● From 2003 to 2010, CPC attended International Conference of the Parties to learn more about the impact of climate change and the ways to reduce carbon emission and the planning for it.
Increase Natural Gas Transportation and Storage Capability to Expand Low Carbon Energy Usage	<ul style="list-style-type: none"> ● Expand Yongan and Taichung Harbors' natural gas storage and transportation facilities, and it is expected to increase 5 million tons of natural gas supply, which is equivalent of 16 million tons CO₂ emission.
Push for Application of Biomass Fuel	<ul style="list-style-type: none"> ● With the usage of 85 thousand tons of biomass diesel, it would reduce 240 thousand tons of CO₂ emission. ● Expand to 14 gas stations supplying E3 ethanol gasoline.



Green Transportation

Green transportation is one of the most important links in adaptation of climate change. Our domestic product transportation in Taiwan is mostly in oil tankers around the island. The major gasoline and petrochemical products are transported by pipes or tanker trucks to reduce the transportation loading and cost and the emission of CO₂ and suspended matter.

Following international regulations, the oil tankers abide by Ship Energy Efficiency Management Plan. Besides that, we regularly inspect and maintain the tankers and pipes to prevent any leaks. We also setup procedures in handling leaking for sea and land pipes. Whenever there is a leakage, the source would be immediately cut off and set up warning labels and signs and safety fences to isolate the leaking site. The proper measures would be implemented to quickly repair the leaking and reduce the environmental impact.

2.2.2 Saving Energy and Power

CPC sets up energy saving service group to speed up equipment repair and replacement, introduce advanced energy saving technology and facilitate fuel gas and waste heat recycling. In 2013, we saved the equivalent amount of 64 thousand kl of oil, which is equivalent to 180 thousand tons of CO₂ emission. From 2005 to 2013, we have saved the equivalent amount of 670 thousand kl of oil, with accumulated carbon reduction of 2 million tons.



Major Items and Achievement for Energy Saving

From 2005 to 2013 Accumulated Achievement of Major Energy Saving Measures			
Major Energy Saving Measures	Energy Saved (kl of oil equivalent)	Money Saved (NT\$ 10 thousand)	CO ₂ Emission Reduced (ton)
Renewal of Manufacturing Equipment	164,003	532,131	496,368
Facility Refurbished or Fixed	161,665	643,486	490,447
Recycle of the Heat and Fuel Gas in Manufacturing	104,046	652,907	315,065
Refinement Manufacturing Process	57,726	230,578	175,777
Improvement of Energy Management	185,241	149,023	526,934
Total	672,681	2,208,125	2,004,591



Energy Consumption of the Four Factories for the Last 3 Years

Energy Consumption from 2011 to 2013				Unit : GJ=10 ⁹ joule
Year		2011	2012	2013
Direct Consumption	Natural Gas	3.1*10 ⁷	3.0*10 ⁷	2.3*10 ⁷
	Fuel Gas	4.3*10 ⁷	4.2*10 ⁷	4.9*10 ⁷
	Low BTU Fuel Gas	7.5*10 ⁶	7.2*10 ⁶	6.7*10 ⁶
	LPG	8.0*10 ²	6.6*10 ²	6.3*10 ²
	NC Bottom Oil	2.7*10 ⁶	2.8*10 ⁶	2.9*10 ⁶
	Low Sulfur Fuel Oil 0.5%	2.1*10 ⁷	1.8*10 ⁷	1.5*10 ⁷
	Carbon Residue	1.1*10 ⁷	7.6*10 ⁶	1.7*10 ⁷
	Total Heating Value	1.2*10 ⁸	1.1*10 ⁸	1.1*10 ⁸
Indirect Consumption	Electricity Purchased	1.3*10 ⁷	1.5*10 ⁷	1.5*10 ⁷
	Steam Purchased	9*10 ⁵	1.2*10 ⁶	1.5*10 ⁶
	Total Heating Value Purchased	1.4*10 ⁷	1.6*10 ⁷	1.7*10 ⁷

Note 1: Energy consumed = energy used * unit thermal energy of the fuel

Note 2: Unit thermal energy of the fuel: (1) natural gas 8,900 Kkcal/KS (2) fuel gas 9,000 Kkcal/KS (3) low heating value fuel gas 6,000 Kkcal/KS

(4) LPG 6,635 Kkcal/KL (5) NC bottom oil 9,700 Kkcal/KL (6) low sulfur fuel oil (0.5%) 9,200 Kkcal/KL

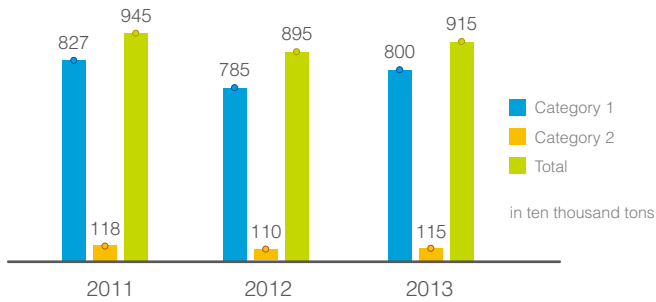
(7) carbon residual 9,580 Kkcal/TON (8) electricity purchases 2,180 Kkcal/MWH

(9) steam purchased 724 Kkcal/TON

2.2.3 Greenhouse Gas Reduction Management and Achievement

The greenhouse gases produced by CPC can be classified into three categories. Category 1 includes those directly emitted by CPC owned or controlled facility, for example, exhaust pipes, manufacturing facilities, and CPC's vehicles. Category 2 includes those indirectly emitted by CPC, for example, purchased electricity, heat, and steam. Category 3 includes those indirectly emitted but not owned or controlled by CPC. Category 3 is the most difficult part to quantify, and thus, not included in the emission amount.

The Amount of Greenhouse Gas Emission for the Last 3 Years



CPC CO ₂ Reduction Plan	
Reduction Target	Reduction Time Table
Reduce 1 million tons	End of 2009 (reached at the end of 2008)
Reduce 2.3 million tons	2015 (2.21 million tons up to 2013)

Note: Factors for different greenhouse gas:

- (1) electricity: factor declared by Bureau of Energy 2012;
- (2) fuel gas, Flare Gas: according to analysis and calculation from each unit;
- (3) fuel oil, diesel, LPG, gasoline, bio-diesel, natural gas: heat value declared by Bureau of Energy and IPCC 2006;
- (4) septic tank: waste water characteristic in Taiwan and IPCC 2006;
- (5) acetylene: mass balance;
- (6) oil sludge: chemically analyzed carbon content in oil sludge.

Greenhouse gas reduction is the most essential responsibility to adapt to climate change. CPC would follow on the usage of low carbon fuel, enhancing facility efficiency and waste reduction and act on measures for carbon reduction. There are two steps in the plan. First, we planned to reduce CO₂ by 1 million tons by the end of 2009 and we already reached the target before that time. The second step we would like to reduce CO₂ by 2.3 million tons by the end of 2015. During 2013, we have already reduced CO₂ by 208 thousand tons with the accumulated amount of 2.21 million tons from 2005.

achievement

Greenhouse Gas Reduction Achievement

Year	2011	2012	2013
Number of Items	21	30	21
Reduction Amount (ten thousand tons/year)	20.7	22.1	20.8
Amount Invested (ten thousand dollars)	126,023	106,567	46,081

- 📍 This figure lists the equivalent CO₂ amount converted from greenhouse gas according to the Global-Warming Potential (GWP) of the Second Assessment Report – IPCC (1995).
- 📍 GWPs: It is a relative measure of how much heat a greenhouse gas traps in the atmosphere. It compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide.



Future Carbon Reduction Actions

Increase Energy Efficiency	<ul style="list-style-type: none"> Fully check on refinery structure, speed up equipment replacement, and enhance heating efficiency on energy hungry devices like heating furnaces and boilers. Enhance manufacturing process, integrate energy management on heating furnaces and boilers and work on recycling for waste gas (flue gas and crude hydrogen) and low and medium pressure steam.
Reduce Energy Usage	<ul style="list-style-type: none"> Integrate and complement one another on regional energy recycling and push for waste heat recycling.
Increase Low Carbon Energy	<ul style="list-style-type: none"> Use low carbon natural gas to replace the fuel gas for heating furnaces and boilers.
CO ₂ Capture and Storage	<ul style="list-style-type: none"> In 2012, took advantage of existing equipment and gas fields in Yongheshan, finished preliminary experimental CO₂ geological storage. We are regularly monitoring on and analyzing soil CO₂ flux and groundwater quality to reduce any risk. In 2013, we have a "CO₂ geological storage preliminary storage test and monitor plan", and expect to establish Carbon Capture and Storage (CCS) technology platform.
Tree Planting to Reduce CO ₂ Emission	<ul style="list-style-type: none"> Reduction of CO₂ emission over 2 thousand tons annually is expected.



Voluntary Greenhouse Gas Reduction Plan

- To cooperate with MOEA's plan of pushing industry greenhouse gas voluntary reduction from 2011 to 2015, our three refineries and petrochemical plants handed in the letter of intent.
- Three refinery plants pass MOEA ISO 14064-1 auditing by Bureau of Standards, Metrology and Inspection (BSMI).
- Both improvement plan for Taoyuan Refinery's heating furnaces and Dalin Refinery's high radiation coating material for interior painting of heating furnaces pass ISO 14064-2 auditing.

2.2.4 Air Pollution Prevention

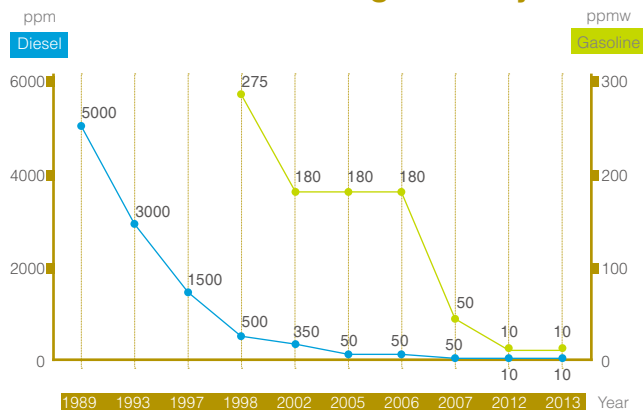
We are actively pushing for new Naphtha Cracker Unit 3, which utilizes related air pollution control equipment adopting the technical standards of best available control technology (BACT). When it is completed, the air pollutant emission would be greatly reduced and would be tremendously beneficial to the overall quality of the environment. Sulfur and benzene contents in CPC gasoline and diesel would be strictly abide by EU regulations (EN228 and EN590) and strive to reduce the industrial impact on the employees and the residents of the surrounding areas. Flue gas emissions are much lower than the national standard quality.

Benzene, Lead and Sulfur content in CPC Gasoline and diesel

Variety	Element	CPC Actual Value 2013	EU Regulation
Gasoline	Benzene	1.0%(v/v), max	1.0%(v/v), max ¹
	Lead	<0.005g/l	-
	Sulfur	10ppm	10ppm, max ¹
Diesel	Sulfur	10ppm	10ppm, max ²

Note 1: Follow EU regulation EN228
 Note 2: Follow EU regulation EN590

Sulfur Content in Gasoline and Diesel Reducing Annually



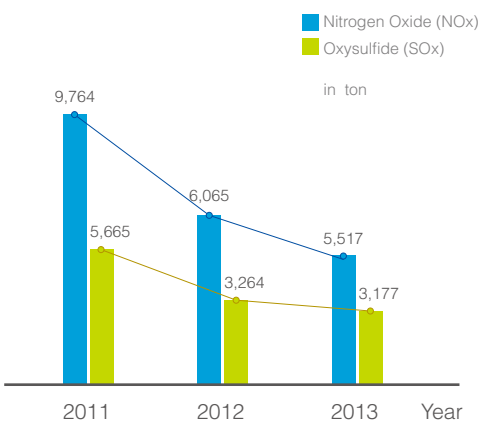


Air Pollution Prevention and Control Measures and Achievement

In Feb. 2013, CPC established “devices and equipment improvement group” in each factory to check and ensure air pollution prevention and control measures can comply with the regulations such as total regulated amount, applicable air pollution fee and emission amount from Environmental Protection Administration. The related air pollution prevention measures are described in the following.

Air Pollution Prevention and Control Measures		Reduction Achievement (compared to 2012)
Reduce Oxysulfide	<ul style="list-style-type: none"> ● Push for using natural gas or self-produced fuel gas for the heaters and furnaces. ● Setup desulfurization equipment, and eliminate oxysulfide. ● Improve operation and management to reduce pollutants. 	reduced by 2.7%
Reduce Nitrogen Oxide	<ul style="list-style-type: none"> ● Push for using natural gas or self-produced fuel gas for all the furnaces and heaters. ● Add denitrification equipment to get rid of nitrogen oxide. ● Add low NOx burners to all furnaces and heaters. ● Increase burning efficiency by improving operation and management to reduce necessary pollutants. 	reduced by 9%
Reduce Particles	<ul style="list-style-type: none"> ● Add electrostatic dust collectors to the chimneys to increase chimney dust removal rate to 90~95%. 	reduced by 13.6%
Reduce Volatile Organic Compounds	<ul style="list-style-type: none"> ● File all the equipment and devices and input the data to computer database. ● Regularly check the equipment according to Environmental Protection Administration's regulation. Check leakages with FLIR and analyzer, and fix or repair any leakages found. ● Use low leakage devices and improve the equipment. ● Wash the tankers cleanly and carefully recycle it. 	reduced by 8.9%

Air Pollution Emission for the Last 3 Years



Quality of Chimney Exhausted Air			
Emitted pollutant		Quality in 2013	National Standard
Oxysulfide SOx (ppm)	Gaseous Fuel	<50	100
	Liquid Fuel	<250	300
Nitrogen Oxide NOx (ppm)	Gaseous Fuel	<100	150
	Liquid Fuel	<200	250
Particles TSP (mg/Nm ³)	According to the Emission Amount	5-100	<25 - 500



Emission Amount of Flared and Vented Hydrocarbon

For oil and gas industry, flared and vented Hydrocarbon is the most visible sources of waste gas. CPC is actively implementing the following procedures:

1. Reduce waste gas and the emission of greenhouse gas: strictly control flare burner, establish and execute flare burner improvement plan, set up recycle equipment to reduce waste gas and greenhouse gas emission. Starting from July 1, 2013, unless approved by authority, waste gas cannot be dealt by flare burner under normal operating condition. If the daily emission is over 30 thousand m³ and public statement and incident description report need to be submitted.
2. Reduce vented gas: Besides replacing or maintaining all the related equipment and devices, all the treatment units of waste water treatment plant would need to add emission regulation approved lids or caps. All CPI/API in the operation units would need to add caps to prevent contacting with air to reduce the gas emission.

For now, CPC collects the data of flared hydrocarbon only from the exhaustion towers in three refineries and Linyuan Petrochemical Complex which doesn't include vented hydrocarbon. Before being emitted, flared hydrocarbon would be recycled by the recycle equipment. Therefore there is no direct emission before burning.

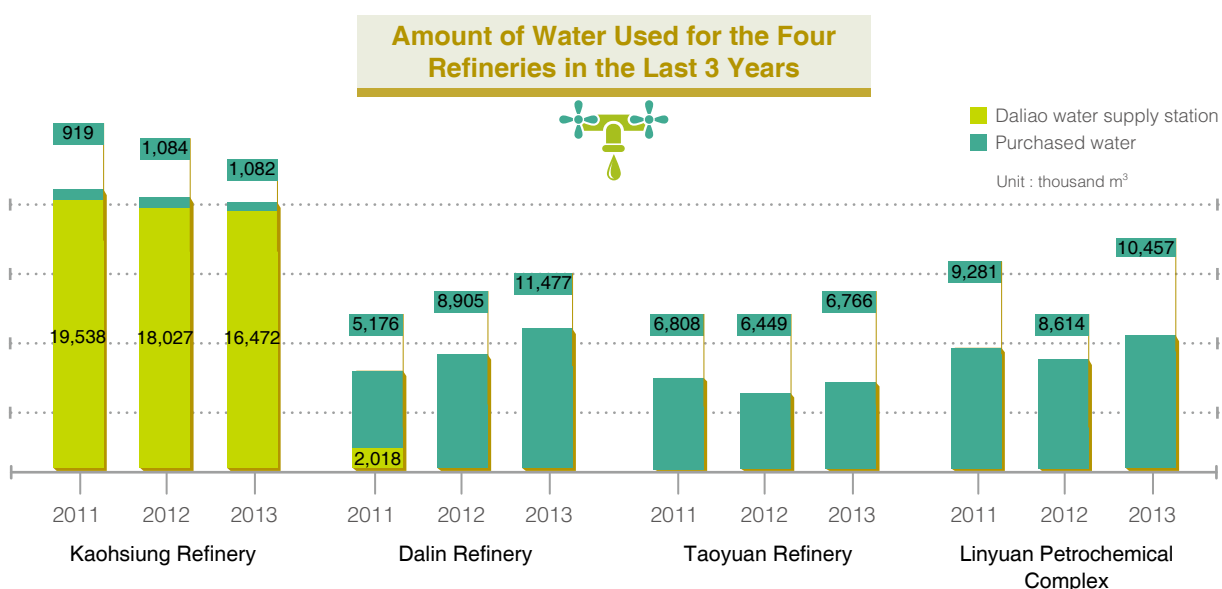
Emitted Amount of Hydrocarbon from Flare Burner			
	2011	2012	2013
Kaohsiung Refinery	75,435.11	40,457.76	21,825.71
Dalin Refinery	145,145.79	175,647.89	132,074.96
Taoyuan Refinery	19,379.7	13,302.9	21,357.3
Linyuan Petrochemical Complex	5,386.59	3,663.21	16,601.2
Total	245,347.19	233,071.76	191,859.17

Unit : thousand m³

2.2.5 Water Resources Management

To adapt to the extreme climate change, water saving and emergency procedure under water shortage are getting more and more important. CPC is actively pushing for industrial water recycle and already implemented several water saving and waste water recycling improvement measures. Water for Dalin and Taoyuan refineries comes from Fengshan Reservoir and Shimen Reservoir of Taiwan Water Corporation, and the water usage plans are evaluated before it is supplied to CPC and thus it would not impact the water resources.

Kaohsiung Refinery asked National Pingtung University of Science and Technology (NPUST) to evaluate the possibility of taking groundwater of Gaoping River for Daliao water supply station and work on water pumping simulation to assess its effect on the ground level. From their result, there is no land subsidence concern for the amount of water we are using. We semi-annually check the ground level, analyze the ground level variation ourselves and also request Resources Engineering Services Incorporated, to do independent inspection. According to their 2013 reports, there is no evidence showing land subsidence in area around Daliao water supply station.

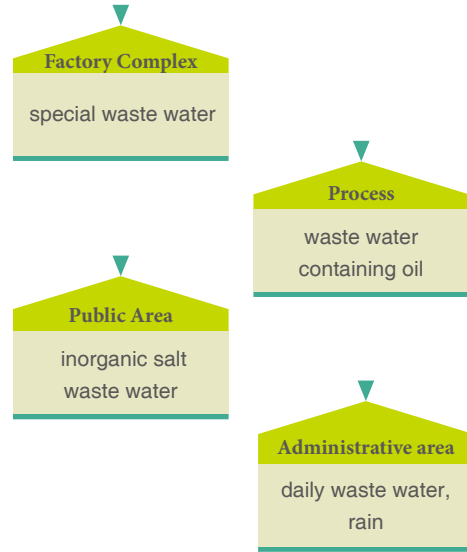


2.2.6 Waste Water Pollution Prevention

Waste water pollution prevention for Kaohsiung Refinery, Dalin Refinery and Taoyuan Refinery is briefly described below:

- The waste water from Kaohsiung Refinery is sent to 4 waste water treatment units and it is properly processed before being released to drainage pipes set up by Industrial Development Bureau at Oyster Village and then sent to the ocean as effluent. During thunderstorms, there are two surge tanks to buffer the excessive rain. However, if the rain shower from Ban-Ping Mountain is too heavy for the tanks to handle, we would ask Environmental Protection Bureau, Kaohsiung City for special permission to release the water. After the permission is granted, the water would then be sent from the emergency pipes to Houjin River.
- Waste water from Dalin Refinery is first sent to oil-water separator and delivered to second level waste water treatment unit. After that, it is released to ocean through the drainage pipes of Combined Wastewater Treatment Plant in Linhai Industrial Zone.
- Waste water from Taoyuan Refinery is sent to waste water treatment unit. After being processed, the water is released to Nankan River through drainage pipes. The assimilative capacity of the river can absorb the treated water and the water fits the national standard effluent quality, and actually the quality is better than the quality of the river water, so the impact would be very little.

Refinery Waste Water Category



Focal Points in Effluent Monitoring

The major pollutants in CPC's waste water are the organic compounds in petro. The main monitoring points are chemical oxygen demand (COD), oil, suspended solid (SS) and Phenol.

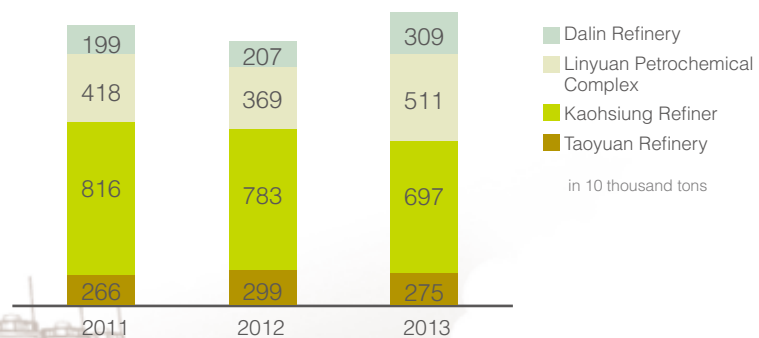
CPC's Monitored Items for Effluent, 2013				
	COD	Oil	SS	Phenol
Taoyuan Refinery	36.9	5.22	16.8	0.1
Dalin Refinery	26.1	1.50	4.0	0.0058
Kaohsiung Refiner	28.1	0.56	19.9	0.001
Linyuan Petrochemical Complex	45.3	1.00	5.9	0.1
Effluent Standard ¹	100	10	30	1.0
Ocean Effluent Standard ²	300	20	150	1.0

Unit : mg/l

Note: 1: Effluent standard for Taoyuan Refinery

2: Ocean effluent standard for Kaohsiung and Linyuan Refineries and Dalin Petrochemical Complex

Waste Water Released from Refineries and Petrochemical Plant





Produced Water from Oil / Gas Mining and Production

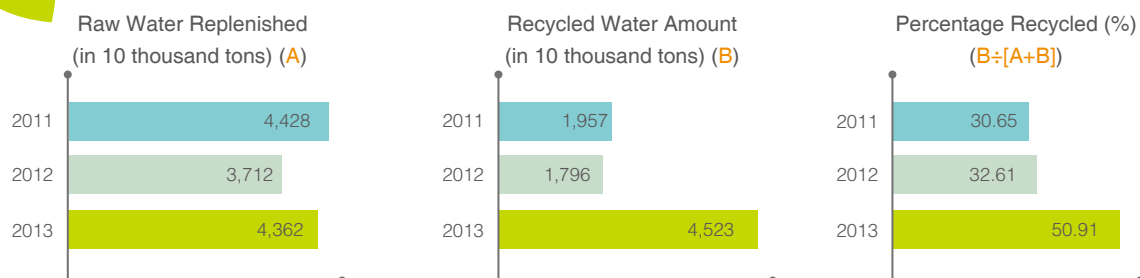
Most of domestic oil or gas fields are natural gas wells. In oil mining and production, condensate (naphtha, C5-C20) and formation water would be the by-products. After coming out of three phase separator, there would be some residue condensate in the produced water. The produced water from different fields would have different quality, especially in term of salinity (Cl-, around 3,800-11,000ppm). Even it is not listed as part of releasing standard, it could cause soil salinization. CPC has two way of processing the produced water. The first would be re-injecting it back to the field through reinjection well, which would help the production of extra oil. Or, it can be sent to waste water treatment plant. After checking for the proper effluent standard, it would be released to river. In 2013, the produced water amount is 14,741.6 kl.

CPC Guidelines of Processing Produced Water		
Area	Tieh-jen Mountain gas field, Jin-shuei, and Jin-ching gas field in Ching-tsoo Lake	Tsu-huangkun oil field
Processing Method	Re-injected back to the field through re-injection well	Effluent
Description	Go through API oil-water separator to recycle oil and then it would be re-injected back to field. The process is done only physically and the rest of the process is only transported by pipes. It follows US EPA class II injection well regulation	Go through API oil-water separator to recycle oil and then it would be treated with pressurized air and bio-processed before being released
Processed Amount in 2013 (percentage)	12,188 kl (67%)	2,553.6 kl (33%)

Reduce Water Consumption and Waste Water Recycle and Reuse	
Reduce the Loss of Cooling Water	Renew water tray and honeycomb water deflector to increase water tower efficiency and decrease the cooling water lost in evaporation from 0.1% to 0.003%. This can effectively reduce the amount of water replenish.
Improve Water Usage for Furnace	Use water purifier to generate pure water and increase the pure water production and also reduce the amount of waste water. Setup electro dialysis reversal (EDR) equipment for raw water to reduce the water conductivity and hardness. Enhance water quality to get more water filtered from ion-exchange resin to reduce the water usage for furnaces.
Improve Firefighting Water Usage	Open end firewater pool can be easily degenerated. Use firewater to smash the water surface can control the fungus and increase the water quality.
Reduce Water Usage in Manufacturing	Set up monitor and control systems for cooling water and deflector. Always check cooling water quality and prevent usable cooling water from contamination. If there is contamination, we use electromagnetic valves to recycle the water to water tower as replenish water. Take a deaerating tank to recycle low pressure steam to get the heat and cooling water.
Drainage Water Recycle and Reuse	Waste water from manufacturing needs to be processed and sent to sewage treatment plant. Some of it can be recycled to wash sludge dehydrator or incineration plant. Public waste water needs to go through sedimentation and sand filter before being released. Some of it can be used to wash gutters or tanks.



Achievement of Recycling Waste Water from Manufacturing





Prevention and Treatment of Soil and Ground Water Pollution

We've finished ground water checking and setup monitor systems for all the refineries and fuel depots to have early warning systems. Also, cathodic protection is added to underground storage tanks and all the pipes are fitted with anti-corrosion protection to prevent any oil leakage. We also have "operation procedures for soil and groundwater contamination prevention" for the related units to follow.

Through choosing the proper engineering method, the best available operation procedure and regularly checking and evaluating, CPC has been doing its best to reduce the impact to the natural environment resources and the environmental footprint. We also work on pollution prevention to maximize the environment benefits.

Conference on soil and groundwater pollution improvement is held every six month.

Sites Still under Surveillance and the Related Treatment Improvement Solutions in 2013

Item	Site	Improvement Solution
listed as pollution need to be controlled sites	CPC Lingya site, Shinkong community, Wugu station, Shinjung station, finished product warehouse for Northern district, Baoshan #11 oil well, east gate of Kaohsiung Refinery, 124 sites in Kaohsiung Refinery ¹ , F area in Dalin Refinery, Xinsheng S. road station, Zhongxiao E. road station, Taiwan #15 road at 53.5Km, Beipu, Hualien, Neihu station, Linsen N. road station	Continuously proposing control, management and improvement plan and working on related investigation and improvement for soil and groundwater pollution
listed as pollution need to be improved sites	Guangming station, Siwei station, New Hukou station, Harbor road station, Caotun station, Jiuqutang station, Yuli station, Green Island station, Guandong bridge station, Xiangshan station	
listed as pollution improvement ongoing site	Changrong Rd. gas station, Xinying Dist, south of Temau #2, Lingya, Linyuan Petrochemical Complex, #9 and other sites in Kaohsiung Refinery, #837 and other sites in Kaohsiung Refinery ²	

Note1: 124 sites in Kaohsiung Refinery are soil remediation sites and groundwater control remediation sites.

Note2: #837 and other nearby sites in Kaohsiung Refinery are listed as control remediation sites for both soil and groundwater.



2.2.7 Management of Wastes

In terms of waste, CPC has mostly catalyst waste, sludge, and bed mud. Catalyst wastes are recycled for precious metal. Sludge and bed mud are first burned in incinerator and then used as landfill. For solid waste, it would first sorted and then the following measures would be taken as needed: recycled, sold with outsiders bidding, barreled and landfill, burned in incinerator, direct landfill, recycled for oil and gas or direct dumping.

Drilling mud is the most common waste material for oil and gas companies. The ingredients are oils and chemical processing agents. If not properly treated, it can cause major contamination to groundwater and bio-environment. For 2013, CPC has 75.4 tons of drilling mud from well number 1 in Beiliao. Drilling mud is the waste produced from Exploration & Production Business Division and not counted in the waste from the 4 factories.

In 2013, Exploration & Production Business Division worked on pollution control plan for Fuxing section, Emei Township, Hsinchu County, and cleared out 13,741.29 tons of contaminated soil with oil and it was treated and recycled as bricks.

Amount of Processed Waste Material for 4 Factories in 2013 in tons					
Category	Recycled	Incinerated	Landfilled	Other	Percentage
Wood and other mixed		122.98			0.22
Refractory waste	326.64		67.68	104.08	0.88
Thermal resistance waste	279.04		432.94	73.17	1.39
Zeolite catalyst waste	14,726.65				26.01
Lead-acid battery waste	9.88				0.02
Activated carbon waste	225.09				0.40
Lubricant waste	6				0.01
Lubricant waste (include engine oil)	167.5				0.30
Mixed oil waste	3,100			2,559.4	9.99
Wire and cable waste	254.36			64.09	0.56
Mixed plastic waste			64.98	76.35	0.25
Daily trash/garbage		9,373.9			16.55
Organic mud		10,733	164.10		19.24
Inorganic mud	180.96			1,192.60	2.43
Nonhazardous oil mud		4,941.10			8.73
Oil tanke bed mud from refinery		1,399.10			2.47
Oil bed mud, filtered or separated waste from refinery		481.73			0.85
Bed bud mixes			392.17		0.69
Furnace slag			83.53		0.15
Incinerator slag			417.20		0.74
General ashes or slag mixes			669.54		1.18
Nonhazardous ores			117.18		0.21
Arsenic and arsenic compounds				26.02	0.05
Other single nonhazardous metal or metal mixes	30.71				0.05
Other single nonhazardous catalyst or metal mixes	1,425.83	2,177.40	1,209.40		8.50
Catalyst waste with precious metal	34.94				0.06
Combustible waste material mixes		0.131			<0.00
Total	20,767.60	29,229.00	5,095.70	1,536.30	56,628.60



Recycled Waste

Category	Recycled Useful Material	Recycled Percentage
Nickel from nickel-on-alumina catalyst (LD 241) waste	Nickel sulfate related products	100%
Catalyst waste	Replacement products for pottery/ceramic tiles/cement or hearthstone ashes	100%
waste carbon	Activated carbon	100%



2.2.8 Management of Hazardous Materials



Poisonous Chemical Material Management

For the materials over the Environmental Protection Administration announced allowed amount of poisonous chemical material, CPC has the following Toxic Chemical Substances need to be regulated, Benzene, 1,3-Butadiene, Dimethylformamide, methyl tert-butyl ether, 1,2-ethylene dichloride, tetrachloroethene, methylene chloride, potassium dichromate, aniline and potassium chromate. They are from Kaohsiung Refinery, Taoyuan Refinery, Petrochemical Business Division and Keelung warehouse for Exploration & Production Business Division. All of them are strictly regulated and reported according to EPA regulation.

For the category one, two and three of those under the allowed amount materials, we have 32, such as carbon disulfide. For category four, we have 12, such as methyl tert-butyl ether.



Management of Ozone Layer Hazardous Material

In CPC, for the ozone layer hazardous material, it is mostly halon fire extinguishers. Ever since 1991, following government regulation, CPC has stopped purchasing halon fire extinguishers, and replaced it with FM-200. In 2013, the weight for the existing dried powder for halon fire extinguishers is 32,569 kg. For all the other ozone layer hazardous material generated from manufacturing process, CPC keeps doing improvement on replacing equipment, and renewing manufacturing process. The results are all lower than the EPA requirement.

2.2.9 Emphasizing Biodiversity

The vanishing biodiversity has quickly become the most important topic in global conservancy. Under the idea of co-existing with green, CPC emphasized on biodiversity and is doing tree planting and green manufacturing as well as environmental and bio monitoring. We would like to take care of humanity, natural environment and sustainable corporation development.



Biodiversity around the Factories

The animals around Kaohsiung complex originally are not plentiful. There is no new factory and plant or land or soil preparation. There is no plant being removed. The plants around the area are Casuarinaceae, Bodhi tree, India rubber plant and Chinese Juniper. Also, there are wild trees, bushes, shrubs and herbs. Also, for the discharge pipes and the construction job for the refineries, there is no impact to the marine life.

East and south east of Dalin factory, there are a few hills. For the rest of the area, there are paddy rice and sugar canes. Most of the area is for factories and housing. In the south-east near Chingshui Rock, there is an area with coral reef limestone. To the south of it, because of the steep slope and some tree, flocks of egrets could be found there. There is a row of Casuarinaceae along the beach from Dalin Pu to the 2nd harbor. In the villages, there is random Cuban Bast. This area, except the Chingshui Rock and Fongbitou, is heavily developed, so no special biological value exists. The plants in Taoyuan factory area are mostly Formosa Acacia, mixes with some wild bushes, shrubs and herbs. Animals there are adapted to human living condition.



Biodiversity for Undersea Pipes

Kuansin algal reef seashore was designated as wild animal protection area by Taoyuan City government. Our ashore area for the undersea pipes is assigned as buffer zone. We would work on the ecological environment protection and send daily patrol to check. Finding any algal reef sabotage activity, we would immediately report to Taoyuan city government. Also, all the undersea pipes are buried 3-6 meters under seabed, so the ecology of the algal reef would not be affected.

Datan undersea natural gas pipe ashore area goes through seashore corrosion area. To protect the corroded seashore, we have completed algal reef restoration and planted windbreak, and no construction in the area since the completion of embankment. The ecosystem has been restored. In the future, before any construction, like the third receiving terminal, we would monitor and investigate the eco-environment first. If there is any special animal or plant ecology, we would investigate and check to understand the ecology impact to the nearby area and propose environment protection measures and policies to achieve the goal to living with the ecosystem.



Thorough Monitoring System

Bad quality water and oil spill would have major impact on biology and ecosystem. In Dalin factory and Taoyuan undersea pipe and the nearby area, CPC built water quality monitoring system. Oil leakage monitoring systems are built for land pipes. In 2013, CPC has kept bio-monitoring for Yongan north levee construction, northern LNG receiving terminal, storage tank construction in Kinma marketing center, downstream of White Dragon creek. We checked for Phytoplankton, Benthos and fish, as well as birds, mammals, amphibians, and reptiles. Number of species, amount, dominant species, and protected ones are all analyzed.



Tree Planting for Ecology Preservation

Since 2008, CPC has been actively working on sapling donation and tree planting to show our determination on energy saving, carbon reducing and Earth loving. In 2013, 20 thousands trees were planted, with area of 35 hectares, equivalent to 1.3 Taipei Da-an Forest Parks. From 2008 to 2013, we have planted 224 thousand trees with area of 167 hectares, equivalent to 6.4 Taipei Da-an Forest Parks.



2.2.10 Carrying out Environmental Evaluation

To achieve a balance between industrial development and impact to the environment, CPC is devoted to environmental evaluation and the corresponding improvement. We regularly invite professional institution and academic groups to do environmental quality survey and investigation to evaluate the environment pollution caused by our business activities. We would minimize the impact and provide a clean surrounding to the local community.

Environmental Evaluation	Impact	Prevention Measure	Action to Easy Up
Soil and Terrain	land subsidence and oil contamination caused by groundwater pumping	<ul style="list-style-type: none"> • Factory gutter improvement • Build new oil pipes and move underground pipe up • Build sealed sludge storage tanks • Set up groundwater monitoring systems • Monitor and evaluate land substance in Daliao water source station Kaohsiung 	<ul style="list-style-type: none"> • Groundwater pollution improvement
Hydrology and Water Quality	produced water contamination	<ul style="list-style-type: none"> • Modernization and rebuilding of sewage treatment center • Move underground pipes up • Complete oil recycling system • Groundwater monitoring system • Sewage pipes treated with anti-leakage cement 	<ul style="list-style-type: none"> • Improve separation efficiency on oil and water separation pool • Recycle and reuse for waste water • Torrential rain pollution prevention • Rain and sewage water separation system • Adopt the care of Houjin Creek
Air Quality	fixed amount of total suspended particles (TSP), oxysulfide (SO _x), nitrogen oxide (NO _x), and volatile organic compounds (VOC)	<ul style="list-style-type: none"> • Furnace fitted with Low NO_x Burner • Use low carbon, low sulfur fuel • Replace cone top tanks with floating roof tanks • Add oil / gas recycle equipment to filling and packaging machines • Check and monitor equipment / device • Use sealed, sealed sampling for API / CPI, use double axis sealed to pumps 	<ul style="list-style-type: none"> • Add electrostatic dust collector • Improve Denitrification and desulfurization equipment • Equip washing tower • Improve maintenance on equipment
Noise and Vibration	rotating machines, steam pipes, vibration and noise from exhaust burning towers	<ul style="list-style-type: none"> • Add noise reduction device to high noise equipment 	<ul style="list-style-type: none"> • Move exhaust burning tower • Setup acoustic barrier
Waste	catalyst waste and oil mud	<ul style="list-style-type: none"> • Setup oil mud incineration plant and buried landfill • Sorting and separating waste 	<ul style="list-style-type: none"> • Ask EPA certified company to do recycling for catalyst waste
Transportation	gas and transportation trucks, construction trucks, buses	<ul style="list-style-type: none"> • Hold or sponsor traffic safety education and seminar 	<ul style="list-style-type: none"> • Security guards to help directing traffic
Industrial Safety	oil or gas leakage, fire, explosion that would impact community and cause demonstration and defiance by the residents	<ul style="list-style-type: none"> • Setup refinery equipment according to domestic and international standard and regulation • Hazard and operability study (HAZOP) on manufacturing process • Hold work safety and equipment inspection seminar and study • Operation training and regular checking to prevent accidental work stoppage • Regular drill for emergency, setup emergency procedure 	-

2.3 Energy Efficient Environment

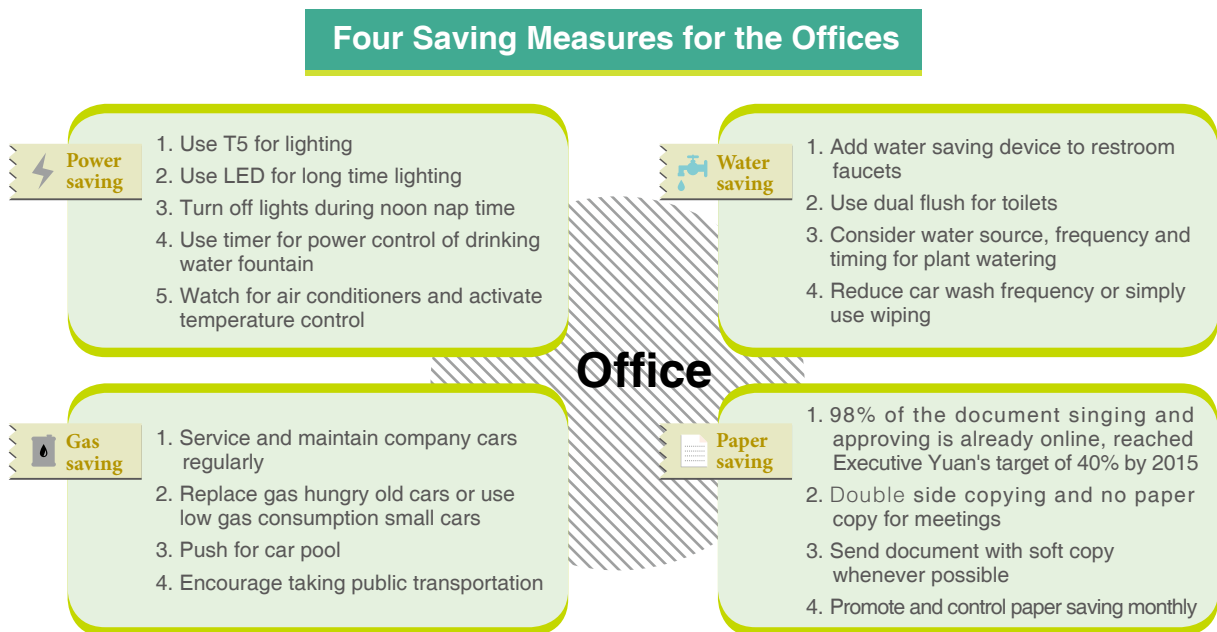
2.3.1 Green Office

CPC is actively promoting “energy and resource conservation” and “complete waste sorting and no trash”. The following measures are been implemented. Use LED for long time lighting like stair way lights and escape directing lights, turn off lights during noon nap time, stop using lights for the outer loop, check for and remove unnecessary energy consuming equipment, and activate temperature control for air conditioners. We are trying our best to comply with the eco-environment and increase our enterprise value.



Four Saving Measures for the Offices

Four saving measures for the offices saved NT\$ 26.84 million in 2013.



Achievement for Office Energy Conservation				
Year	Power for Existing Building (million kwh)	Water for Daily Usage (million m ³)	Gasoline for Cars (kl)	Copy Paper
2012	78.6	1.611	2,995	50,771
2013	74.7	1.440	2,800	42,477
2013 Saving Percentage	4.96%	10.61%	6.51%	16.34%



Total Electricity

Unit : thousand kwh

	2011	2012	2013
Total	14,406	13,512	13,303
Electricity Saved	-284	894	209
Percentage Saved	-2.02%	6.21%	1.55%

Note: Total electricity for 2010 is 14,122 thousand kwh, so the electricity and its percentage saved is negative for 2011



Total Water Usage

Unit : m³

	2011	2012	2013
Total	90,344	64,600	62,113
Water Saved	-12,151	25,744	2,487
Percentage Saved	-15.54%	28.5%	3.85%

Note 1: The water used in 2010 is 78,193 m³, so the water and its percentage saved is negative for 2011.

Note 2: The major reasons for the huge increase in water in 2011 are:

1. 16 cooling water towers in top of buildings were replaced.
2. For the first time, CPC washed floors and walls for underground parking garage floor 1 to 5.
3. Floor 11 was rented out and more water was needed because of it.
4. Hot and dry weather caused more garden and lawn watering.



Amount of Resources Recycled

Unit : kg

	2011	2012	2013
Waste paper	21,460	28,752	29,892
Metal can	1,092	839	447
Glass container	11	9	0
Other plastics	997	1,394	1,499
Pppliances	40	60	0
Paper boxes	20	3,949	2,260
Batteries	60	82	32
Computers	1,232	1,981	0
Others	13,310	5,520	7,740
Total	38,222	42,495	41,870

Note: Others are the shredded confidential documents.



Office Green Purchasing

The green purchasing goal for CPC in 2013 is 90%. All offices are required to follow green purchasing guidelines on office supplies, equipment, and appliances, and website reporting of the result is needed. Actual percentage is 93.36%, over the 90% goal.



Green Building

Green Building for Gas Stations :

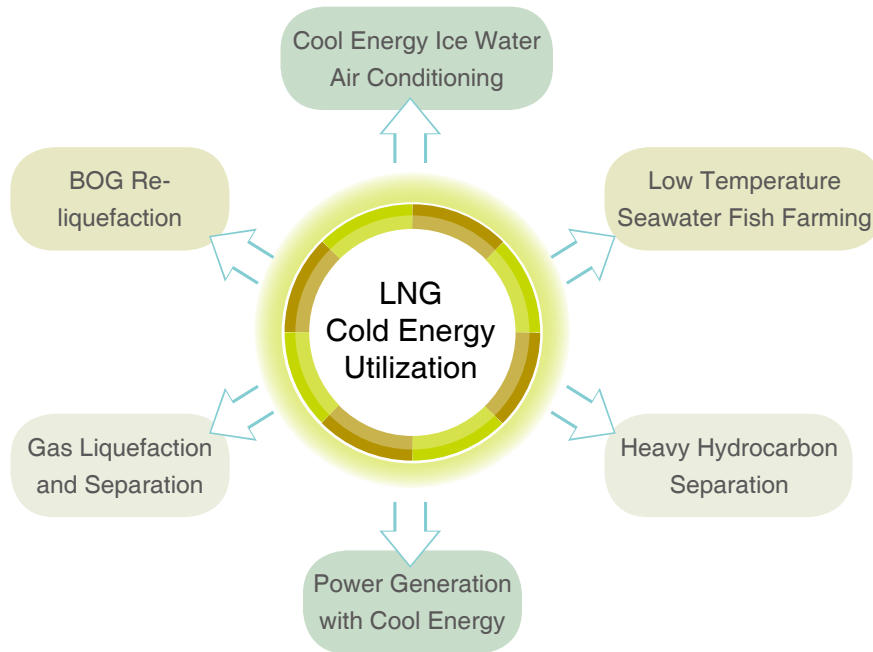
CPC completed green building on 6 of new or remodeled gas station and supply centers, emphasized on principles of blocking heat and shielding sunlight and painted the exteriors with light color to reflect sunlight. Recycle waste water has been used for sprinkling, floor washing, and car washing machines and rain water preserve systems have been added. There are 31 gas stations equipped with photovoltaics. In 2014, we are planning to have at least 16 gas stations getting green building certified.

Green Building for the Complex :

New Instructional Building and the Dormitory, starting to be built since 2010, were both awarded with "Candidate Green Building Mark" during designing phase. Before starting to be used in 2014, New Instructional Building was judged with copper medal of "Green Building Mark" according to the six index consisting "water-saving of the ground", "daily energy-saving", "reduce of carbondioxide", "indoor environment", "water resource" and "improvement of polluted water and waste". The Dormitory is also under the evaluation and highly expected to aquire silver medal of "Green Building Mark".

2.3.2 Cold Energy Utilization

When warming the super low temperature LNG (-162°C) to room temperature, for every kilogram of LNG, there is around 200 Kcal energy need to be removed. Without utilizing the energy, it would be a terrible waste. For now, it can be applied to Gas Liquefaction and Separation, cold energy power generation, heavy hydrocarbon liquefaction and separation, cold energy, air conditioning, low temperature fish farming and boil-off gas (BOG) reliquefaction.



Gas Liquefaction and Separation

The most competitive and economical application for LNG cool energy is gas liquefaction and separation. Because no pollutants are produced in the process, it can save energy cost and reduce carbon emission. Right now, Yong-an factory is working with Far East Industrial Gases Co., Ltd., while Taichung factory is working with Blue Sea Industrial Gases Co., Ltd. Energy resource cooperation is integrated into cool energy application, nitrogen supply and land renting. LNG cool energy used by Far East Industrial Gases Co., Ltd. and Blue Sea Industrial Gases Co., Ltd. are 40 ton/hr, and 75 ton/hr, respectively.

Cold Energy Power Generation System

Cold energy power generation uses propane as the working fluid and sea water as the heat source of the evaporator. Propane in the system goes through pressurization, heat absorption, expansion, and cold condensation to complete the close circulation of low temperature thermal power system. The coolant in the cold condenser is the super low temperature LNG, fully utilizing its cold energy. The cold energy power generation system in Yong-an factory is one with functions of power generation, ice water making, and gasify LNG. It can gasify LNG 90 MT/hr, generating 1800 KWH power.

Cool Energy Ice Water System

Yong-an Factory, in which cold energy is utilized to exchange heat with the circulating ice water in the system. The system provides air conditioning to offices, backup operation center, maintenance building, and central control room and is also used as cooling water for air compressor. It saves huge amount of electricity needed for the conventional refrigerators and freezers and indirectly saves the electricity needed for air conditioning, truly being an environmental friendly and money saving facility.

2.3.3 Product Water Footprint

To adapt to the international trend, CPC has pushed checking for product water footprint. However, there is no international water footprint standard, so we only check the water footprint for ethylene and 0.5 liter clean cleaning naphtha done by Petrochemical Business division of Linyuan Petrochemical Complex and Solvent & Chemical Business Division, respectively. Linyuan Complex completed the report for ethylene, which is certified by SGS, on Sep. 13, 2013 and Solvent & Chemical Business Division finished the report for 0.5 liter clean cleaning naphtha in 2013.

Petrochemical Business division of Linyuan Petrochemical Complex Water footprint for ethylene Unit : m ³ /kg						Solvent & Chemical Business Division Water footprint for 0.5 liter clean cleaning naphtha Unit : m ³ /can				
Stage	Green water	Blue water	Gray water	Total	Percentage	Green water	Blue water	Gray water	Total	Percentage
Raw material stage	0.00	0.613	0.983	1.60	99.54%	0.00	0.60	8.08	8.68	99.99%
Manufacturing stage	0.00	0.007	0.000	0.01	0.46%	0.00	0.00085	0.00	0.00085	0.01%
Total water footprint	0.00	0.620	0.983	1.61	100.00%	0.00	0.60085	8.08	8.68085	100.00%

Note: The checking period for Petrochemical Business division of Linyuan Petrochemical Complex for ethylene water footprint is from July 1 to Dec. 31, 2012. The 0.5 liter clean cleaning naphtha water footprint was checked by Solvent & Chemical Business Division from July 1, 2012 to Jun. 30, 2013.

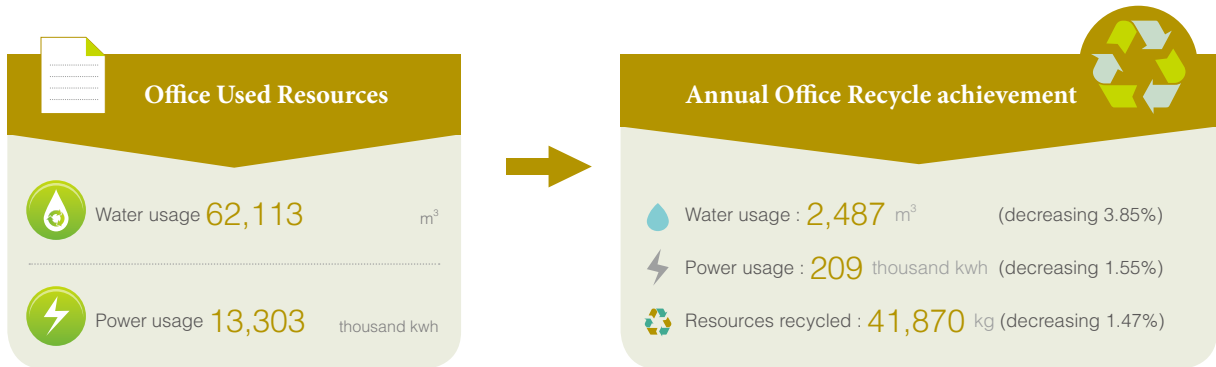
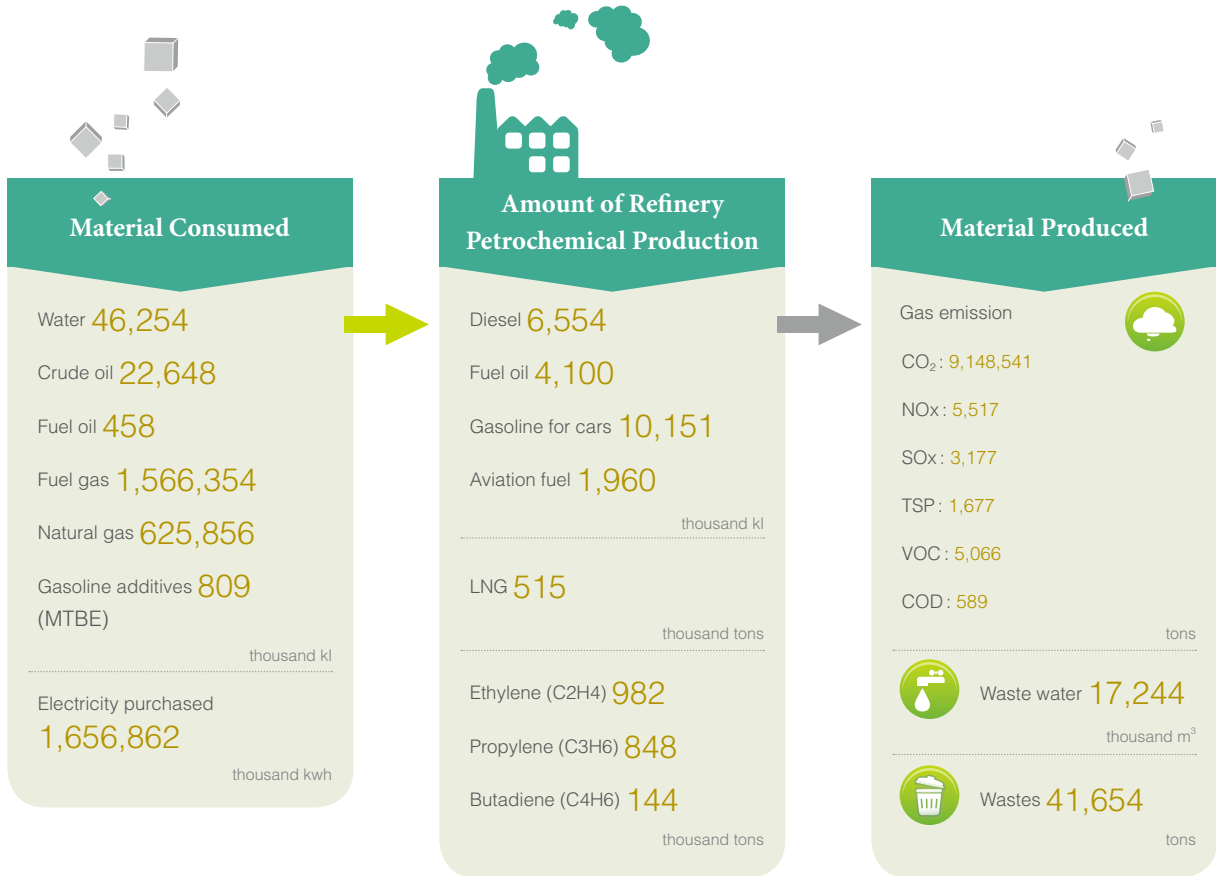


Definition of water footprint:

- Green water footprint: the volume of water evaporated from the global green water resources (rainwater stored in the soil as soil moisture).
- Blue water footprint: the volume of surface water and ground water used to produce the goods and services.
- Gray water footprint: the volume of water that is required to dilute pollutants associated with the production of all goods and services to such an extent that the quality of the water remains at or above agreed water quality standards.
- Our products in manufacturing stage or products from our first level suppliers do not consume any green water, so we only calculated the blue and gray.



2.3.4 Environmental Footprint in 2013



2.4 Green Products

The manufacturing process, quality and transportation of CPC products all follow domestic and international environmental regulations and we can provide Material Safety Data Sheet (MSDS) for our products to ensure the safety. Customers can go to our company website to check for product quality testing reports.

Re-refining of Used Oil for Refinery

After years of effort, CPC's percentage of re-refining has reached 0.065% with total amount of 14,770 kl in 2013.

Percentage of Re-refining of Used Oil		Unit : kl		
		2011	2012	2013
Incoming	Crude oil (including recycled oil)	24,549,203	26,741,892	22,648,022
Re-refining	Waste oil or non-qualified oil	762	81,382	14,770
Percentage of Re-refining		0.003%	0.304%	0.065%

Note: In 2012, the reason for the higher percentage of recycled and non-qualified oil is caused by higher reserved oil in slop and combined with cheaper exhaust oil.

Liquefied Petroleum Gas (LPG) for Cars

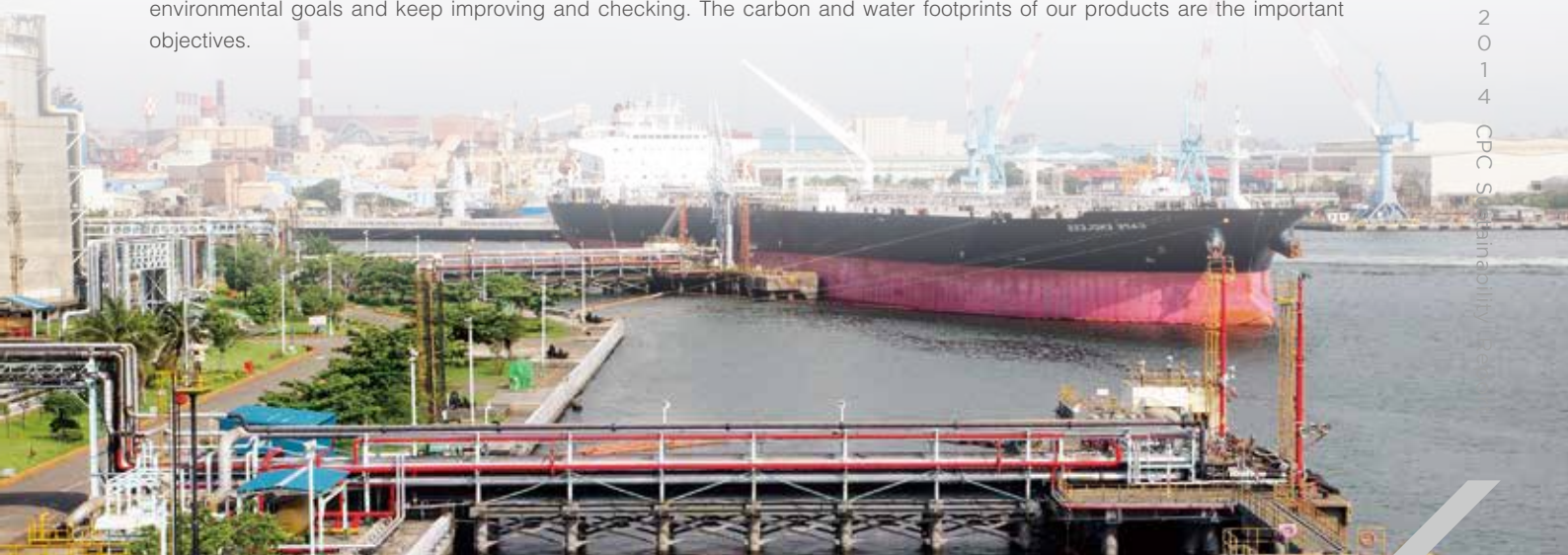
The efficiency for LPG for cars is around 85% of that of gasoline with NT\$ 10 lower in per liter price. The CO and hydrocarbon (HC) emission for LPG is 71% and 89.3% to that of gasoline, respectively. For CO₂ emission, LPG has 14~17% reduction compared to gasoline's. As for Volatile Organic Compounds (VOC), Polycyclic Aromatic Hydrocarbons (PAH) and Ozone formation potential, LPG also has 49%~67% reduction to that of gasoline.

In Taiwan, CPC has 60 LPG stations, mostly in northern, central, and southern metro areas. For detail information on those LPG stations, please visit our website or call CPC service hot line 1912.

Product Evaluation and Improvement

CPC does the best hazardous material management, pollution prevention, energy and water conservation, and carbon reduction for 100% of our important products and service over their lifetime to have the lowest pollution and highest safety production. For example, we add smell to LPG for cars for the early warning when leaking.

If there are some factors not conformed to the regulation and have major impact to the environment, we would setup our own environmental goals and keep improving and checking. The carbon and water footprints of our products are the important objectives.





High Value-added Petrochemical Products

CPC has been working on manufacturing process improvement for upstream petrochemical products for a long time. For the midstream and downstream, however, less effort has been involved. To speed up the development of high value-added petrochemical products, CPC setup two research institutes in March, 2012. One is Material Testing & Certification Center and the other is Green Technology Research Institute. Also, we have petrochemical product research group in Refining & Manufacturing Research Institute to enhance the research capability in petrochemical, green energy and new materials.

In 2013, we were planning the design platform of multiple function carbon material pilot plant production and were involved in research of transforming PFO heavy cracking oil into high value-added coke and impregnation pitch. We are expecting the multiple function carbon material pilot plant platforms and the corresponding production system to be ready in 2014. The best operation conditions and optimized manufacturing process would then be experimented to shorten the commercialization process. We would then build five more platforms, develop other or our company's experimental result for production, such as DCPD purification, biomass fuel and trial production of adamantane derivatives to lead us and the industry into high value-added one.

2.5 Develop Green Energy

According to the Statistical of Review of World Energy 2014 released by BP, the oil reserve for the whole world would only last for 53 more years, and for natural gas, it is only 55 more years. In the near future, the dry up of the traditional energy would be a serious problem we all have to face. Besides calling for energy saving, CPC is devoted to green energy exploration. The renewable energy we are working on includes solar, bio-mass, and hydrogen energy.

2.5.1 Establishment of GTRI

In 2012, Green Technology Research Institute (GTRI) was established to provide an integrated platform for green energy research for the industry, government, university and research organization. We'd like to provide a solid foundation for green energy research, establish core technology, and work on the commercialization of green product and technology and to lead CPC into high value, low carbon, environmental friendly, energy saving green industry, transforming us from oil refinery into bio-refinery.

The R&D cost for GTRI in 2013 is NT\$ 1.127 million and the R&D capital is 1.8 million and it is expected to be 2.683 and 1.376 million respectively in 2014. The major core technology and research areas would be renewable energy, bio-technology, material technology and environment protection technology. We would like to increase operation profit and the investment benefits. Also, to work with the privatization planning, we would setup "renewable energy and biomass chemical company" to get involved in production of bio-gasoline, bio-diesel, bio-aviation fuel, bio-fuel and related chemical. The production revenue is expected to be 30 billion in five years and 50 billion in 10 years.

In the short term, GTRI would take advantage of the currently self-owned core technology through strategic alliance to speed up the building of green energy core technology. When the short term core technology is obtained, we would increase the commercializable production and technology. Three to five patents or commercializable product and technology is expected annually.

Major R&D Items for Green Energy

- 01 → Research on manufacturing technology for biomass fuels – biomass diesel, green diesel, biomass aviation fuel
- 02 → Develop on hydrogen production technology for renewable energy
- 03 → Develop photovoltaics technology
- 04 → Research on bioenergy technology
- 05 → Research on biomass fuel technology
- 06 → Research on special biotechnology
- 07 → Research on material technology – LED packaging and heat dissipating materials, coating materials and high value biopolymers and its composite materials
- 08 → Research on environmental catalysts
- 09 → Research on eco-friendly manufacturing

2.5.2 Solar Power

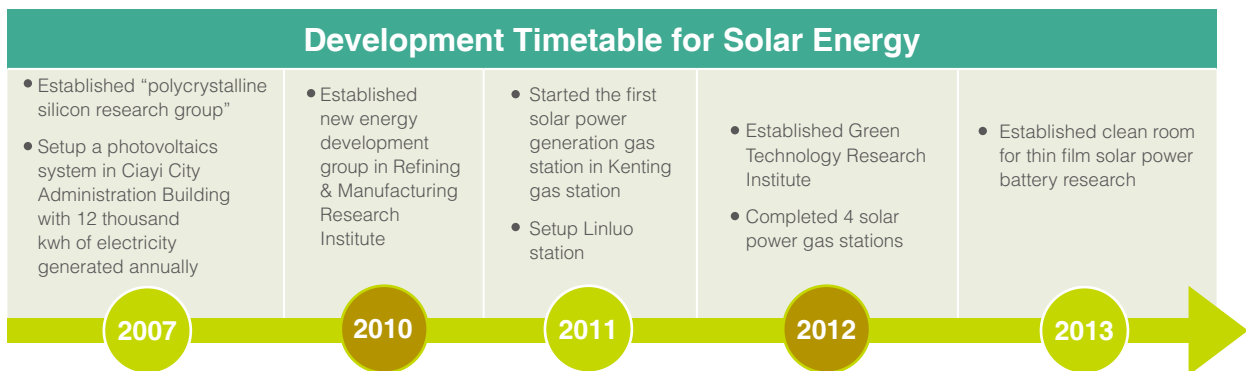
Solar power has renewable and always on characteristics, and it has become a must have industry for all the nations. Although the power conversion efficiency is still low and with high initial equipment setup cost, the cost of solar power is way higher than the traditional fossil fuel power station. It would need government subsidy and support. Long term speaking, however, it could be the major energy source in the future. Located in subtropical region, Taiwan has plenty of sunshine and has a niche in solar energy development. Taiwan could play a critical role in solar energy.

GTRI would keep building a complete platform for solar power generation systems. We would work on different types of photovoltaic systems and study their characteristics. In addition to the research work, the platform would also provide a chance for the employees and the community to get closer to and understand more about solar energy, which would help promoting solar power.

There are various solar cells, with mostly being classified into crystalline silicon and thin film. Based on the pros and cons, we would focus equally on polycrystalline silicon and CIGS thin film. The solar power system could monitor and display the power generation condition, store all the related data, and drive the LCD and LED display boards to show the real time and accumulated power generation data.

CPC Green Gas Station

Up to the end of 2013, CPC already has 6 gas stations with solar power generation stations with over 230 thousand kwh generated and all of them sold to Taiwan Power Company. We are completely devoted to renewable energy development and establishing a low carbon homeland.



- 1. Kenting
- 2. Linluo
- 3. Shetou
- 4. Ershhui
- 5. Makuang
- 6. Nanhuan Road

6 Solar Powered Gas Stations for CPC

Location	Kenting, Pingtung	Linluo, Pingtung	Shetou, Changhua	Erhshui, Chunghua	Makuang, Yunlin	Nanhuan Road, Douliu	Total
Started date	100.05	100.10	101.07	101.11	101.12	101.12	-
System	polycrystalline silicon	thin film	polycrystalline silicon	thin film	polycrystalline silicon	thin film	-
Set up cost* (NT\$ 10 thousand)	540	260	324	295	389	329	2,137.76
Capacity installed (kwp)	24.84	10.08	23.04	18.24	33.6	18.72	128.52
2013 annual electricity generated (10 thousand kwh)	3	1.2	3	2.4	4.3	2.4	16.3
Accumulated electricity generated (10 thousand kwh)	6.57	2.83	4.21	2.4	4.75	2.33	23.09
2013 electricity sold (NT\$ 10 thousand)	27.5	10.7	25	20	35.8	20	139
2013 annual CO ₂ reduced (ton)	16	6.3	16	12.8	22.9	12.8	86.8
Accumulated CO ₂ reduction (ton)	35	15.1	22.4	12.8	25.3	12.4	123

Note1: Cost includes solar power system, waterproofing roof, exhibition facility and outdoor billboards

Note2: Accumulated electricity generated and CO₂ reduced are counted up to Dec. 31, 2013

2.5.3 Bio-energy

Biomass energy is the fourth largest energy source, ranked after crude oil, coal, and natural gas. It provides around 10% of the basic energy supply in the world. Biomass energy has been actively pursued all over the world, and it is the most widely used renewable energy. Biomass fuel has been actively promoted around the world, and percentage of added biofuel to gasoline has been increasing as well. The most widely used biomass energy application is the liquid biofuel for transportation. Biodiesel and bioethanol are readily available in the market.

Explanation:

Biomass energy means converting biomass to usable energy like electricity and heat. The basic theory is that by using solar energy, biomass can absorb and store CO₂ and then transfer it into energy. Finally CO₂ is released into the atmosphere, which means zero carbon emission.



Biodiesel

Biodiesel is environmental friendly, safe, and highly lubricant. Its flash point is higher than that of fossil diesel and thus has higher transportation and storage safety. Besides, there is no new facility needed for gas station and no modification is needed for vehicle engines.

In Taiwan, one-third of the waste cooking oil can be recycled as raw material for biodiesel manufacturing. Also, we can use crops like canola (canola oil), sunflower (sunflower oil), soybean (soybean oil), palm (palm oil), Jatropha curcas (Jatropha curcas seed oil) as the raw material to make biodiesel. Also glycerol would be produced for byproducts like toothpastes, cosmetics and medications.

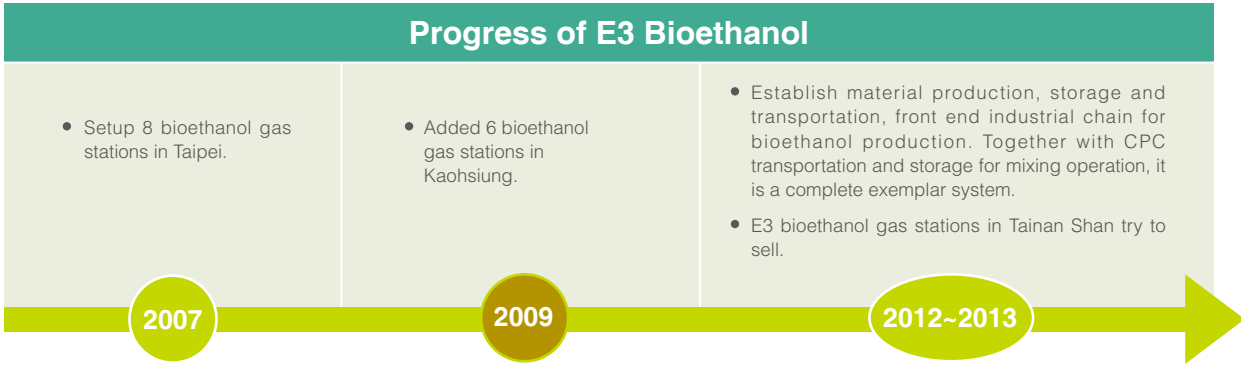
Since 2010, 2% of biodiesel has been added, and CPC's super diesel comes with 2% bio-diesel (B2) to allow the general public to be able to contribute to "save energy, reduce carbon emission and save the Earth" while driving.

CPC's bio-diesel purchase mainly comes domestically. The purchased amount for 2013 is 85 thousand kl, helping the reduction of fossil fuel consumption and CO₂ emission.

Bioethanol

Bioethanol is made by using sugar (like sugar cane and sweet sorghum), starch (like sweet potato and corn) and cellulose energy crops through fermentation. Bioethanol is good to the environment and each kl can reduce 2.1 tons of CO₂ emission and it can also reduce emission of CO₂, hydrocarbon, formaldehyde, propionaldehyde and acetone.

CPC gas stations have started providing unleaded gasoline and E3 (3% bioethanol) and the amount of ethanol purchased is 250 kl.



2.5.4 Hydrogen Energy

Hydrogen and fuel cell has been regarded as the highest potential clean energy. Fuel cell produces energy by utilizing the chemical reaction between hydrogen and oxygen to generate electricity and heat. As long as there is hydrogen and oxygen provided, it would continue generate endless power, and the final product is clean water. Proton exchange membrane fuel cell and solid oxide fuel cell can reduce family main power usage by 24%, carbon emission by 39%.

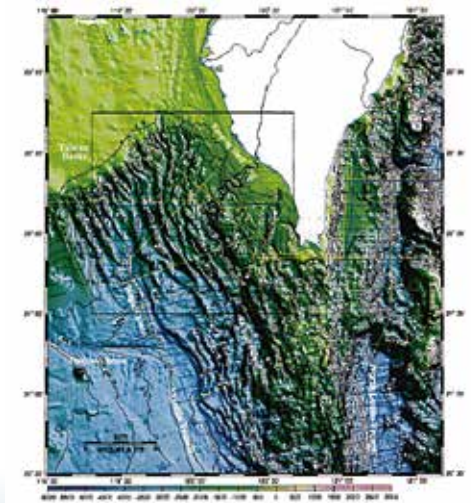
CPC has been focused on application technology on hydrogen energy production, storage, and transportation. Our long term goals are to setup hydrogen supply environment, hydrogen energy application demo system and hydrogen station demo system. In the future, we will keep watching fuel cell applications and evaluate fuel cell for family and factory power generation.

2.5.5 Striving for New Energy Exploration and Development

Methane Hydrate

Methane hydrate is also called natural gas hydrate. It's a methane based gas molecule trapped in water ice in high pressure and low temperature environment. Pure methane hydrate is white, looks like snow ice, and can be ignited like solid alcohol. 1 unit volume of methane hydrate when broke down in normal temperature and pressure, 160 unit volume of methane gas can be released.

CPC started the exploration off shore in Kao-Ping area as early as 2002. The investigation shows there is an area of 20 thousand km² of methane hydrate in southwest Taiwan Strait, with potentially 3 trillion m³ of natural gas. It could be the critical opportunity of increasing self-owned energy. Because off shore methane hydrate production is still under development and with the high cost of well drilling, CPC would keep monitoring the international development (including Japan) and watch for commercial feasibility.



The location map of seismic data of gas hydrate in Taiwan southwest sea area.



Long-term LNG Sources

To keep seeking reliable, price competitive and diverse LNG sources, besides the current long term contract from Qatar, Malaysia and Indonesia, we have chosen suppliers and signed Heads of Agreement to import LNG from North America. To diversify source and react to emergent supply when needed, we signed purchasing contracts with 22 other suppliers to buy mid-term and in stock with possible sources of Nigeria, Trinidad, Australia and other African countries. Also, CPC is planning to by shale gas from North America. In addition to diverse source, we can buy natural gas with different pricing index to diversify the natural gas pricing risk.

Shale Gas

Shale gas exploration and production exploded in North America. From 2000 with only minor percentage of natural gas production to 34% in 2012, it is expected to grow to reach 50% in 2040. It brings abundant and cheap natural gas to North America. Lately, China, Japan, Korea, Malaysia all get into shale gas exploration and production.

CPC is also doing evaluation on shale gas field exploration. Basically, there is a high threshold in capital and technology needed. It needs to put in huge amount of money and even more capital is needed afterward, but the return would take ten, twenty years. On the other hand, the international market for shale gas is not yet stabilized, and the production cost and export strategy is still up in the air.

To establish the expanded application of clean energy, CPC is actively purchasing LNG from America. In Sep. 2013, we reached an agreement with the world's number 3 LNG importer, French GDF SUEZ for them to provide Cameron LNG from Louisiana, USA. With Heads of Agreement for LNG purchasing signed in Mar. 28, 2014, it is expected around 800 thousand tons of LNG would be sent to Taiwan by 2018.

Coal Bed Methane (CBM)

CBM is methane adsorbed into the solid matrix of coal. It is the gas produced by microorganism interacting with heat when dead plants got buried and transformed into coal. Its content increases as the depth of the coal mine increases. According to US Department of Energy, the top 3 areas with CBM are Russia, China and Alaska.

CPC has been actively exploring overseas CBM mine filed, looking for chances of cooperation with international energy company. The exploration in Indonesia has shown that there is abundant of CBM. Facing some problems in exploration and production, it is not in commercial operation yet. CPC is working diligently for the solutions in order to show our actions and resolves in expanding self-owned energy source, and searching for energy diversification.



New Age of Gas: Shale Gas



Shale gas has been revolutionizing the global energy structure and revitalizes the hope of solving the energy shortage issue that mankind has once been facing.

Shale gas, is a kind of non-traditional natural gas, that is found within dark or high carbon shale of low porosity and low permeability and rich organic carbon formations, the composition dominated by methane, the same as conventional natural gas.

Natural Gas		
	Non-traditional Natural Gas	Traditional Natural Gas
	Shale Gas	Natural Gas
Stratum Stored	Exists in deeper stratum like shale formation, coal seam and sandstone bed	Formed and stored in sandstone or limestone between the shale formations
Exploration and Production Technology	Horizontal drilling, hydraulic fracturing	Vertical fracturing
Reserves	The estimates amount of global shale gas is 204.37 trillion m ³ by EIA	The estimates amount of Traditional natural gas is 185.7 trillion m ³ by BP
	The ingredient is mostly methane, regarded as a clean and highly efficient energy. The production of shale gas would extend the lifespan of natural gas from 59 years to 100 years. For all Taiwan imported natural gas is traditional natural gas so far.	



Non-traditional natural gas includes shale gas, tight gas, coalbed methane and gas hydrate.

Global Shale Gas Storage and Distributed Area

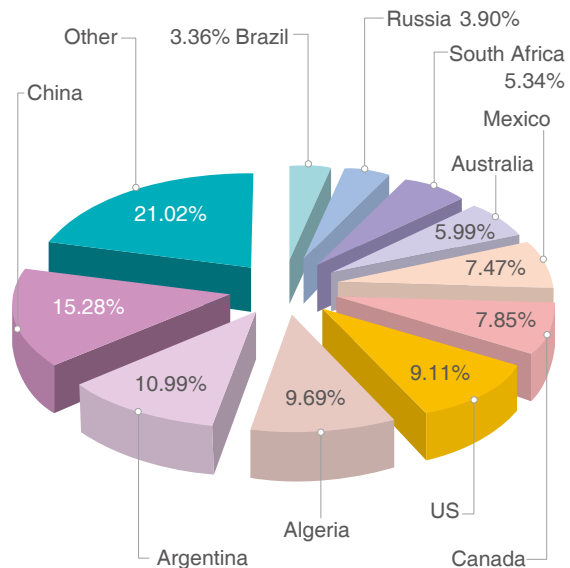
According to the latest statistics, global shale gas reserves are more than traditional natural gas reserves. With the breakthrough of the production technology and the increasing amount of US shale gas production, it really rewrites the global energy map. As indicated in "Technically Recoverable Shale Oil and Shale Gas Resources: There are 204.37 trillion m³ of technically recoverable shale gas reserves.

Around the world, the Top 10 countries estimated by EIA with most technically recoverable shale gas reserves are listed in the following table. US has the most shale gas production and has 18.62 trillion m³ of shale gas, 9% of the global amount.



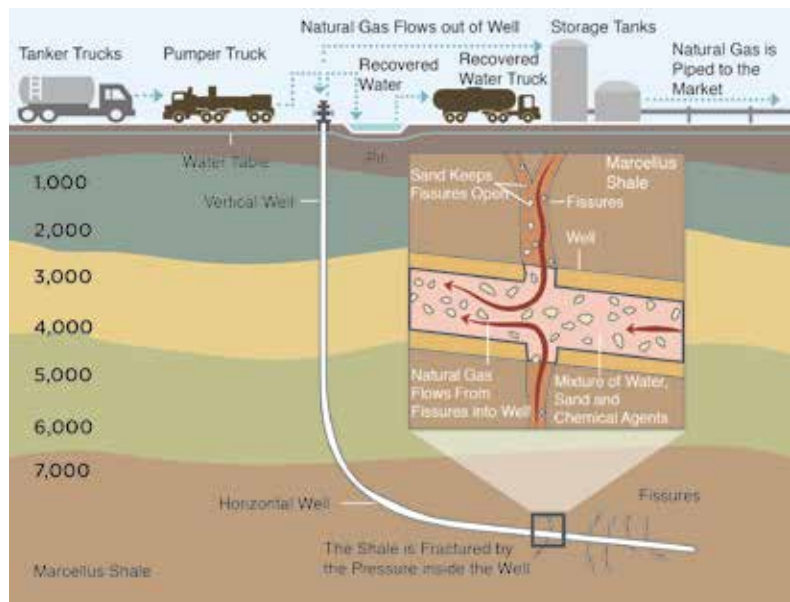
- World largest shale gas reserve area is **North America** 49.92 trillion m³.
- World largest shale gas reserve country is **China** 31.22 trillion m³.

Top 10 Countries with the most Shale Gas Reserves in the End of 2011
Global Reserves are 204.37 trillion m³



US Leads the Production of Shale Gas

Shale gas production utilizes the latest technology of horizontal drilling with multistage cracking, hydraulic fracturing and synchronous cracking. With the horizontal drilling with multistage cracking technology developed by US, shale gas production cost has been greatly reduced and the amount has been increasing dramatically. The most active and successful shale gas site in the world is in Texas and North Dakota in US. With the increasing shale gas supply from US, it could initiate a big supply change in the world. EIA estimated in 2018 US will become a net exporter of natural gas (including traditional natural gas and shale gas) and gradually reduces the dependence on Middle East oil.



Hydraulic fracturing and shale gas
Picture source : U.S. Energy Information Administration website, Al Granberg

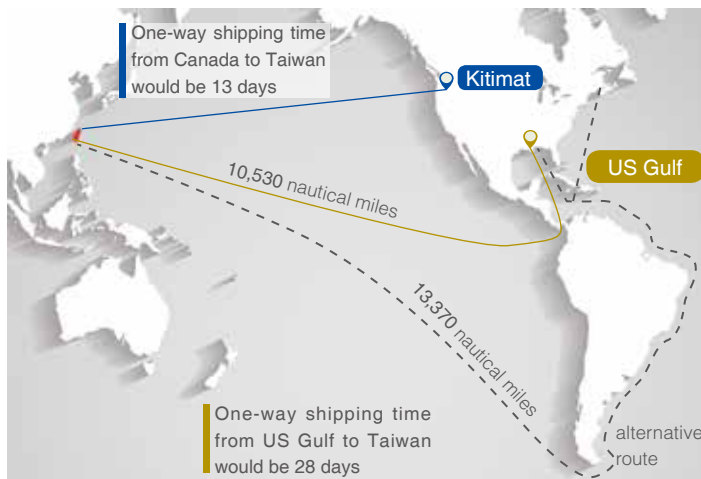
CPC Responds to the New Opportunity of the New Scenario

With 98% and increasing demand of natural gas imported, Taiwan has no self-own energy resource. Shouldering the safety of domestic energy, CPC has to take on the following 4 Strategies: “diversified oil supplies”, “diversified gas supplies”, “responding to North America shale gas production” and “safe storage of oil and gas”. Our major actions are stated in the following.

1. Construction of the 3rd LNG Receiving Terminal

Construction of the 3rd LNG receiving terminal, Keep adding the natural gas facility would be the most important one. CPC only has two LNG terminals, namely, Yong-an and Taichung, the storage and dumping capacity of 12.5 million tons has been reached. Thus, we are actively increasing the LNG importing and storage facility, including the on-going project of building 3 storage tanks in Taichung LNG factory, channel deepening for Yong-an harbor, Yong-an LNG factory, to increase the allowable tanker capacity, and plan to build the wholly owned third receiving LNG terminal.

2. Assessment of the Diversification of Natural Gas Source



Besides US, Canada is aggressively pushing for shale gas production, with multiple LNG projects on-going, such as, Kitimat LNG project by Chevron, LNG Canada project by Shell and Pacific Northwest LNG project by Petronas. However, those projects would need to build new pipes through Rocky Mountain and Indian Reserves to LNG factories along the Pacific coast. The starting operation time would, thus, be after 2020.

Compared to US, one advantage for Canadian shale gas is the exporting would be directly from Pacific coast with transportation time saving of two weeks. Another advantage is Canada’s relatively openness to LNG exporting, and the on-going construction of Western Sea Ports in Canada.

US and Canada Shale Gas Comparison		
Shale Gas Supply Location	US East Coast	Canada West Coast
Openness of the Government	DOE is taking a more cautious approach to LNG exporting, especially to Non-FAT countries. US Chemical Engineering Industry is concerning about higher domestic energy price, so it is against exporting.	For LNG exporting, Canadian Government is more open than US.
Area for New Development	A lot of shale gas fields are handled by big oil companies, so less development space.	With abundant resources waiting to be explored, Canada has more development space.
Starting Time	After 2016	After 2020
Shipping Time	Single trip voyage is 28 days	Single trip voyage is 13 days
Up-stream Participation	No	Yes

3. Main Strategy of Elevating Self-owned Oil and Gas Percentage

With small residential area, a huge population and frequent earth quakes, as well as not enough shale gas resources and environment protection issue, we would not consider domestic shale gas production, instead, we would focus on overseas investment and development. To build Taiwan self-owned energy resource, we would aggressively negotiate with international big oil companies and evaluate the opportunity of joint exploration and production of shale gas.

To strive for the ownership of shale gas exploration and to get the opportunity of joining US and Canada shale gas exploration and production. CPC is negotiating with four big energy companies, namely, Exxon Mobil, Shell, Petronas and Chevron Corp and we would pick two out of the four for 3~5% shares of investment with the total investment amount of around one billion US dollars.

4. Working with Asia Pacific Nations to Establish the New Natural Gas Pricing Mechanism

With the US natural gas exporting to Asia and the price of which being calculated by Henry Hub pricing mechanism, the original Asian natural gas price calculation equation is no longer suitable. CPC would like to work with Asia Pacific countries for building the new pricing mechanism not related to oil price and keep purchasing US and Canada natural gas with competitive price.

5. Establishment of Shipping Date Exchanging Mechanism with Neighboring Countries

We would keep good working relationship with international energy companies in Japan, Korea and China to build a communication mechanism. Through regular contact, we could exchange pricing information and the global LNG requirement to get a better handling of market trend. In order to respond to emergency natural gas needs, we would work with neighboring countries for shipping date exchanging mechanism to avoid any low inventory issues.



CPC Successfully Importing US Shale Gas

For now, the domestic LNG is exclusively imported by CPC with annual amount of around 12.5 million tons. We have signed traditional natural gas supply contracts with Indonesia, Malaysia, Qatar, Papua New Guinea and Australia.

CPC also aggressively negotiated for US LNG and signed with world's number three LNG importer, French GDF SUEZ, for 20-year LNG heads of Agreement. It would provide Cameron LNG from Louisiana, US, starting in 2018 with annual amount of 0.8 million tons, which is 6% of domestic supply in 2013.



For the latest information, please come and visit CPC Petroleum Museum or the following official Petroleum Museum website.

<http://www3.cpc.com.tw/museum/ShaleGasShow/index.html>



Signing the 20-year, long-term heads of agreement (HOA) with French GDF SUEZ

Gas Stations with Passion and Love

Little by Little, CPC is Fueling Love and Passion to You through Our Gas Stations

Serving over 900 thousand cars daily, our gas stations are the service bridges between you and CPC. Besides serving gas, we also keep building innovative gas stations. Our gas stations would like to work with you in building a society with warm and passionate love. The innovation of our gas stations would never stop and we would keep CPC's torch lightening and warming you and me.



Caring for the Underprivileged: CPC's Passionate Gas Stations

Since introducing "passionate gas stations" 2001, CPC has named the ones hiring more than 5 physically challenged person as "passionate gas station". In 2013, CPC owned gas stations has hired 302 physically challenged part-time workers, which is 5.6% of 5,393 total part-time workers. There are 45 "passionate gas stations" in Taiwan, distributing in north, central and south. Working for refueling or car washing service, starting from guiding cars into station and greeting with welcome, up to giving receipts and greeting with thanks for coming and guiding cars leaving station, those physically challenged workers all follow CPC's SOP.

Through our program, we would like to help those people in learning valuable skills and being able to work independently. Providing a career opportunity, CPC would be more than happy to help them earn the respect and self-confidence they deserve.



Providing Car Washing Service

To increase the convenience and provide more diversified service, CPC would like to expand the operation scope for the gas stations, and car washing is one of the most important ones. In 622 CPC owned gas stations, there are 207 of them equipped with manual or automatic car washing systems. In 2013, the car washing profit is 4.5% of the total car washing service. Working toward the goal of "the best car washing chain stores in Taiwan", we would need to keep enhancing the service quality and car washing quality.



CPC's Car Washing Gas Stations

Mostly working with local special education schools, CPC's car washing gas stations provide under privileged students and families a chance to bridge them into the society through intern jobs. With 45 car washing gas stations in place, we would like to have 50 of them and hire and train 282 physically challenged persons through car washing SOP so that they could be completely in charge of the service.

Being responsible of car washing service, those physically or mentally challenged persons are called "angels".





Training of the Angels

To enhance our service and car wash quality, we have attentively and progressively worked with special education schools for training and learning. Some schools have built car washing centers to professionally train those students.



Develop and Elaborate Personal Value

For the hiring process, schools would recommend students to get familiar to our delicate car washing SOP training. Students with lesser capability would start from car drying and when they are more familiar with the job, the more skillful front end car washing SOP training would be provided. With their slower reaction time and lesser responsive capability, the friendly management of the environment and the better equipped car washing equipment and facility are the most important setups for the washing service.



The Most Valuable Praise: Your Encouragement

Through the long term observation and communication of the special school teachers, although it takes a bit longer time for them to adapt to the new environment, they do possess the professional car washing capability.

With intern training and continuing employment after graduation, there is already one student serving the car washing for 10 years. Some customers have been going back to the station just to have a chat with them and offer their encouragement, a really touching moment for all of us.



A Society Full of Love and Passion

They use their passion for your car washing and we would hope you to support them with your love. Through the passionate gas station and delicate car washing service, CPC would like to build a platform for the exchanging of love and passion. "CPC with love, service with passion" would like to encourage the general public for the building of a society with warm love and delicate passion.



03

Refuelling for Taiwan

Cherish Our Homeland



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2013

Social Goals and Achievements

- Setup regular toilets in 357 company owned gas stations and handicapped toilets in 177 company owned gas stations in 2013.
- The results of customer satisfaction survey for the last 3 years show that the overall satisfaction score is over 9/10, over the goal of 8.5/10.
- Up till 2013, we have 31 units completed the establishment and verification of Taiwan Occupational Safety and Health Management System (TOSHMS).
- CPC has hired 812 physically or mentally challenged people, 5% of the number of all staff. The proportion is much higher than 1% required by "Disability Rights Laws". With 11 of them being managers, it shows CPC being the exemplar cooperation.
- In 2013, we held training classes of industrial safety, gender equality and personal privacy protection. Our employees enjoy fair training opportunity and we strive for the fair and equal chance of training course regardless of gender, nurturing all employees with professional job training needed.
- CPC has spent NT\$ 467 million for social care in 2013.

3.1 Customers and Us

CPC works hard on all business areas, and emphasizes on core corporation value of "customer-focused and service first". We pay attention to customers' wishes, and lately have been working on customer based service system network. We would keep pursuing the ultimate customer satisfaction. One of our management ideas, "top in service and first in quality", is CPC's essential commitment to our customers. We would base on our core technology to provide safe and diversified products. For years, CPC fleets of tankers take care of transporting gasoline around the island for oil supply and are in charge of offshore islands' gasoline inventory. With those tankers, Taiwanese can all enjoy the same high quality gasoline from CPC.

3.1.1 Providing Clean and Diversified Products

CPC provide customers with product, service, and marketing promotion according to number 62-1 of Budget Act, and always mark "CPC Ads". In 2013, there is no product, service, advertisement or marketing related regulation violation, nor with any fine. CPC really emphasizes on company logo and trademarks. All the logo and trademarks are legally applied and registered to get the exclusive usage right. We are always monitoring market trends and protecting company goodwill. All of our products are marked with our logo to prevent any confusion from customers and to protect company benefits.

Service for Fuel Related Products

CPC's products are really diversified. In fuel products, there are natural gas, LPG, propane, butane, all kinds of gasoline for cars, aviation fuel, all kinds of diesel and fuel oil. For petroleum chemical raw material, we have ethylene, propylene, butadiene, benzene and toluene. For solvent related products, we have aromatic solvent and aliphatic solvent. We also have lubricating oil and asphalt.

For the products listed above, besides detail marking and description for danger identification and ingredient list, we also list the "product regulation", "material safety data sheet", "hazard identification data" and "ingredient identification data" in "product and service" section of our company website. In that section, there are also other detail customer service items and daily product prices with all information being open and transparent. The manufacturing process, quality and transportation of our petrochemical products all follow international and domestic environment protection regulations and we can also provide Material Safety Data Sheet (MSDS) for all the products to ensure the safety. Customers are welcome to visit our website for the quality verification reports for all of our products. In 2013, we did not have any violation for regulation or voluntary acts.

Service for Biotechnology Products

CPC's "Biotechnology Business Center" is responsible for research and development of biotechnology and health food. For the last decade, it has been excelsior and kept introducing new products with great results. CPC's biotechnology products,

See Clean eco-friendly laundry liquid and Zoeyen GSH bio-fiber moisturizing facial mask got SNQ (Symbol of National Quality) certified. See Clean eco-friendly laundry liquid is the only domestic liquid detergent to get both Taiwan Green Mark and SNQ certified. Its ingredients follow CNS 2477 category three national standard for laundry detergent. With materials from coconuts and corns and food level additives, it is sold at ease and people can buy with no worry. CPC biotech products always abide by the idea of safety and effectiveness.



3.1.2 Outstanding and Innovative Gas Stations

Outstanding and Innovative Gas Stations

Gas Station with Diversified Services

Car wash, convenience store, fast car maintenance, eTag installation and top up, missing kids posting.

The Highest and the most Authentic and Primitive New Ali Mountain Gas Station

Taiwan first mountain gas station “Alishan New Gas Station”, it is much tougher to build a gas station on an elevation of 2,200 m than to do the regular one. Besides good soil and water conservation and enhance earthquake resistant structure, using green building materials, solar powered water supply and rain water recycle system, we constructed it with ecological engineering to preserve precious energy.

Gas Station with Packaged Mobile Restrooms

To build restrooms with accessibility, in one hand, was restricted by limited space. For example, those stations with small room have no places for it, and on the other hand, the highest elevation Guanyuan station being located in a National Park, has a problem getting the construction permit. In the meantime, to save the construction time, CPC takes packaged mobile restrooms with easy to open doors, fixed or swirl hand rails, anti-slippery floors, washing counters, flush toilets, urinals, and service rings. With wide space and smooth light, physically challenged persons would surely have a brand new feeling about it.

Green Gas Station

Built or remodeled 6 gas stations and gas supply centers. (Please refer to 2.5.2)

Self-service Gas Station

Set up the first domestic self-service gas station. Till 2013, there are already 115 gas stations with self-service for VISA and CTBC Bank credit card holders. Self-service provides cash discount. CPC rewards the cost saved from personnel, gifts, and the management fee to the customers.

Gas Station with Smile

In 2013, Environmental Protection Department, New Taipei City held “Gas Stations with Smile” evaluation, which appraised items including air pollution control, waste water treatment, restroom cleanness, wastes management and chose top 10 gas stations. CPC has 7 of them, Ji-suei station, Shulin station, Luzhou station, Kuangfu station, Puchi station, Bauchiau station and Taishin station, are chosen as 2013 “Gas Station with Smile”.

Gas Stations with Accessibility

Considering elders, kids, females and physically challenged persons, we designed the accessibility facility like ramp, entrance/exit, and restrooms with national standard anti-slippery, abrasive resistance materials. In 2013, 357 CPC owned gas stations have flush toilets and 177 owned gas stations have restrooms for physically challenged persons.



Clear and Bright Gas Stations

- The first to hold “public restroom forum” to promote better rest room culture.
- In 2013, 439 gas stations got awarded with the best or the better ones in rest room contests.
- On Nov. 17, 2013, all CPC owned and franchised gas stations held one week of “clean and bright starts from our own restroom”, “cleaning week” activity.
- Emphasize on restroom cleaning education and training as well as the guidance and auditing to fully elevate restroom standard.



Orchid Island Gas Station with Local Culture

Orchid Island gas station was severely damaged by Typhoon Tembin. To rebuild the station, we added two elements of “innovative rebirth” and “local characteristic fusion” to the new design.

Gas Stations with Charity Carwash

So far there are 45 gas stations come with charity carwash. Besides friends from special education schools, some stations like Hualien harbor station, directly hires physically challenged persons to let them learn the skill and we'd like to have the customers give them more patient and love. (Please refer to special edition II)



3.1.3 Customer Satisfaction

We do customer satisfaction survey for owned gas stations annually. With scientific statistical analysis to obtain customer satisfaction information and consumption behavior, we would use the data as the reference for service improvement to increase gas station service quality and differentiate it from that of our competitors. From 2011 to 2013, the results of customer satisfaction survey are over 9 / 10, over the target of 8.5 / 10.

The overall satisfaction score is over **9**



Protection of Personal Data and the Privacy

CPC has established mechanism to protect customer personal data and increase education and training for employee awareness, especially gas station operators, in privacy protection and personal data safety. In 2013, there is no privacy violation or personal data breach case.

3.2 Affiliated Partners

CPC affiliated partners include suppliers and engineering and labor contractors. To maintain a good partner relationship, a complete partner management mechanism is essential, of which, stable supply is the iron rule of CPC supply chain management.

3.2.1 Characteristics of Overseas Purchase

Almost all of the crude oil CPC needed is imported. To be sure of the stability, besides long term purchasing contract, we are actively building up more oil importing sources. The total imported oil for 2013 is 139,886,968 barrels, with 65.6% coming from Middle East, 25.7% from Africa, 2.6% from Australia, 2.1% from Southeast Asia, and 4.0% from other regions such as Central Asia, China, Russia.

98% of the natural gas needed is also imported. In order to stabilize supply, CPC is actively pursuing long term contracts. For now, natural gas mostly comes from Qatar, Malaysia and Indonesia, with 80% of the total import and in 2013, the percentage purchased are 48.64%, 23.84% and 15.63%, respectively. To continue the diversification of natural gas source to respond to sudden surge of demand, we has signed midterm and in stock purchasing contracts with 22 suppliers. Possible sources are from Nigeria, Trinidad, Equatorial Guinea, Australia and other African countries.

3.2.2 Contracts for Affiliated Partners

Importing crude oil or natural gas from overseas suppliers, CPC always sign purchasing contracts, listing the suppliers should abide by their local regulations including labor right related ones. Suppliers, at the same time, need to provide the definite source for the oil or natural gas, and CPC can filter through it and make sure there are no violations on international regulation or involvement with commonly known wrongful oil or natural gas supply sources. In LNG supplier management mechanism, we have "LNG import purchasing operation procedures" and "LNG purchasing plan review and advisory committee", through which we can choose and qualify the suppliers and check their capability of fulfilling the contract.

As for engineering and labor purchasing, because CPC is a government-owned enterprises, we have to follow Government Procurement Act. In other words, anyone violated government regulation and got banned from any transactions is not eligible to be CPC's supplier or contractor. Also, when signing contracts or agreements, CPC specifically lists that the contractor must abide by government regulations in hiring labors and workers. The regulations include "Labor Standard Law", "Labor Safety and Health Law", and all the other related enforcement rules, acts and regulations.

3.2.3 Human Rights Management of Important Investment

CPC's fixed asset investment is mostly about oil and gas exploration, production, sales and marketing, storage and transportation and construction, replacement or expansion of public and environment protection facilities. In 2013, there is no new fixed asset investment plan, and there are 8 on-going ones.

To adhere to gender equality and basic human rights, CPC always follow regulations from authority for planning, review, and execution of fixed asset investment. Since 2012, for any over 10 billion dollars fixed asset investment, we follow the rules of making feasibility study and report, evaluating impacts for different stages.

We always follow Government Procurement Act for all the engineering and labor purchasing operation for the investment plans. Also, when signing contracts or agreements, CPC specifically lists that the contractor must abide by government regulations in hiring labors and workers, and the regulations include "Labor Standard Law", "Labor Safety and Health Law", "Gender Equality Law", and all the other related enforcement rules and regulations. In 2013, there are two purchasing contract awarded contracts for one sub-plan of renewed investment for distillation and related units, Dalin Refinery, Refining Business Division and two sub-plans of 2nd phase investment for Taichung Factory, Natural Gas Business Division. The regulations and acts by which the contractors must abide are all listed in the contract agreements.

3.2.4 Human Rights Management of Supplier

To manage the risk of suppliers violated human rights, we ask the contractors to fulfill society, environment and moral responsibility under the procurement act, such as providing more jobs to underprivileged minority in order to raise company social responsibility. In the purchasing contract, we ask contractor to follow Labor Standard Law and the related regulations to prevent any case of child labor and forced labor.



3.3 Healthy and Safe Work Place

Because of the flammability of oil and natural gas, to have a smooth operation and to ensure the safety of our workers, people in the community and their properties near the fields, CPC promises to fulfill our mission and responsibility of ensuring the safety and health of our employees and involved stakeholders. Participating in oil and gas exploration, refinery, storage and transportation, and sales, we would provide resource and training that emphasizes on safety from design, construction to production and also service, as required with the regulations. Through PDCA management mechanism, we would keep reducing the risks to personnel, equipment and environment, and emphasize on damage prevention and employees' health improvement. We would treat work place safety as the core value of company management and emphasize even more on employees' self-awareness of safety to achieve the goal of 100% safe workplace and no injury allowed.



3.3.1 Workplace Safety Policies and Goals

Workplace safety is the foundation of company operation. To achieve the goal of "100% safe workplace and no injury allowed", CPC stands by the safety and health policy to keep elevating safety culture.

CPC Safety and Health Policy

Discipline on safety, thorough checking

Health promotion, responsible care

Risk management, systemic operation

Continual improvement, systematic evaluation

3.3.2 Occupational Safety and Health Management

Besides Occupational Health and Safety Assessment Series 18001 (OHSAS 18001), CPC sets up Taiwan Occupational Safety and Health Management System (TOSHMS) in 2008 to reduce the risk of workplace accidents. Up to the end of 2013, we have total of 31 business units establishing and achieving TOSHMS certification.

Workplace Safety Audit System

CPC actively pushes for workplace safety auditing, for example, management by walking around, workplace safety professional checking, safety auditing for new factory construction or the test run after major maintenance and workplace safety auditing for each level of managers. All the corrective and preventive actions would be tracked and verified in a company-wide information management system until completed. We would like to proactively find the unsafe environment or behavior to prevent accidents from happening.

Work safety division setup work safety auditing principles and audit teams from headquarter would do on site auditing. To enable all departments handling emergency situations, we have issued regulations like “principles of the emergency response program” and “the points of guidance for the emergency response training” with the contractors and visitors being included. All the business units need to setup their own emergency response teams and policy according to their own condition and environment and need to hold training and drills to make sure employees getting familiar with the procedures to reduce loss of life and property.

Occupational Safety and Health Committee

To have a unit specifically for workplace safety, to prevent accident and to improve work environment safety and employees' health, CPC setup a “Occupational safety and health committee”, with the president being in charge. There are 25 members including one Commissioner, and 24 other members, which come from related departments. There are 9 members from the labor union, which is 36%, over the regulation requirement. CPC holds quarterly meeting for occupational safety and health committee. In 2013, labor union members submitted 24 proposals which are 100% of the discussion.

Management of Contractors' Safety

CPC has issued rules like “Management procedures for safety and health of engineering contractors” and “Guidance on safe work permit”. The same regulations and procedures apply not only to our employees but also to the contractors' workers and are strictly enforced. The contractors' labor accidents are seen the same as the ones for the employees, and would be investigated, recorded and tracked.

We have also established “auditing teams” to go to construction sites for non-scheduled on site auditing. Any violations would be fined severely and the auditing team members would act as safety coaches to change the unsafe behavior of the contractor's workers in order to reduce the risk.

In 2013, one contractor tried to hurry up to catch up with the schedule and didn't operate according to the SOP and it caused an accident. We immediately reviewed and improved on system operation, working flow control and emergency response. Everyone is expected to remember this accident and to prevent recurrence of similar accident and injury.

Improve Safety Management Procedures for Contractors

Ask contractors to follow strictly on the SOP and construction procedures.

Contractors need to have safety and health personnel on site to check the safety and health all the time. If there are no such personnel, construction work would be halted immediately.

Hold safety and health training and tests on contractors, those who are not properly trained are not allowed to work.

Use computer to manage and control the contractor's workers in and out of the construction site. All managers need to know the ongoing construction items and number of contractors.

All constructions would be categorized according to level of danger involved. Highly dangerous ones would need supervisors to do on site monitoring all the time. Generally, no construction in holidays, but if needed, managers in charge would need to be presented.

Enhance access control, and no illegal or unsafe gears or tools are allowed. If cigarettes are taken or smoked in a nonsmoking location, the person is banned from working with CPC forever.

The work items and the corresponding responsibility need to be clearly stated in the contract, and the contractors would need to sign the safety affidavit and promise and guarantee the construction safety.

Management of Security Guards

Management Measures for Security Guards

All security guards need to take our safety and health lecture for 3 hours and qualify the test to be able to work.

Security guards hired by contractors need to take 4 hours of on-job training monthly.

20 minutes before job training should be held weekly.

Read "security guard operation emergency handling procedure" daily and record it in the work logs to ensure operation safety.

Promotion on body protection training: when searching for illegal items, ask for his/her cooperation and don't touch the body.

Personal data protection: documents recording persons coming to factory need to be saved properly, and destroy the document when expired.

Check the monthly salary, labor and health insurance fee according to the contract to prevent any harsh treatment and ensure workers' benefit.

Equipment Safety Management

Implement risk management and equipment checking work, establish equipment safety management procedures, carry out inspection for tankers and pipelines, and build monitoring and leakage checking systems for long-distance oil/gas pipelines. According to the contents and materials of the equipment and the operating condition, we use Risk Based Inspection (RBI) to decide the possible erosion loops, and categorize the equipment. Plan for the factory maintenance according to how critical the equipment is. The more dangerous the equipment is, the more thorough inspection is needed to ensure the safety. When working with the equipment, the operator needs to inspect and check it proactively. Also, the equipment needs to be checked and qualified regularly by labor inspection department.

In the equipment operating area, safety management procedures need to be proposed for the safety of the people, jobs, area and nearby objects, and it should be checked according to SOP such as procedures for personnel access to the limited (explosive) area, locking/marketing management procedures, and cutoff/restart electricity procedures. Those safety regulations are closely related to the safety of the factory workers and the safe operation of the equipment, and thus they should be followed strictly.

For the oil storage facility, regular or unexpected checks are required to ensure the equipment safety. All departments should follow "Labor Safety & Health Law" and "Management and Self Inspection Regulations for Labor Safety and Health Organizations" to setup self-inspection plan every year. For the checking of the electricity and machinery equipment in office buildings, coordinate with the administration department to ensure the self-inspection would not cause any inconvenience. At the same time, systematic service and maintenance strategy is needed to effectively identify high risk items and establish specific maintenance strategy to reduce risk and prevent over-maintenance. All critical machinery equipment need to be included in the management system, and be keyed-in to the information platform. The regulations, property, figures and diagrams, maintenance and checking records of the equipment all need to be keyed-in to the management system to be able to setup equipment safety management process, regulate equipment operating procedures, set up training for maintenance personnel, and carry out equipment checking and testing improvement and ensure the safety of the workers and the equipment and increase productivity of the factory and reach the goal of equipment completeness.

Fire Fighting Operation Management

According to the fire code regulation, CPC performs regular inspection, maintenance and repair for firefighting equipment. We also establish "work plan for firefighting management", "procedures for firefighting pump test and water pressure test for firefighting water system" and "oil and gas pipelines fire prevention checking table" to make sure that regular checking and inspection is properly done and all the firefighting equipment is always ready. Also, we have professional teams to help each department for firefighting water pump function test, and there are already 5 books related to firefighting equipment operation manual published, namely, fire extinguisher, firefighting spray and sprinkle, firefighting foam, CO₂ fire extinguisher system, and firefighting pumps.

Firefighting drill and training

Establish hot/warm/cold zones



High elevation place rescue drill and training



Other Safety Management

Other safety management includes safety gear management, safety and health management for chemicals and traffic safety management. We also have all phone numbers of the departments in charge of emergency listed on our company website.

3.3.3 Work Place Safety Education, Training and Advocating

To elevate the work place safety of the employees and to enhance the effectiveness of the trainings, CPC established “principles of employees’ education and training for Environmental Health & Safety (EHS) protection” to regulate persons who need to have health, safety, and environment certification, training credits, and on-job education and training. We plan all kinds of idea communication, training and promotion for EHS.

Types of Training	Year	2011	2012	2013
Safety and Health Certifications		4,908	6,208	4,838
On-job Training for Safety and Health		26,606	14,160	14,346
On-job Training for Hygiene		5,497	5,372	9,772
Total		37,011	25,740	28,956

Unit : person-time



Safety pledge event in the national workplace safety week campaign

2013 Work Safety and Health Conference

CPC held “2013 annual work safety and health conference” from Nov. 11~12 in Petrochemical Business Division. Invited domestic and mainland guests include: Labor Standards Inspection Office, Kaohsiung City Government, Industrial Safety and Health Association of Taiwan, DNV-Taiwan, China Steel, Energywell Technology Co., Ltd, and China’s big four oil companies. With around 300 people participating, there are special topic speeches, and presentation of research papers. We also arranged demonstration of unloading oil from an oil tanker by Cianjhen Storage Unit. All the papers and speeches of this conference are shown in our company website, so all employees and interested people can learn and download for reference.



3.3.4 Workplace Safety Performance

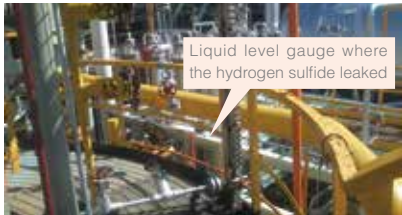
International Labor Organization “Record and Report of Occupational Accidents and Diseases” Code of Conduct Statistic		
Item	Calculation Rules	
Injury Rate (IR)	$(\text{Number of recorded injuries} / \text{Number of hours worked}) \times 200,000$ $8/321,385,751 \times 200,000 =$	0.03
Occupational Disease Rate (ODR)	$(\text{Number of recorded diseases} / \text{Number of hours worked}) \times 200,000$ $0/321,385,751 \times 200,000 =$	0.00
Lost Day Rate (LDR)	$(\text{Number of day cases} / \text{Number of hours worked}) \times 200,000$ $12,261/321,385,751 \times 200,000 =$	7.63
Absentee Rate (AR)	$(\text{Number of absent days} / [\text{Number of employee} \times \text{Annual work days}]) \times 200,000$ $21,907.8/(14,819 \times 249) \times 200,000 =$	1,187.43
	$(\text{Female absent days} / [\text{Female number of employee} \times \text{Annual work days}]) \times 200,000$ $4,547.6/(1,752 \times 249) \times 200,000 =$	2,084.87
	$(\text{Male absent days} / [\text{Male number of employee} \times \text{Annual work days}]) \times 200,000$ $17,360.1/(13,067 \times 249) \times 200,000 =$	1,067.11
Total Number of Employee for Work-related Fatalities	—	2 persons

Note: There is no female injury or death case.

😊 Accident Cases

In 2013, there are 4 fire cases, 8 workplace injury cases. The result of disabling injury severity rate is 381, serious disabling injury frequency rate is 0.34, and lost day rate is 7.63.

In 2013, there were two casualties. One was caused by jacking pipe impact, Drilling Branch, Exploration & Production Business Division and the other was the fetal hydrogen sulfide inhalation accident in No.2, Low Sulfur Fuel Oil Unit Kaohsiung Refinery. We have rigorously investigated the fundamental cause of the problem and actively worked on preventing any similar accidents from happening in the future.

Accident	Improvement Action	
Death caused by jacking pipe impact, Drilling Branch, Exploration & Production Business Division	<ol style="list-style-type: none"> 1. Add wireless communication tools to operators, ensuring proper communication for two or more people on both sides. 2. Identify and evaluate the hazard and risk of the work place in order to add or refine all the SOPs for operation conditions and check for safety before any work is started. 3. Enhance safety training for all operators and the group leaders would be in charge of checking the overall safety. 	 <p>Death caused by jacking pipe impact, Drilling Branch, Exploration & Production Business Division</p>
Hydrogen sulfide poisoning, Low Sulfur Fuel Oil Unit 2, Northern Refinery, Kaohsiung Refinery	<ol style="list-style-type: none"> 1. Replace the high pressure glass liquid level gauge to magnetic liquid level gauge to increase safety. 2. Those who are operating or inspecting near any special chemicals should wear proper personal protective equipment. 3. Advocate these fatal cases for safety awareness and enhance emergency response training. Safety propaganda and lesson learned from this case would be added in the future to grow safety awareness and enhance emergency response training. 	 <p>Fetal hydrogen sulfide inhalation accident in No.2 Low Sulfur Fuel Oil, Kaohsiung Refinery</p>

Occupational Safety Cost			
	2011	2012	2013
Direct Costs	1,130,965	1,332,016	1,270,154
Indirect Costs	288,444	181,634	184,062
Management Costs	505,149	481,397	423,946
R&D Costs	29,490	73,263	35,381
Social Activity Costs	2,829	7,805	515
Loss and Compensation	0	248	60
Total	1,956,877	2,076,363	1,914,118

Unit : NT\$ thousand



3.3.5 Healthy Work Environment

CPC has established clinics for employees' convenience. We also have setup health checkups including general and special ones for all employees. Checking work environment regularly, we have been providing healthy and safe workplaces. With enhanced health management statistic capability, the foundation of employee health management has been successfully built. We also provide professional health training and carry out health and hygiene activity to protect our employees and promote better health. CPC would hold all kinds of dynamic or static health related activities or seminars, such as, weight-loss challenge, on-site physician health counseling, remedies for sleeping disorder, stress management. We would also provide monthly health improving information to promote health awareness to all employees.

Periodic Health Examination			
	2011	2012	2013
Number of Employee (person)	14,372	13,624	16,770
Total Cost (NT\$)	17,756,012	18,751,196	28,760,260

Note: Employees need special checkup include those who work in noisy, dusty, organic solvents, special chemicals, ionizing radiation, abnormal air pressure environment.



Fitness walking workout



Aerobic workout

😊 Infectious Disease Prevention Measures

Management of Mandatory Reporting Infectious Diseases

Cooperating with government epidemic prevention works, like disinfection of workplace, and flu vaccination, work safety and health department would hold awareness and health education activity. For example, we hold annually promotion activity for awareness of enterovirus, dengue fever, and flu.

Management of Possible Pandemic or Epidemic Diseases

For pandemic diseases such as, SARS, bird flu, H1N1 and H7N9 or new pathogens or mandatory reporting infectious diseases which could cause large scale infection, work safety and health department would collect domestic and international data, and follow suggestions from professional doctors from World Health Organization (WHO) and Center for Disease Control. According to the infectious pattern and possible impacts after healing, preparation for disinfection materials would be implemented and disinfect immediately once everything is ready. Then, adjust the procedures accordingly until the infection is under control or stopped. After that, collect all the data and file it for later occasion as needed.

😊 Energetic Leisure and Recreation Center

CPC provides leisure and recreation centers for all staff and their family for exercise and leisure activity including swimming pools, gyms, and pin pong tables. Our employees can enjoy all the facility, obtain a healthy balance physically and psychologically and improve the relationship between friends and colleagues. We also have employee clinic for medical service and health promotion for the well-being of all employees.



😊 Accessible Environment

Our office facilities all follow construction regulations for people with disabilities. All facilities like outdoor guiding passage, ramps with rails, indoor hall ways, voice control and braille in elevators, stairway guidance, swirling space and restrooms being properly constructed.

😊 Occupational Health Cost

Occupational Health Cost			
	2011	2012	2013
Direct Costs	113,160	100,829	98,162
Indirect Costs	26,585	18,583	15,688
Management Costs	15,721	13,188	12,763
R&D Costs	3	0	0
Social Costs	219	5,740	3,845
Losses and Compensation	32	16	0
Total	155,720	138,356	130,458

Unit : 1000 NT\$

3.4 Happy CPCers

Employees are the most precious asset and the most essential and inseparable part of CPC. Without suitable and enough talent, sustainable management is impossible.

3.4.1 Respecting Human Rights

CPC never has forced labor and in rule 37 of "CPC work rules", it regulates when employer needs employees to work beyond regular working hours, agreement from the union is needed but the extended time with the regular hours cannot exceed 12 hours a day, and the monthly overtime cannot exceed 46 hours. However, in special cases, such as emergency repair work, the limitation can be lifted but it needs to be authorized by management and proper rest would be needed for the overtime workers.

Regarding to the cases of layoff, CPC follows proper inform procedures according to Labor Standards Law and other related regulations to make sure employees have enough time of preparation. Employees worked over 3 months but not yet one year, need 10 days of advance notice; over one year but not 3 years, 20 days in advance; over 3 years, 30 days in advance. Anyone not getting proper advance notice would be paid accordingly.

Hire and Care for Underprivileged Groups

Till the end of 2013, CPC hires 812 people with disabilities, of which 11 of them are managers, which is 5% of total staff, over the 1% required by "Bill of Protection of Rights of Persons with Disabilities".

Improve Gender Equality

For the same jobs, CPC gives the same salary no matter whether the employees being male or female. However, because of the special requirement for exploration and refinery, most of their employees are male. In HQ, number of female managers is increasing annually and the percentage of female manager is over the percentage of female employees.

CPC also provides friendly working environment for female workers with quality and certified breastfeeding rooms and educational training for gender mainstreaming. In 2013, we held 33 classes with 1,932 person-times trained. During the class, films about work place anti-discrimination and Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) were played to inform trainees for the work place discrimination and enhance employees' human right awareness. There is no sexual harassment case in 2013.

CPC supports parental leave without payment, and in 2013, there are 9 males and 5 females applied for it. All of the previous applicants came back to work in 2013, with 100% reinstatement and 100% staying. Also, those who reinstated in 2012 have stayed and worked with us in 2013, again 100% staying rate.

Hire local Residents in Important Operation Sites

To help building the harmonious relationship between CPC and residents of important operation sites and to improve the development and prosperity of local community, CPC reserves some positions and with bonus points to better hire local residents when there are openings.

Hire Part-time Workers

Besides minimum wage, part time workers have other benefits such as performance bonus, yearend performance appraisal bonus, free dinner or dinner compensation. They would enjoy salary increases for annual review after every one full year of service and being the group leaders or associate leaders would get supervisory bonus. Newly hired part time workers also need to attend new employee orientation and training. Through those professional training and practices, CPC part time workers are the skillful employees. Up to the end of 2013, the total number of part time workers is 5,393, with which the number of males is 1,693 (31.39%) and the number of females is 3,700 (68.61%), average age of 20.1 years old and 1.5 years of seniorities.



😊 Salary System

CPC is a state-owned enterprise, and the employee salary is based on regulations, personal contribution and achievement. New employee salary is always higher than the local minimum wage. Salary is based on new employee category of 1st level of 2nd grade, from MOEA joint examination for state-owned enterprises with starting monthly salary of NT\$ 37,125. Workers hired directly by CPC would be 1st level of 5th grade with monthly salary of NT\$ 27,000, and there is no difference between genders. For the same grade and the same level, the starting salaries for female and male employees are the same. The salaries for female managers compare to those of male managers is 1:0.996 and the salaries of general female staff compare to those of male staff is 1:0.985.

😊 Retirement System

CPC retirement system follows "Labor Standard Law" and "Regulations Governing the Pension and Severance Payment of MOEA Operated Enterprise Employees". "The Supervisory Committee of Workers' Retirement Fund" and "Employees Retirement Fund Management Committee" are established to take care of labors and workers retirement fund appropriation and payment.



Resigned and Retired Person and Percentage for the last 3 Years												
	2011				2012				2013			
	Female		Male		Female		Male		Female		Male	
	#Of person	%	#Of person	%	#Of person	%	#Of person	%	#Of person	%	#Of person	%
Not yet 30 years old	10	0.07	20	0.13	7	0.05	11	0.07	6	0.04	16	0.11
30~49 years old	2	0.01	41	0.28	11	0.07	37	0.24	4	0.03	30	0.2
Over 50 years old	23	0.15	200	1.34	41	0.27	330	2.17	42	0.28	380	2.54
Total	35	0.24	261	1.75	59	0.39	378	2.48	52	0.35	426	2.84
Total resigned and retired	296 persons (1.99%)				437 persons (2.87%)				478 persons (3.19%)			

😊 Union and the Collective Agreement

Labor-management meeting is held monthly with representatives from labor and management joining to completely discuss and effectively talk about issues related to labor rights and benefits and labor working condition. All proposals are filed, tracked and the execution is followed. Meeting information is posed online to let employees have easy access in order to build interaction mechanism.

CPC article of corporation is revised in 2001, adding number of directors in the board to 13, which include 3 from the union to be presented in the company board meeting to make the relationship between labor and management smoother. We want to have a good interaction and consensus with the union. We also setup an agreement with the union, and it is suitable to all employees.

CPC labor is 100% protected by the agreement, and it shows our resolve in protecting employees' right and benefits. In addition, CPC established "operation guidance from company and labor stability - handling grievance of labor-management disputes", which can be used to handle grievance of disputes and emergencies. In 2013, there is no labor-management dispute nor does any loss occur from it.

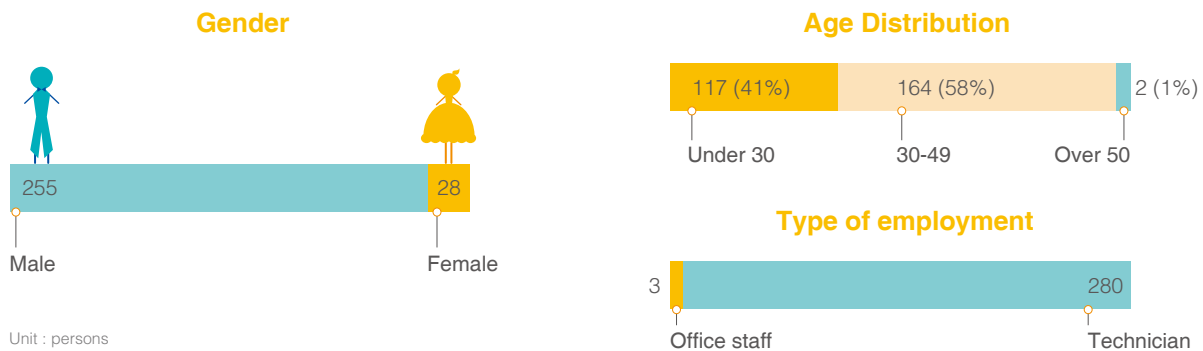
3.4.2 Hiring Employees

😊 Employment Status

CPC gets new employees through “new employee examination for MOEA owned company”, with educational qualification of junior college degree and over. Contract employees need to have high school degree or over, and thus all the employees are over 18 years old. For the part time workers, according to “Management guidelines for part time workers in gas station, Marketing Business Division, CPC”, the limitation of age is over 16 years old, so CPC never hires child labor. In order to provide more job opportunity to underprivileged groups, we have special bonus points for handicapped and aboriginal persons when participating in new employee examination.

After hiring, CPC provides equal salary for equal jobs, and never has other consideration for criteria like race, believe, religion, political party, originated place, birth place, gender, sexuality, marriage, face, handicapped or union membership. We also ensure freedom of association for the employees, and encourage them to join clubs and cooperate with other companies that follow the same principles, and that is why there is no gender or race discrimination case against CPC. During 2013, there is no human right violation or discrimination case for newly hired employees and company operation is not impacted by human rights.

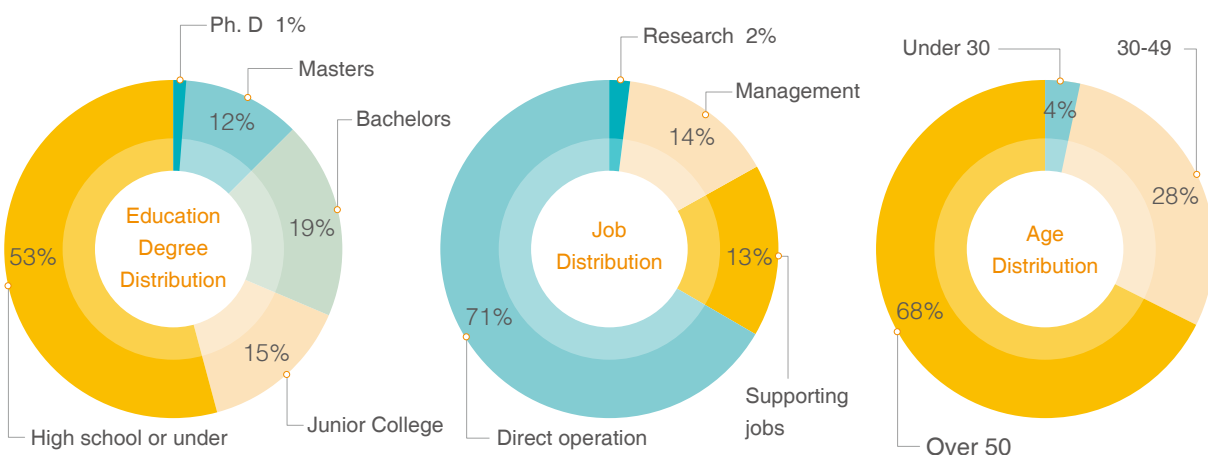
😊 283 Newly Hired Employees in 2013



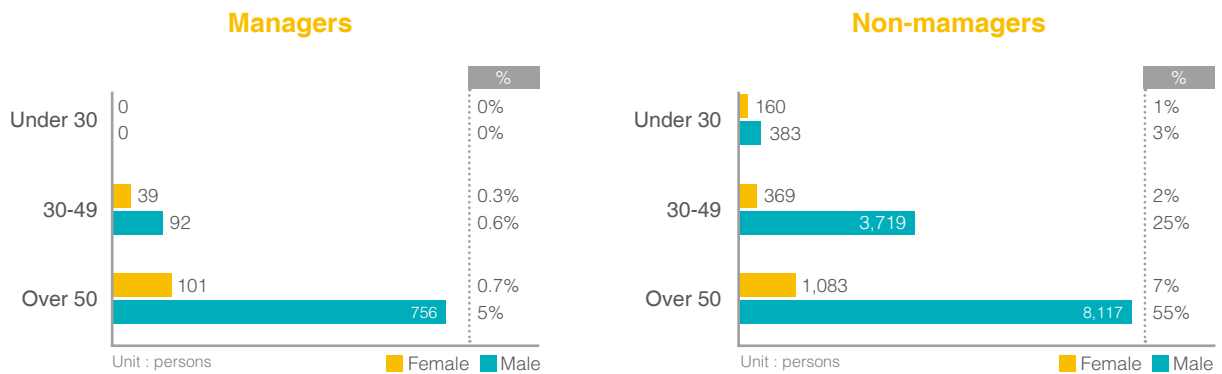
😊 Employee Right-sizing Program

Lately, we've been working on reorganization and re-engineering, establishing annual ratio of job rotation for managers and employees to enhance manager development training and enforce successor job training. Also, we actively push for right-sizing program and since 1994, 5,555 persons were cut down with yearly cut down rate of 1.1%. In 2013, newly hired workers are 1.91% of all employees.

At the end of 2013, CPC has 14,819 employees, of which, number of males are 13,067(88.18%) and number of females are 1,752 (11.82%). All of them hired from Taiwan area with average age of 51.2 years old and average seniority of 26.0 years.



😊 Gender and Age Distribution for Managers and Non-managers



3.4.3 Human Resources Training and Development

Lately, we integrated the training system and established "CPC Enterprise University". We analyzed and developed core technology course and divided our professional training into 4 departments of refining and petrochemical, exploration and production, marketing and sales and engineering. Each department would plan for different level of courses such as introductory, middle level and advanced. To respond to lecturers' retirement, we also introduced digital learning for all the core technology courses, built up digitized educational materials for "CPC e-college", and activated cloud learning to continue and develop professional knowledge and technology for petroleum industry.

😊 Training Based on Job Requirement

According to "Operating Guidelines of Employees Training and Promotion", CPC established management capability training, professional training and safety and health training certification for job requirement based on different job grades and professions. To implement the spirit of "training for the job requirement", we adopt multiple ways such as, class room teaching, on- job instructions, job rotation, overseas education and online learning, to build up job knowledge and experience.

CPC already sets up management function framework for all grades of jobs, and has the on-job training as part requirement of promotion besides knowledge and skills. We'd like to emphasize on the suitability of employees' working attitude.

In the mid and end of every year, CPC would evaluate all employees for their performance and regularly track the achievement with proper rewards or punishments. CPC is also working on research and investigation on professional skills needed for core specialties and using it as the reference for internal promotion and interview questions. We want to be able to pick the persons with proper working attitude and ideas to join us. We also encourage employees to take part in national skill tests and certifications, and help them to get the work safety and environmental protection certifications. We also encourage employees to have additive studies and learn all lifelong, including training for second professional skills, on-job education, foreign language learning, and job transferring training.

To follow the trend of emphasizing social responsibility as an international enterprise, CPC held human rights related classes like industrial safety, gender equality and personal information protection in 2013. The total training hours are 128,001 hours with 25,310 person-times. For CPC employees, no matter male or female are all entitled equal opportunity of training. In 2013, the average training hours for male is 41 hours and for female is 42 hours.

😊 CPC E-college

In 2002, CPC established "CPC E-college" in company intranet to improve employees' professionalism and their work skills and to combine information technology and learning application in developing diversified E-learning resources. CPC E-college is a virtual college, emphasizing on innovation sharing, deepen knowledge and E-learning service. It was incorporated into CPC Enterprise College in 2005. 50% of courses are self-developed or jointly developed core knowledge courses, and issues monthly E-publication.

Average Training Hours for Each Person Per Year			
Year	2011	2012	2013
Manager	34	32	31
All Employees	43	45	41

CPC E-college			
Year	2011	2012	2013
Max. # of People On Line	43,703	57,501	46,734
Average Reading Courses	14,900	25,221	15,489

Unit : person / month

Employee Education and Training								
Year	Manager Training		Professional Training		Second Professional Skill Training		Other Training	
	# of class	person-time	# of class	person-time	# of class	person-time	# of class	person-time
2011	55	2,481	2,094	52,800	406	12,893	547	27,077
2012	79	2,531	2,324	56,064	264	12,511	525	27,551
2013	218	4,781	2,469	72,293	209	10,098	443	24,181

😊 Medium- and Long-Term Talent Development Plan

To increase the overall competitiveness, CPC will keep going on core technical profession development plan to adapt the human resource demand for improvement of refinery structure, relocation of Kaohsiung Refiner and updating of Linyuan #3 Naphtha Cracking plant. We will keep enhancing the breadth and depth of the professional capability of the existing employees. Besides internal training and stockpiling of talents, we are planning to add staff within the allowed personnel quota.



😊 Anti-corruption Training

All the employees have received anti-corruption policy and procedure training and we also conduct the incorrupt government advocacy every year. In 2013, CPC held 47 incorrupt government oath assembly and promotion activities with 4,611 person-times.

😊 Security Guards Training

All entry access control and security in our factories, plants, and the office buildings are taken care of by our own security guards and contracted security company. According to company regulations, the security guards need to take at least 4 hours of security personnel training and all need to get trained for being professional security guards as well as first-aid personnel. Besides that, central control office operators need to get high-rise building disaster prevention training. Contracted security companies would hold self-training and be also required to hold basic training, including basic security rules, firefighting, traffic flow control and self-defense, and advanced training, like etiquette, system operation, equipment usage, patrolling, and inspecting.

3.4.4 Employees' Rights and Benefits

Welfare Facilities and Diversified Activities

According to "Employee Welfare Fund Act", we work with Taiwan Petroleum Workers Union to establish Employee Welfare Committee for different kind of employee welfare and leisure activities.

All business units have facility for employee benefit, such as, clinics, restaurants, libraries and convenience stores and all kinds of exercising facilities like swimming pools, multifunction stadiums and gyms. Also, there are educational scholarships for children, university educational loans for children, medical subsidies for employee and family, subsidies for marriages, funeral and retirement as well as interest-free loans for emergency. To take care of young employees and carry out gender equality, we revised the rules for employee loaning, and added borrowing measures for marriage and birth. Also, according to the resolution from 7th labor-management meeting, if regional departments cannot afford to setup kindergartens, nearby evaluated and accredited kindergartens or preschools can be signed as special discounted ones for employees. CPC also helps to set up clubs for ball games, chess and bridge, mountain climbing, swimming, painting, and movie watching to enlighten employees' life and enhance working moral.



Employee Grievance Handling Channels

CPC sets up "employee grievance handling committee" to be in charge of dealing with employee grievance cases. The president would assign one of four VPs as the convener, and appointed one executive secretary, one to two officers to take care of helping, communicating, coordinating and dealing with grievance cases. It has 7~9 committee members including VP, related division or department head, union president and representatives with two years tenure. The committee members were nominated by the convener and report to the president for approval.

3.4.5 Employee Discipline

For those departments evaluated with high risk because of the business nature, we carry out personnel rotation and follow internal auditing system to actively check for any illegal activity to prevent it from happening.

Anti-corruption and Anti-bribery

CPC has established ethnic department in charge of anti-corruption. It regularly checks and analyzes the risk of corruption and uses it for risk management procedures. For the risk evaluation, we have 9 units listed 15 “corruption risky events”, of which there is no event for high risk, 6 (40%) events for medium risk and 9 (60%) events for low risk.

CPC Anti-corruption, Anti-bribery Measures

Anti-corruption

CPC adhere to “anti-bribery, eliminate bribery and then anti-bribery again” as the main axis of anti-corruption theme. With “cost saving”, “increase revenue”, “reduce employee criminal cases” and “enhance bribery elimination achievement” being the four KPIs (Key Performance Index), we would push on the effectiveness of anti-corruption.

Anti-bribery

To enhance the honest awareness for the management and elevate the ethical and legal ideas to employees, CPC held 47 times of incorrupt government oath assembly and promotion activities with 4,611 person-times, which is 30.7% of all employees.



3.5 Create a Harmonious Society

As the leading enterprise of petrochemical industry in Taiwan, CPC has always taken the responsibility in developing essential industry and economic development of Taiwan, and also has been contributing to the supplying of high quality living resources for food, clothing, housing and transportation. Besides that, CPC has been working alongside with government policy to stabilize consumer price and take care of underprivileged groups. Taking domestic oil supply as our highest priority, CPC subsidizes gas for public transportation and taxi drivers and fishing boat fuel and set up gas stations in Ali Mountain and offshore islands. In addition to those silent and quiet actions above, CPC works tirelessly on “community caring”, “looking after underprivileged groups”, “public welfare activity” and “energy education and promotion” to build a harmonious society.



3.5.1 Society Caring

2013 CPC Social Caring Events

Build a Platform of Delivering Love to Fulfill the Dreams Of the Underprivileged Groups



Long-Term Blood Donation: Passion of Million cc



Green Dragon Creativity Summer Camp

CPC holds summer camps annually. Teaching through fun activity, the Green Dragon summer camp in 2013 was held 98 times from July 15 to Aug. 22, with 3 thousand students from 31 elementary schools participated.



2014 CPC Artistic Calendar Launching Ceremony



High Quality Public Toilets and Accessible Environment in CPC Gas Stations

High quality public toilets in CPC gas stations have been evaluated as the best or excellent cleanly public toilets by environmental agencies. Considering the needs for physically challenged people, we built the accessibility facility, like ramp, entrance/exit, and anti-slippery floor.



Clean-up Activities of Beach and Mountain



Donate used Computer



Tree Planting for Our Cherished Homes



Keep Sponsoring Jin-tan Elementary School Baseball Team



Hire the Handicapped Workers in CPC Gas Stations



Winter Pass-warmth Activity

Provide 750 relief foods to low income residents in Daliao District.

Assist to Sell Agriculture Products

In Apr. 2013, CPC signed the MOU of "agriculture products cooperative selling" with Agriculture and Food Agency to support local farmers.



CPC Health and Public Interest Seminars

CPC and Management Institute in Taipei jointly held "the health and public interest seminar during Mar. 28 and Jul. 2 in 2013.

Energy Education and Promotion

CPC held "soliciting fuel-efficient tips and seeking fuel-efficient experts" internet essay soliciting campaign in 2013, and top 3 and 20 winners were chosen. Else, we also held "oil painting Taiwan and love the Earth" internet quiz activity.



😊 Friendly Relationship with the Community

For years, we have been continuously and actively worked on feeding back to the residents, helping local development, sponsoring culture and education activities, providing emergency assistance, greening the community, providing jobs to local residents, encouraging subcontractors to hiring locals, and inviting residents join social activities.

😊 Unconditionally Benefiting Yong-an Fish Farmers

The most economical method of converting LNG back into gaseous state from -162 of liquid state is to use seawater with LNG in proceeding heat exchange effect. The seawater after proceeding heat exchange is cooler than usual seawater, and thus named "cooled water".

The cooled water recycled from CPC Yong-an LNG terminal was unconditionally provided to local high-value fish farms and thus saved operating cost of fish farmers. As precious as diamond, the farmers named the cooled water as the "diamond water" to be grateful of the good-neighborly action by CPC. Because of the value in saving energy and reducing carbon emission, the recycled CPC diamond water assists local industry development and drives local prosperity. CPC diamond water builds a newly successful example that a company operation activity can drives the local development and prosperity, and establishes a successful exemplar of good-neighborly actions.

3.5.2 Lively and Happy Homeland

For new investment plan, describe clearly the purpose, the content and the impact to the environment, which include physical and chemical ones (weather and air quality, noise and vibration, hydrology and water quality, soil, waste, landform and geology), eco-environment (terrestrial and aquatic), social economy environment (population and jobs, land utilization and local development), transportation, cultural environment, and other public concerned issues. CPC predicts the above possible impacts to the entire environment and seek for policy and management plan to reduce or avoid the impacts and promise to the locals with a lively, clean and happy homeland.

Adapted Strategies to Reduce the Local Community Impact

Adapted Strategies to Reduce the Local Community Impact	
Strategy	Description
Follow government regulation	Do a better job on industry safety, hygiene, pollution prevention for refinery operation. Follow government regulations on environmental protection for effluent, air pollution, noise, waste management and reduce the impact to the local residents.
Training and drill for emergency response	Follow the order of "training and drill, accident, informing, checking and making judgment, handling, evacuating" and regularly practice. If there is a fire, oil or gas leakage, explosion, work place accident, besides informing related units for support, local community need to be altered for risk prevention and then check and make judgment on the severity and handling procedure. If necessary, execute community evacuation, broaden the precaution area and evacuate unnecessary personnel.
Environmental impact assessment	For the new refinery investment plan, investigation, evaluation and explanation for the local area impact is absolutely needed. It needs to be checked and authorized by experts and the government officials in charge and explain the impact in local town meeting and respond to resident concerns.
Public sentiment communication and interaction	Regularly hold neighborhood relation building meeting and invite local resident to tour the facility and let them understand the safety and environmental protection measures that have been taken. Listen to the opinions and suggestions from the public and take it as a reference for improvement.
Feedback community plan	Sponsor education, sports and art and cultural events, set up scholarships, emergency assistance measures, assist low income family, elders and physically challenged, provide medication assistance, work on environmental improvement construction (cleaning, greening, beautification), care for the community development and other charity events or activities.
Building communication platform	Through regular visit, subsidy and participation of local events to build communication platform with local residents.

Decommission of Mining Fields and Kaohsiung Refinery

Mining field decommission means that a mining field, which is assessed no more operational value for exploration and production, will stop operating and return the authority to the government. In the past 5 years and future 3 years, there is no mining field decommission plan for CPC. Since Naphtha Cracker #5 begins building in 1991, Kaohsiung Refinery has been implementing on a 25-year relocation plan and promised to complete the relocation by 2015. CPC has been working diligently and pragmatically on the relocation plan including refining production adjustment, handling the existing facility, redevelopment of the Kaohsiung Refinery land.

Three-stage Schedule of Kaohsiung Refinery Relocation

Phase One		
Date Order	1991/1~1995/12	Situation
1	hydrodesulfurization # 1	demolished
2	Catalytic reforming #2	demolished
3	naphtha cracking #1	demolished
4	hydrodealkylation	demolished
5	vacuum distillation #2	demolished
6	sulfur #2	demolished
7	cyclohexane	demolished
Total	7 Plants	

Phase Two		
Date Order	1996/1~2005/12	Situation
1	alkylation #2	demolished
2	naphtha cracker #2	demolished
3	butadiene extraction #1	demolished
4	aromatic extraction #2	demolished
5	distillation #5	stopped production
6	hydrocracking	demolishing
7	vacuum distillation #1	demolished
8	Catalytic reforming #3	Stopped production
9	hydrodesulfurization #4	Stopped production
10	aromatic preparation	demolished
11	hydrogen purification #3	relocated
Total	11 Plants	

Phase Three		
Date Order	2006/1~2015/12	Situation
1	CSLC #1	2013/4/23 stopped production partially
2	CSLC #2	
3	naphtha processing	2003/3/19 stopped production
4	distillation #7	2010/9/2 stopped production
5	Petroleum coke	2010/9/1 stopped production
6	Zuoying isopentane purification	2001/7/6 stopped production
7	Coke gas oil (#3) hydrodesulfurization	2010/9/1 stopped production
8	naphtha blending	
9	distillation #6	2013/5/25 stopped production
10	Zhoying hydrogen	
11	vacuum distillation #3	2010/9/1 stopped production
12	vacuum distillation #4	2010/9/1 stopped production
13	vacuum distillation #5	
14	catalytic cracking	2010/9/1 stopped production
15	distillation #8	
16	vacuum gas oil #1	2011/8/9 stopped production
17	sulfur #4	2011/12/13 stopped production
18	vacuum gas oil #2	2013/5/28 stopped production
19	residue gasification	
20	sulfur #5	
21	hydrodesulfurization #7	
22	low sulfur fuel oil #2	
23	hydrodesulfurization #8	2011/9/1 stopped production
24	butandiene extraction #4	
25	aromatic extraction #5	
26	naphtha cracking #5	
27	Zhoying Tert-Amyl Methyl Ether (TAME)	2006/7/18 stopped production
28	Zhoying isopentane isomerization	2013/5/19 stopped production
Total	28 Plants	

2013 Public Protests and Demonstrations

To all the protests and demonstrations regarding to our operation and management, CPC would heartedly work on investigation, inspection and improvement, and actively communicate with the locals to prevent any similar incidents from happening. In 2013, there are 39 occasions that needed coordination and communication.

3.5.3 Social Care Spending

CPC has been striving for environmental protection and caring for underprivileged groups. Participating social welfare, sponsoring young and potential athletes and local cultural activities, helping neighborhood area development, working on eco-preservation, pushing for tree planting, and greening, caring the culture of the local area, broadening the environmental education are all the efforts of CPC in promoting local development and prosperity.

For all the charity, neighborhood relation building up, and sponsoring for private organization and persons, CPC established special committee to strictly check and audit all of the process. For the content of the activity and the write offs, we also have the proper checking and auditing procedures.

Money Spent on Society Caring			
Unit : NT\$			
Item	2011	2012	2013
Education and culture	24,960,221	24,365,310	49,137,472
Scholarship	1,889,000	2,202,997	1,697,466
Emergency assistance	4,151,100	4,961,000	2,954,000
Helping low income family	5,976,799	7,161,753	3,494,214
Welfare facility for elders and physically challenged	15,502,969	40,979,484	44,210,593
Other charity activity or local construction	563,065,482	419,751,198	365,438,860
Total	615,545,571	499,421,742	466,932,605

3.5.4 Participation of Associations and Organizations

All CPC divisions and departments actively join business related associations or organizations in domestic or international, such as Taiwan Petroleum Worker Union (TPWU), John Tung Foundation, World Vision Taiwan, Women's Federation for World Peace-Taiwan R.O.C., Sino-Arabian Culture & Economic Association, Sino-Indonesia Cultural and Economic Association, Chinese Alternative Energy Association, Social Enterprise Innovation and Entrepreneurship Association-Taiwan, Chou, Ta-Kuan Foundation, Chinese Petroleum Institute, WBCSD, BCSD-Taiwan, Association of Industry for Environmental Protection R.O.C., Chinese Association for Energy Economics (CAEE) R.O.C., Taiwan Responsible Care Association, Taiwan Association of Marine Pollution Control, Taiwan Climate Change and Sustainable Energy Association and other over one hundred associations and clubs.



2013 Awards and Honors

Getting rewards on competition is the way to check our efforts and the motivation for us to work even harder.

Category	Description
Social Responsibility	CPC CSR 2013 got the best in manufacturing industry award from "Taiwan Top 50 CSR awards" by Taiwan CSR Rewards, Taiwan Institute for Sustainable Energy (TAISE) and the "Sustainable Innovation", "Innovative Communication", and "Social Harmony" awards.
	Joined "The house filled with happy – goods bank" activity of New Taipei City government to benefit underprivileged people.
	Donated to school rebuilding project for Longhua Elementary School, Sinyi Village, Nantou County, helping the local students.
	439 gas stations got the recognition of the best or excellent awards from local environmental agencies or won the public toilet contest.
Service Contribution	"Top Service Awards" in gas stations and service industry for the 8 th consecutive time, Next Magazine.
	"Reader's Digest Trusted Brand Platinum Award" for the 13 th consecutive time (gas station category).
	"2013 Outstanding Utilities Award", Chinese Institute of Engineers.
	"2013 Cargo Owner and Port Operation Contribution Award", Taiwan International Ports Corporation, Ltd.
	"Top 5000", "1 st place revenue in state-owned enterprises", "1 st place in state-owned enterprises", and "1 st place in enterprise owning gas stations", 2013, China Credit Information Service, Ltd.
	1 st place in gas station of "2014 Consumers Ideal Best Survey", Management Magazine.
Occupational Safety and Health	<p>Won the following awards in 2013, from the best workplace safety unit and person, 2012, MOEA-owned enterprises :</p> <ol style="list-style-type: none"> 1st place in group A, the best labor safety and health unit, Taichung Operation Department, Marketing Business Division. 1st place in group B, the best labor safety and health unit, Taichung LNG processing Plant, Exploration & Production Business Division. 1st place in the best labor safety and health person, Program Manager Chen, Refining & Manufacturing Research Institute. 2nd place in the best labor safety and health person, Manager Oh, Taichung LNG Plant. 5th place in the best labor safety and health person, Unit leader Hsu, Kaohsiung Refinery.
Engineering Quality	<ol style="list-style-type: none"> MOEA's Excellent Quality in Public Engineering, 2013, "the tearing down and replacing pipes for existing gasifier, E-131A/B, Yong-an Plant". MOEA's Excellent Quality in Public Engineering, 2013, "New Plant Construction, #6 Naphtha Cracker".

GRI G3.1 Index

Extent of Reporting: ● Fully disclosed ● Partially disclosed ○ Not Disclosed Core Indicators are indicated with green background.

GRI Index		Related CSR Report Section	Page(s)	G4 / Notes
1	Strategy and Analysis			
1.1	Statement from the most senior decision-maker of the organization.	Our Ultimate Commitment	2	G4-1
1.2	Description of key impacts, risks, and opportunities.	1.3.5	22,23	G4-2
2	Organizational Profile			
2.1	Name of the organization.	1.1.2	6	G4-3
2.2	Primary brands, products, and/or services.	1.1.2	7	G4-4
2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	1.3.1	16, 17	G4-17
2.4	Location of organization's headquarters.	1.1.2	6	G4-5
2.5	Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.	1.1.3	9	G4-6
2.6	Nature of ownership and legal form.	1.1.2	6	G4-7
2.7	Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	1.1.3	9	G4-8
2.8	Scale of the reporting organization.	1.1.2, 1.1.3, 1.2.1	6, 9, 10	G4-9
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	1.1.2, 1.3.1	6, 16	G4-13 / No major changes
2.10	Awards received in the reporting period.	Appendix-Awards and Honors	88	
3	Report Parameters			
3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	Editing Principles	1	G4-28
3.2	Date of most recent previous report (if any).	Editing Principles	1	G4-29
3.3	Reporting cycle (annual, biennial, etc.)	Editing Principles	1	G4-30
3.4	Contact point for questions regarding the report or its contents.	Editing Principles	1	G4-31
3.5	Process for defining report content including: Determining materiality; Prioritizing topics within the report; and Identifying stakeholders the organization expects to use the report.	1.4.2	27	G4-18
3.6	Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance.	Editing Principles	1	G4-20, G4-21
3.7	State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope).	Editing Principles	1	G4-20, G4-21
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	Editing Principles	1	G4-20, G4-21/ No effect
3.9	Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report. Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols.	Editing Principles	1	
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g., mergers/acquisitions, change of base years/periods, nature of business, measurement methods).	GRI/G3.1index	89	G4-22/ 2013 impact of no such circumstances described in
3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	Editing Principles	1	G4-23/ Not significantly different
3.12	Table identifying the location of the Standard Disclosures in the report.	Editing Principles GRI/G3.1 index	1, 89	G4-32
3.13	Policy and current practice with regard to seeking external assurance for the report.	Editing Principles Appendix-Report Assurance	1, 93	G4-33
4	Governance, Commitments, and Engagement			
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight.	1.3.1	17, 18	G4-34, G4-38
4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	1.3.1	17	G4-39
4.3	For organizations that have a unitary board structure, state the number of members of the highest governance body that are independent and/ or non-executive members.	1.3.1	17	G4-38
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	1.3.1, 1.3.4, 1.4.1, 3.4.1, 3.4.2	17, 21, 25, 27, 82	G4-37, G4-49, G4-53
4.5	Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performance (including social and environmental performance).	1.3.1, 1.3.2	17, 19	G4-51
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	1.3.1, 1.3.2	16, 19	G4-41
4.7	Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity.	1.3.1	16	G4-40
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation.	1.1.1, 1.3.2	5, 19	G4-56
4.9	Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles.	1.3.1, 1.3.5, 1.3.6	17, 22, 23	G4-45, G4-47
4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance.	1.3.1	17	G4-44
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	1.3.5	22	G4-14
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	1.3.3	19	G4-15
4.13	Memberships in associations (such as industry associations) and/ or national/international advocacy organizations in which the organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding beyond routine membership dues; or * Views membership as strategic.	1.3.3, 3.5.4	19, 87	G4-16
4.14	List of stakeholder groups engaged by the organization.	1.4	24	G4-24
4.15	Basis for identification and selection of stakeholders with whom to engage.	1.4	24	G4-25
4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group.	1.4.1	25	G4-26
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	1.4.1, 1.4.2	25, 26, 27	G4-27

GRI Index		Extent of Reporting	Related CSR Report Section	Page(s)	G4 / Notes
5	Management Approach and Performance Indicators				
Economic					
DMA	Disclosures on Management Approach	●	1.3	16	
EC1	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	●	1.2.1, 3.4.1, 3.5.3	10, 77, 87	G4-EC1
EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change.	●	2.2.1	35	G4-EC2
EC3	Coverage of the organization's defined benefit plan obligations.	●	3.4.4	82	G4- EC3
EC4	Significant financial assistance received from government.	●	1.1.2, 1.2.1	6, 10	G4- EC4
EC5	Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation.	●	3.4.1	77	G4-EC5
EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation.	●	3.2.1	68	G4-EC9
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation.	●	3.4.1	77	G4-EC6
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement.	●	3.5.2	86	G4-EC7
EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts.	●	1.2.1, 1.3.5, 1.3.7	10, 22, 23	G4-EC8
Environmental					
DMA	Disclosures on Management Approach	●	2.1	31	
EN1	Materials used by weight or volume.	●	1.2.2	11	G4- EN1
EN2	Percentage of materials used that are recycled input materials.	●	2.4	53	G4- EN2
EN3	Direct energy consumption by primary energy source.	●	2.2.2	36	G4- EN3
EN4	Indirect energy consumption by primary source.	●	2.2.2	36	G4- EN3
EN5	Energy saved due to conservation and efficiency improvements.	●	2.2.1, 2.2.2	35, 36	G4- EN6
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.	●	2.2.1, 2.2.2, 2.3.1, 2.4, 2.5	35, 36, 48, 53, 54	G4- EN7
EN7	Initiatives to reduce indirect energy consumption and reductions achieved.	●	2.2.2, 2.3.1	36, 53	G4- EN6
EN8	Total water withdrawal by source.	●	2.2.5	40	G4- EN8
EN9	Water sources significantly affected by withdrawal of water.	●	2.2.5	40	G4- EN9
EN10	Percentage and total volume of water recycled and reused.	●	2.2.6	41	G4- EN10
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.	●	2.2.9	46	G4- EN11
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.	●	2.2.9	46	G4- EN12
EN13	Habitats protected or restored.	●	Not eligible for our company	92	G4- EN13/ Please refer to "why CPC is not eligible" section for details.
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity.	●	2.2.9	46	All indicators moved guidelines
EN15	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.	●	Not eligible for our company	92	G4- EN14/ Please refer to "why CPC is not eligible" section for details.
EN16	Total direct and indirect greenhouse gas emissions by weight.	●	2.2.3	37	G4- EN15, G4-EN16
EN17	Other relevant indirect greenhouse gas emissions by weight.	●	2.2.3	37	G4- EN17
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved.	●	2.2.1, 2.2.2, 2.2.3	35-38	G4- EN19
EN19	Emissions of ozone-depleting substances by weight.	●	2.2.8	45	G4- EN20
EN20	NOx, SOx, and other significant air emissions by type and weight.	●	2.2.4	38	G4- EN21
EN21	Total water discharge by quality and destination.	●	2.2.6	41, 42	G4- EN22
EN22	Total weight of waste by type and disposal method.	●	2.2.7	44	G4- EN23
EN23	Total number and volume of significant spills.	●	3.5.2	86	G4- EN24
EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.	●	Not eligible for our company	92	G4- EN25/ Please refer to "why CPC is not eligible" section for details.
EN25	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff.	●	2.2.6, 2.2.9	41, 46	G4- EN26
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.	●	2.4, 2.5, 3.1	53, 54, 65	G4- EN27
EN27	Percentage of products sold and their packaging materials that are reclaimed by category.	●	GRI/G3.1index	89	G4- EN28/ According to regulations, we recycled 100% of our products with packaging materials.
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.	●	2.1	31	G4- EN29
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce.	●	2.2.1	35	G4- EN30
EN30	Total environmental protection expenditures and investments by type.	●	2.1.2	33	G4- EN31
Social: Labor Practices and Decent Work					
DMA	Disclosures on Management Approach	●	3.3.1	70	
LA1	Total workforce by employment type, employment contract, and region broken down by gender.	●	3.4.1, 3.4.2	77, 79	G4-10
LA2	Total number and rate of new employee hires and employee turnover by age group, gender, and region.	●	3.4.1, 3.4.2	77, 79	G4-LA1
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation.	●	3.4.4	82	G4-LA2
LA4	Percentage of employees covered by collective bargaining agreements.	●	3.4.2	79	G4-11
LA5	Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements.	●	3.4.1	77	G4-LA4
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs.	●	3.3.2	70	G4-LA5
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender.	●	3.3.4	74	G4-LA6
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.	●	3.3.5	75	G4-LA7

GRI Index		Extent of Reporting	Related CSR Report Section	Page(s)	G4 / Notes
LA9	Health and safety topics covered in formal agreements with trade unions.	●	3.3.2	70	G4-LA8
LA10	Average hours of training per year per employee by gender and by employee category.	●	3.4.3	80	G4-LA9
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	●	3.4.3	80	G4-LA10
LA12	Percentage of employees receiving regular performance and career development reviews by gender.	●	3.4.3	80	G4-LA11
LA13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.	●	3.4.2	79	G4-LA12
LA14	Ratio of basic salary of women to men by employee category, by significant locations of operation.	○	3.4.1	77	G4-LA13
LA15	Return to work and retention rates after parental leave, by gender.	●	3.4.1	77	G4-LA3
Social: Human Rights					
DMA	Disclosures on Management Approach	●	3.4.1	77	
HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns or that have undergone human rights screening.	●	3.2.2, 3.2.3	68, 69	G4-HR1
HR2	Percentage of significant suppliers, contractors and other business partners that have undergone screening on human rights and actions taken.	○	3.2.2, 3.2.4	68, 69	G4-HR10
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	●	3.4.3	80	G4-HR2
HR4	Total number of incidents of discrimination and corrective actions taken.	●	3.4.1	77	G4-HR3
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights.	●	3.4.2	79	G4-HR4
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor.	●	3.2.2, 3.4.2	68, 79	G4-HR5
HR7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor.	●	3.2.2, 3.4.1	68, 77	G4-HR6
HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations.	●	3.4.3	80	G4-HR7
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken.	●	3.4.2	79	G4-HR8
HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments.	●	3.4.2	79	G4-HR9
HR11	Number of grievances related to human rights filed, addressed, and resolved through formal grievance mechanisms.	●	3.4.2	79	G4-HR12
Social: Society					
DMA	Disclosures on Management Approach	●	3.5	83	
SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs.	●	3.5.3	87	G4-SO1
SO2	Percentage and total number of business units analyzed for risks related to corruption.	●	3.4.5	82	G4-SO3
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures.	●	3.4.3	80	G4-SO4
SO4	Actions taken in response to incidents of corruption.	●	3.4.5	82	G4-SO5
SO5	Public policy positions and participation in public policy development and lobbying.	●	3.5.3	87	All indicators moved guidelines
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country.	●	3.5.3	87	G4-SO6
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes.	●	GRI/G3.1index	89	G4-SO7/ Our gasoline price is decided by governmental authority.
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations.	●	3.3.4	74	G4-SO8
SO9	Operations with significant potential or actual negative impacts on local communities.	●	2.2.10	47	G4-SO2
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities.	●	2.2.10	47	All indicators moved guidelines
Social: Product Responsibility					
DMA	Disclosures on Management Approach	●	3.1.1	65	
PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	●	2.4	53	G4-PR1
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes.	●	3.1.1	65	G4-PR2
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements.	●	3.1.1	65	G4-PR3
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes.	●	3.1.1	65	G4-PR4
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.	●	3.1.3	68	G4-PR5
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship.	●	3.1.1	65	G4-PR6
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.	●	3.1.1	65	G4-PR7
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data.	●	3.1.3	68	G4-PR8
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.	●	3.1.1	65	G4-PR9
Oil and Gas Sector Supplement					
OG1	Volume and type of estimated proved reserves and production.	●	1.2.2	11	
OG2	Total amount invested in renewable energy.	●	2.5.2	55	
OG3	Total amount of renewable energy generated by source.	●	2.5	54	
OG4	Number and percentage of significant operating sites in which biodiversity risk has been assessed and monitored.	●	2.2.9	46	
OG5	Volume and disposal of formation or produced water.	●	2.2.6	41	
OG6	Volume of flared and vented hydrocarbon.	●	2.2.4	38	
OG7	Amount of drilling waste (drill mud and cuttings) and strategies for treatment and disposal.	●	2.2.7	44	
OG8	Benzene, lead and sulfur content in fuels.	●	2.2.4	38	
OG9	Operations where indigenous communities are present or affected by activities and where specific engagement strategies are in place.	●	GRI/G3.1 index	89	There are no aboriginal tribes or establishment or settlement, so the percentage of indigenous people is low.

	GRI Index	Extent of Reporting	Related CSR Report Section	Page(s)	G4 / Notes
OG10	Number and description of significant disputes with local communities and indigenous peoples.	●	3.5.2	86	
OG11	Number of sites that have been decommissioned and sites that are in the process of being decommissioned.	●	3.5.2	86	
OG12	Operations where involuntary resettlement took place, the number of households resettled in each and how their livelihoods were affected in the process.	●	GRI/G3.1 index	89	None in 2013.
OG13	Number of process safety events, by business activity.	●	3.3.4	74	
OG14	Volume of biofuels produced and purchased meeting sustainability criteria.	●	2.5.3	56	

Why CPC is not eligible for GRI Index

EN13	The operating site is not part of natural ecological conservation area, so there is no national conservation list species.
EN15	
EN24	We have no hazardous wastes under the definition by Basel Convention. All wastes are dealt by legitimate domestic companies, and after tracking, there is no waste transporting abroad.

Appendix ISO 26000 Index (disclosed in CSR soft copy and company website)

Core Subjects and Issues		Related CSR Report Section	Page(s)	Explanatory Notes
Organizational governance	Decision-making processes and structures	1.3	16	
Human rights	Due diligence	3.4	77	
	Human rights risk situations	3.4.1	77	
	Avoidance of complicity	3.2	68	
	Resolving grievances	3.4.1	77	
	Discrimination and vulnerable groups	3.4.2	79	Conform with Labor Standards Law
	Civil and political rights	3.4.1	77	
	Economic, social and cultural rights	3.5	83	
	Fundamental principles and rights at work	3.4.1	77	
Labor practices	Employment and employment relationships	3.4	77	
	Conditions of work and social protection	3.3	70	
	Social dialogue	1.4	24	
	Health and safety at work	3.3	70	
	Human development and training in the workplace	3.4.3	80	
The environment	Prevention of pollution	2.2	35	
	Sustainable resource use	2.3.1, 2.4, 2.5	48, 53, 54	
	Climate change mitigation and adaptation	2.2.1	35	
	Protection of the environment, biodiversity and restoration of natural habitats	2.2.9	46	
Fair operating practices	Anti-corruption	3.4.5	82	
	Responsible political involvement	-	-	Being neutral and objective, we don't participate in any lobbying activity
	Fair competition	3.1	65	
	Promoting social responsibility in the value chain	3.2	68	
	Respect for property rights	1.2.3	13	
Consumer issues	Fair marketing, factual and unbiased information and fair contractual practices	3.1.1	65	
	Protecting consumers' Health and safety	3.1.1	65	
	Sustainable consumption	3.1	65	
	Consumer service, support, and complaint and dispute resolution	3.1	65	
	Consumer data protection and privacy	3.1.3	68	
	Access to essential services	1.1.2	5	
	Education and awareness	3.1.1	65	
Community involvement and development	Community involvement	3.5.1	84	
	Education and culture	3.5.1	84	
	Employment creation and skills development	3.4.1, 3.4.2	77, 79	
	Technology development and access	1.2.3, Special Edition2	13, 62	
	Wealth and income creation	1.2.1, 3.4.1	10, 77	
	Health	3.3.5	75	
	Social investment	1.2.1, 1.2.4	10, 15	

Appendix United Nation Global Compact Comparison Table

(disclosed in CSR soft copy and company website)

Category	10 Principles	Related CSR Report Section	Page(s)	Explanatory Notes
Human Rights	Businesses should support and respect the protection of internationally proclaimed human rights.	3.4.1	77	
	Make sure that they are not complicit in human rights abuses.	3.2, 3.4.1	68, 77	
Labor	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	3.4.1	77	
	The elimination of all forms of forced and compulsory labor.	3.2, 3.4.1, 3.4.2	68, 77, 79	CPC never hires child labor.
	The effective abolition of child labor.			
	The elimination of discrimination in respect of employment and occupation.			
Environment	Businesses should support a precautionary approach to environmental challenges.	2.1-2.4	31-54	
	Undertake initiatives to promote greater environmental responsibility.			
	Encourage the development and diffusion of environmentally friendly technologies.	2.5	54	
Anti-Corruption	Businesses should work against corruption in all its forms, including extortion and bribery.	3.4.5	82	

Assurance Statement

INDEPENDENT ASSURANCE OPINION STATEMENT

2014 CPC Corporation Sustainability Report

The British Standards Institution is independent to CPC Corporation, Taiwan (hereafter referred to as CPC in this statement) and has no financial interest in the operation of CPC other than for the assessment and assurance of this report.

This independent assurance opinion statement has been prepared for CPC only for the purposes of assuring its statements relating to its sustainability report, more particularly described in the scope, below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by CPC. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to CPC only.

Scope

The scope of engagement agreed upon with CPC includes the followings:

1. The assurance covers the whole report and focuses on systems and activities during the 2013 calendar year on the CPC headquarter and relevant operations, environmental performance mainly collect from Taoyuan - Dalin - Kaoshiung Refinery and Linyuan Petrochemical.
2. The evaluation of the nature and extent of the CPC's adherence to all three AA1000 AccountAbility Principles in this report as conducted in accordance with type 1 of AA1000AS (2008) assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process.

This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the 2014 CPC Sustainability Report Review provides a fair view of the CPC CSR programmes and performances during 2013. We believe that the 2013 economic, social and environmental performance indicators are fairly represented. The CSR performance indicators disclosed in the report demonstrate CPC's efforts recognized by its stakeholders.

Our work was carried out by a team of CSR report assurers in accordance with the AA1000 Assurance Standard (2008). We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that CPC's description of their approach to AA1000 Assurance Standard and their self-declaration of compliance with the GRI guidelines were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- review of issues raised by external parties that could be relevant to CPC's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers and staffs on CPC's approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 20 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the company's reporting and management processes concerning this reporting against the principles of Inclusivity, materiality and responsiveness as described in the AA1000 AccountAbility Principles Standard (2008).

Conclusions

A detailed review against the AA1000 AccountAbility Principles of Inclusivity, Materiality and Responsiveness and the GRI G3.1 guidelines is set out below:

Inclusivity

This report has reflected a fact that CPC is seeking the engagement of its stakeholders continuously. The participation of stakeholders has been initiated in developing and achieving an accountable and strategic response to sustainability. The reporting systems are being developed to deliver the required information. There are fair reporting and disclosures for economic, social and environmental information in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the CPC's inclusivity issues; however, the future report should be further enhanced by the following areas:

- Considering to involving social contribution systematically combined with CPC's core strategy and vision in the long term.

Materiality

CPC publishes sustainability information that enables its stakeholders to make informed judgments about the company's management and performance. In our professional opinion the report covers the CPC's material issues; however, the future report should be further enhanced by the following areas:

- Clearly defining and documenting the thresholds and underlying criteria which determining material aspects.

Responsiveness

CPC has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for CPC is developed and provides the opportunity to further enhance CPC's responsiveness to stakeholder concerns. Issues that stakeholder concern about have been responded timely. In our professional opinion the report covers the CPC's responsiveness issues; however, the future report should be further enhanced by the following areas:

- Encouraging to work towards a type 2 of AA1000AS (2008) engagement with a view to providing the reliability of sustainability performance information that stakeholder concerns.

GRI-reporting

CPC provided us with their self declaration of compliance within GRI G3.1 Guidelines and the classification to align with application level A+. Based on our review, we confirm that social responsibility and sustainable development indicators with reference to the GRI Core Index are reported, partially reported or omitted. In our professional opinion the self declaration covers the CPC's social responsibility and sustainability issues; however, the future report could be further enhanced by the following areas:

- Along with the newly developed Standards, consider in applying the GRI G4.0 Framework for future reports to ensure material focus and reporting on performances which are relevant to CPC material issues.
- Attention to the supplier environment, labour practices, human rights assessment continuously to show CPC's performance at supplier chain management.

Assurance level

The moderate level assurance provided is in accordance with AA1000 Assurance Standard (2008) in our review, as defined by the scope and methodology described in this statement.

Responsibility

This CSR report is the responsibility of the CPC's CEO as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of Lead Auditors and Carbon Footprint Verifiers experienced in industrial sector, and trained in a range of sustainability, environmental and social standards including AA1000 AS, ISO14001, OHSAS18001, ISO14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.

For and on behalf of BSI:



Peter Pu
Managing Director BSI Taiwan
10 July, 2014

bsi.



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BSI Taiwan is a subsidiary of British Standards Institution.

For More Information

You are more than welcome to download the complete CSR in PDF format from CPC official website, <http://www.cpc.com.tw>
Please contact us if you have any question or suggestion for the CSR.

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