In 2012, CNPC continued to promote concepts underpinning a safe, environment-friendly and resource-saving development. Throughout the year, no major HSE incident was reported and the key environment indicators continued to improve.

We established a new HSE institutional framework and launched a comprehensive review of the HSE systems of 120 subsidiaries to check and improve the effectiveness of our HSE management mechanisms. We collected typical cases and effective practices of our subsidiaries, and compiled programs to train HSE managers and auditors.

As part of our ongoing efforts to improve social security management and HSE management in international operations, we learned from the industry’s best practices in risk monitoring and control and established a regular mechanism for emergency response. Despite social unrest and rising operational risks in some regions, we maintained a good track record in security and HSE performance.
Operational safety

In 2012, we set up a multi-level risk prevention mechanism based on different risk factors to strengthen control of safety and environmental risks from the very beginning. We launched a new round of hidden risk identification and correction initiative, focusing on oil and gas production, refining, storage, transportation and distribution, to foster a long-term and systematic mechanism in risk control. HAZOP was carried out to identify and evaluate potential hazards in 304 projects as well as 255 installations currently in operation. A series of risk management measures and tools, including work permits, safety analysis before operation, energy isolation and GPS-based vehicle navigation, were used to control risks in key areas such as contractors’ operations and road transportation.

Accident management was further strengthened and sharing of information and experiences was promoted to increase employees’ safety awareness. An investigation center was established to inquire into and analyze each accident in detail. Educational videos were made based on the results of investigations and shown to over 200,000 employees in 2012.

Aiming to enhance safety and environmental protection awareness among managers, technicians and operators, the Company issued disciplinary code, setting forth different types of disciplinary action and levels of responsibility covering 20 aspects including design and procurement. The disciplinary code is applicable to any employee who is responsible for a safety incident, fire or environmental accident.

Environmental Protection

In 2012, we implemented 74 emission reduction projects, including upgrading of wastewater treatment and desulfurization of flue gas generated from catalytic cracking units. Verifications were carried out to ensure the progress and effectiveness of emission projects at key affiliated companies. A real-time pollution source monitoring network was created, making it possible to report environmental data and respond to early warnings in a timely manner.

In addition, the existing Technical Requirements for Prevention and Control of Water Pollution during an Environmental Emergency were amended to raise the risk control level in sensitive regions and ensure wastewater was treated properly in case of an emergency.
Tree planting is an important way to increase forest cover, improve the natural environment and achieve environmental sustainability. In China, voluntary tree planting for afforestation and landscaping purposes started in the 1980s.

Over the years, CNPC has encouraged voluntary tree planting among employees at all levels. Member companies have developed their own tree planting programs, setting forth the requirements on types of trees, planting procedures, technical support and follow-up care.

In 2012, employees from Changqing Oilfield planted more than 600,000 trees and shrubs. Thirty-six tree planting programs were carried out at Liaohe Oilfield. Lanzhou Petrochemical has actively participated in tree planting in the hilly area of Lanzhou city for many years, creating two tree farms with a forest coverage rate of up to 88% and providing an ideal place for fitness and recreation activities.

Ningxia Petrochemical raised forest coverage to more than 50% at its Zhongwei carbon emission reduction base since the project was launched in 2008. CNPC’s environmental initiatives were highly recognized by the National Afforestation Committee. In March 2012, Daqing Oilfield and Lanzhou Petrochemical received the title of “Outstanding Homeland Afforestation Contribution Unit.”

**Occupational Health**

In 2012, adopting an integrated, prevention-oriented approach and in line with the newly amended Law of the People’s Republic of China on Prevention and Control of Occupational Diseases, CNPC improved its occupational health services, prevention and control measures against occupational health hazards, and workplace health surveillance efforts to ensure a continuous improvement in our ability to protect the safety and health of our employees. 93.5% of our employees received occupational health checks in 2012 and the workplace occupational hazard detection rate remained 92.8%.

Special investigations were conducted on workplace noise and dust, emphasizing the monitoring and protection at fields with relatively high sulfur content and refining enterprises with high toxic risk. We continued to deliver healthcare services to frontline workers, especially those working in remote locations and harsh climate conditions. A mental health management and training center was established to promote workplace mental health.

Health management in international operations remained at the top of our agenda. The Guide to Health Management for Overseas Projects was released, specifying the procedures and requirements for protecting occupational health, and the mental and physical health of our overseas employees. In 2012, in view of local climate and healthcare conditions where we operate, we reinforced initiatives in disease prevention, dietetic hygiene, and mental health counseling.

With the aim of promoting workplace mental health and improving the work/life quality of employees in overseas projects, an employee assistance program (EAP) was launched in 2008 to provide mental health counseling and services for employees working on long-term assignment abroad and their family members. After running for five years, the EAP has delivered 4,000 hours of counseling services for more than 3,400 people. In addition, we sent psychotherapists to hold more than 30 counseling sessions in six countries to help employees ease their mental stress. As part of this ongoing program, mental health surveys and personal evaluations were arranged. So far, we have collected more than 2,100 questionnaires and developed a mental health model based on the analysis of the survey and evaluation results to facilitate further assistance efforts.
Energy Efficiency

In 2012, Energy Performance Contracting (EPC) was implemented to ensure energy resources were utilized in an efficient and effective way. We established market-based energy conservation mechanisms mainly in the form of EPC to promote conservation efforts and accelerate project construction with continuously improving standards. Key energy conservation programs were further pushed ahead. A total of 101 projects were launched, including enhancing energy efficiency in mechanical extraction systems, phasing out low-efficiency equipment, calibration and upgrading of measurement instruments, energy-saving renovation of heating furnaces, and low-temperature thermal recycling. These projects, when completed, will reduce energy consumption by 420,000 tons of standard coal equivalent.

Quality Control

We have a firm commitment to the values of honesty, trustworthiness and excellence in product quality. In 2012, we continued to build our quality management system and improve product quality. As of the end of 2012, 123 affiliates have had their own quality management systems in place. In particular, 86 affiliates passed the third-party audit for quality management system certification and all production companies had developed and received certification for their quality control systems.

We improved quality control measures, especially spot inspection of key products such as gasoline, diesel fuel and natural gas. In addition, we implemented tighter quality standards for products from our suppliers, such as valves, pipes and instruments, as these products are essential to safety, environmental protection and engineering quality. In 2012, seven CNPC products including LSAW steel pipes were named famous brand products by China Petroleum and Chemical Industry Federation. As part of efforts to enhance quality management in construction projects, CNPC issued Quality Management Manual for Construction Projects, clearly stipulating the management responsibilities, basic requirements, process control, supervision and penalties related to project quality. We strengthened quality control and supervision over the entire engineering process including feasibility studies, primary design and post-assessment, and emphasized the accountability of construction companies.

In 2012, CNPC organized and participated in the formulation and amendment of 167 national and industry standards, and 168 enterprise standards. We undertook the job as the secretariat of ISO/TC263 (ISO Technical Committee for Coalbed Methane) in 2011, and then hosted the first ISO/TC263 annual session in October 2012. Actively participating in drawing up standards, CNPC is willing to promote the establishment of the international CBM standard system and provide effective guidance for technical progress, production and business management in the CBM sector.

Recovery of Rich Gas in Junggar Basin

Rich gas refers to the low-pressure and volatile gas by-produced in the development of gas condensate reservoirs. Difficult to collect, rich gas used to be flared, causing waste of resources and environmental pollution.

In some CNPC operated gas fields in the Junggar Basin, such as Kelameili and Mahe, comprehensive study and analysis were conducted to find a technical solution to address gas flaring, i.e., using an inverter to enable regulation of the output frequency of compressors in response to the changes in pressure. This has facilitated the recovery and utilization of rich gas.

Recovery and utilization of rich gas is currently possible in all of CNPC’s uncompartmentalized gas fields in the Junggar Basin. A total of 18.09 million cubic meters of rich gas can be recovered annually and delivered for domestic use. This additional gas can meet the needs of 50,000 households, helping to ease the tight gas supply in winter in northern Xinjiang.