

Government Structure and Ownership

Nuclear Power in China Appendix 1

(Updated 3 December 2010)

Ministries and Commissions are at the top level under the State Council; Administrations and Bureaus are under these. The national utility companies are largely or wholly state-owned. As well as these high-level entities, there are [specialist service companies with national scope](#), listed in the second section of this page. Below these are listed the [owner companies](#) relevant to each power plant or project.

National organisations and utilities

China Atomic Energy Authority

Under the control of the Commission for Science, Technology & Industry for National Defence under the State Council of Ministers, the China Atomic Energy Authority (CAEA, www.caea.gov.cn) is responsible for planning and managing the peaceful use of nuclear energy and promoting international cooperation. Since being split from the old China National Nuclear Corporation (CNNC) in 1998, CAEA has been the key body planning and managing civil nuclear energy and reviewing and approving feasibility studies for new plants. [\[Index\]](#)

State-owned Assets Supervision & Administration Commission

The State-owned Assets Supervision and Administration Commission (SASAC) of the State Council (www.sasac.gov.cn) was founded in 2003 to take over the responsibilities of the former State Economic and Trade Commission as investor of state-owned assets on behalf of the central government and in guiding state-owned enterprises' reform and management. It aims to speed up restructuring of state-owned economy and push forward reform of state-owned enterprises, as well as harvesting dividends from them. At the end of 2007, 152 major enterprises were subordinate to it, comprising the top two or three in each sector, which gives SASAC great political and economic power. SASAC has a major role in nuclear power expansion, along with the NDRC, and supervises CNNC and CGNPC. [\[Index\]](#)

National Development and Reform Commission

The National Development and Reform Commission (NDRC, www.ndrc.gov.cn) is the macroeconomic management agency directly under the State Council. It has been finally responsible for assessment and approval of major projects, and is responsible for deciding which major nuclear power projects proceed, and when. However, the reforms early in 2008 mean SASAC will be the primary body approving new projects, with formal approval from NDRC following. [\[Index\]](#)

National Energy Commission, National Energy Administration

In March 2008, a new National Energy Commission (NEC) was announced to replace the National Energy Leading Group, an advisory and coordination body directly under the State Council. It will draft a national energy development strategy complete with various programs and then monitor and

implement its execution. At the same time the new National Energy Administration (NEA) was set up to strengthen government management of the energy sector and implement NEC policy. It is a second tier ministry under the NDRC and replaces the State Energy Bureau under NDRC, which had been ineffective. Its nine departments, including one planning nuclear and thermal power development, work to integrate NDRC's energy management functions, promote favoured forms of energy and encourage conservation. It is not clear how it relates to other national energy entities, but its first announcement was that nuclear energy should provide significantly more power by 2020 than previously planned. The NDRC-NEC-NEA arrangement is seen as a political compromise and alternative to an Energy Ministry with clearer authority. [[Index](#)]

National Nuclear Safety Administration

The National Nuclear Safety Administration (NNSA) under the CAEA was set up in 1984 and is the licensing and regulatory body which also maintains international agreements regarding safety. It now reports to the State Council directly. At the Second China-US Strategic Economic Dialogue held in Washington in May 2007, a memorandum of understanding between the NNSA and the US Nuclear Regulatory Commission was signed regarding Westinghouse's AP1000 reactor design. The long-standing protocol on nuclear safety cooperation between the two countries was revised to take account of the introduction of the AP1000 and signed in January 2008. Under the revised protocol, the NRC will provide support for safety regulations and standards for the AP1000 design, as well as provide training for NNSA personnel. [[Index](#)]

Ministry of Environmental Protection

The State Environment Protection Administration (SEPA), now elevated to a Ministry of Environmental Protection, (MEP, www.mep.gov.cn) is a department directly under the State Council and is responsible for radiological monitoring and radioactive waste management. A utility proposing a new plant submits feasibility studies to the CAEA, siting proposals to the NNSA and environmental studies to MEP. [[Index](#)]

State Nuclear Power Technology Corporation

The State Nuclear Power Technology Corporation (SNPTC, www.snptc.com.cn) was set up in 2004 to take charge of technology selection for new plants being bid from overseas. This is through its Preparatory Office which draws expertise from other organizations such as CGNPC. SNPTC is directly under China's State Council and closely connected with it, being owned 60% by the State Council and with 10% of shares owned by each of CNNC, CPI, CGNPC, and China National Technical Import & Export Corp. Early in 2007, SNERDI (see below) was removed from CNNC control and assigned to SNPTC as an R&D arm, boosting its stature considerably. [[Index](#)]

China National Nuclear Corporation

The China National Nuclear Corporation (CNNC, www.cnncc.com.cn) controls most nuclear sector business including R&D, engineering design, uranium exploration and mining, enrichment, fuel fabrication, reprocessing and waste disposal. It also claims to be the major investor in all nuclear plants in China. Established by the State Council in 1988 as a self-supporting economic entity, it "combines military production with civilian production, taking nuclear industry as the basis while developing nuclear power and promoting a diversified economy." It has numerous subsidiaries, including CNNC International Ltd (www.cnnccintl.com), which is listed in Hong Kong. CNNC designed and built Qinshan Phases I and II, and controls the full Qinshan power plant. It has a payroll of about 1,000,000 and owns shares in many of the nuclear power generation projects (see below).

In particular it is a champion of local designs. [[Index](#)]

China Guangdong Nuclear Power Group

In Guangdong province and now more widely, the China Guangdong Nuclear Power Group plays the leading role. It comprises some 20 companies with gross assets of RMB 133 billion and net assets of RMB 41 billion. China Guangdong Nuclear Power Holding Company (CGNPC, www.cgnpc.com.cn) leads this group, which is responsible for Daya Bay, Ling Ao, Yangjiang, Hongyanhe and Ningde power stations, as well as further projects in the province and outside it. CGNPC was established in 1994 and is 45% owned by the provincial government (via China Guangdong Nuclear Power Group), 45% by CNNC and 10% by CPI. Despite its relative independence it claims so be "under the supervision of the State-owned Assets Supervision and Administration Commission of the State Council." There is 25% Hong Kong equity in the Daya Bay plant. [[Index](#)]

China Power Investment Corporation

China Power Investment Corporation (CPI, www.cpicorp.com.cn), is one of five state-owned power generation holding companies formed from the State Power Corporation in 2002 and inheriting all its nuclear capacity. It is a major power generator (controlling 54 GWe at the end of 2009, including only 1351 MWe nuclear) and is the largest state-owned power holding company with nuclear assets. It was at the forefront of discussions on plants for the 11th Five-Year Plan (2006-10).

CPI owns 19 operating power plants above 1000MWe each, a majority of Shandong Haiyang nuclear power project, 45% of the first phase of Liaoning Hongyanhe nuclear power project, and holds minority shares in five nuclear power plants in operation, and three under construction. It is carrying out preparation for nuclear power projects in Guangxi, Liaoning, Hunan, Jilin and Chongqing.

CPI's wholly-owned subsidiary, CPI Development Corporation, was listed on the Hong Kong exchange in 2004. It also owns Shanghai Electric Power Co. Ltd, Shanxi Zhangze Electric Power Co. Ltd, Chongqing Jiulong Electric Power Co. Ltd, Jilin Electric Power Co. Ltd, and Wuling Electric Power Development Corporation as well as China Power International Holding Ltd. registered in Hong Kong, through which CPI indirectly owns China Power Development Ltd. listed on the Hong Kong Stock Exchange and China-Hong Kong Power Development Ltd. supplying power for Hong Kong. It also owns China Power Complete Equipment Company Ltd., supplying and servicing power equipment. [[Index](#)]

China Huaneng Group

China Huaneng Group (CHNG, www.chng.com.cn) is one of China's major generators, formed in 1988 when the State Power Ministry was broken up, and it has about 50 GWe in operation, none of it nuclear. In 2005 it set up a subsidiary, **Huaneng Nuclear Power Development Co Ltd** to handle nuclear power projects, initially two projects in Shandong province. It has formed links with both CNNC and CGNPC. It is an independent state-owned but incorporated business entity focused on power generation. It had a 30% stake in the Changjiang nuclear plant but transferred this to Huaneng Power International in December 2010. CHNG aims to have 80 GWe installed by 2010 and 120 GWe by 2020. [[Index](#)]

Huaneng International Power Development Corporation

Huaneng International Power Development Corporation (HIPDC) is a sino-foreign JV company owned 52% directly and 5% indirectly by China Huaneng Group and set up to develop, construct and operate power plants in China. HIPDC controls **Huaneng Power International (HPI)**, www.hpi.com.cn/company/index.jsp), a sino-foreign joint stock company incorporated in China, with a 42% shareholding in it. China Huaneng Group also has a further 8.9% direct and indirect shareholding in HPI. The country's largest listed generator, HPI develops, constructs, operates and manages large-scale power plants nationwide. It claims to be "one of the largest independent electricity power suppliers in China, [in late 2009] owning a generation capacity of 40,975 MW on equity basis." China Huaneng is focused on Shidaowan development, with HTR demonstration plant and six large PWRs – apparently four AP1000 units and two CAP1400 units. HPI now has 49% equity in Hainan Nuclear Power, which is building the Changjiang plant. [\[Index\]](#)

Huadian International Power Corporation Ltd

Huadian, the country's third-largest listed generator, is identified as having plans to build four AP1000 units at Xiangtan in Hunan province and also the Donggang nuclear plant in Liaoning. With CNNC it is building the Fuqing plant. [\[Index\]](#)

China Datang Corporation

Datang Corporation (www.china-cdt.com) is one of the five large generating companies formed from the State Power Corporation in 2002. It has 44% stake in phase one (four units) of the Ningde nuclear power project in Fujian province, and 20% of Xudabao in Liaoning. [\[Index\]](#)

China Guodian Corporation

Guodian Corporation (www.cgdc.com.cn) is another of the five large generating companies set up in 2002 and now controlling 82 GWe of capacity. Its subsidiary Guodian Power Development Co Ltd is listed on the Shanghai stock exchange. It has signed a strategic cooperation agreement with CNNC and will have equity in Zhangzhou (Fujian province) and Hengyang (Hunan), as well as a stake in Jingyu nuclear power project proposed in Jilin province, with CPI.

The NDRC has announced that China Guodian will invest CNY 20 billion (\$2.9 billion) on power projects in Hunan province within three to five years from 2009, possibly including a major stake in CNNC's Taohuajiang plant. [\[Index\]](#)

Ministry of Science & Technology

Planning for major nuclear energy research projects is the responsibility of the Ministry of Science & Technology (MOST). [\[Index\]](#)

China Nuclear Energy Association

The China Nuclear Energy Association (CNEA) was set up with State Council agreement in 2007 as a trade association. It has membership of over 200 enterprises involved in the whole fuel cycle and its infrastructure. [\[Index\]](#)

Specialist service companies with national scope

State Nuclear Demonstration Company

The State Nuclear Demonstration Co was set up in December 2009 by SNPTC (55%) and China Huaneng Group (CHNG, 45%) to take charge of the project to develop the indigenous and exportable CAP1400 reactor, based on Westinghouse's AP1000. Construction of the first reactor at Shidaowan, Rongcheng city, Shandong was to commence in April 2013, for December 2017 start-up. The State Nuclear Power Engineering Company (SNPEC) is doing the engineering under a team from the Shanghai Nuclear Engineering Research and Design Institute (SNERDI), the Shandong Electric Power Engineering Consulting Institute (SEPECI), and the State Nuclear Power Equipment Manufacturing Company (SNPEMC) which will make the components. A 1700 MWe version would be considered. [[Index](#)]

China Nuclear Energy Industry Corporation

The China Nuclear Energy Industry Corporation (CNEIC) is a CNNC subsidiary established in 1980 as a trading company authorized to carry out import and export trade of uranium products, nuclear fuel cycle and nuclear power and technology equipment. It acted as agent in establishing Qinshan and Tianwan power plants, and signed for the BN-800 fast reactor technology from Russia. [[Index](#)]

China (Nuclear International) Uranium Corporation

China National Uranium Corporation is responsible for CNNC's uranium exploration domestically. In December 2006, China Nuclear International Uranium Corporation, or simply China Uranium Corporation (Sino-Uranium or SinoU), was set up by CNNC to acquire uranium resources internationally, as well as undertaking exploration, development and uranium production abroad.¹ It is setting up a mine in Niger and is investigating prospects elsewhere. [[Index](#)]

CNNC Overseas Uranium Holding

A wholly owned Hong Kong subsidiary of SinoU is CNNC Overseas Uranium Holding Ltd, which in mid-2008 bought a 75% interest in United Metals Holdings, a listed Hong Kong company and changed its name to CNNC International Ltd. This has bought prospects in Mongolia, and in February 2009 made a takeover bid for Khan Resources Inc, with major Mongolian assets. Khan directors recommended acceptance. [[Index](#)]

Sinosteel

Sinosteel Corporation (<http://en.sinosteel.com>) is another state-owned entity with equity in an Australian uranium explorer and 60% joint venturer with it in developing a mine, hoping to sell the product to the Chinese nuclear industry. [[Index](#)]

China Jianzhong Nuclear Fuel

China Jianzhong Nuclear Fuel Co Ltd is a CNNC subsidiary and its main PWR fuel fabricator, at Yibin in Sichuan. [[Index](#)]

China North Nuclear Fuel

China North Nuclear Fuel Co Ltd is a CNNC subsidiary set up in 1998 to run a fuel fabrication plant at Baotou in Inner Mongolia. A joint venture centred on it is being formed to progress research on thorium fuel cycle. [[Index](#)]

CNNC Baotou Nuclear Fuel

CNNC Baotou Nuclear Fuel Co Ltd was set up at the end of 2008 by SNPTC and the two CNNC fuel companies to make fuel for AP1000 reactors in Inner Mongolia. [[Index](#)]

CGNPC Uranium Resource Co

CGNPC Uranium Resource Co Ltd (CGNPC-URC) is a CGNPC entity responsible for mining and purchase of uranium resources, both domestic and imported. A related CGNPC subsidiary set up in 2007, Sino-Kazakhstan Uranium Resources Investment Co, has invested in two Kazakh uranium mines managed by Semizbai-U joint venture, following approval from NDRC. CGNPC-URC has also embarked upon a joint venture (Uz-China Uran LLC) with Uzbekistan's Goskomgeo focused on black shales in the Navoi region of Uzbekistan. Within China, in November 2008 CGNPC Uranium (Xinjiang) Co. Ltd., a JV between CGNPC-URC and Xinjiang Geology and Mineral Resources Bureau, was established. [[Index](#)]

China Uranium Development

China Uranium Development Co Ltd (CUD) is an investment vehicle of CGNPC-URC buying equity in overseas uranium resources, notably by a 70% takeover of Australian uranium exploration company Energy Metals Limited. [[Index](#)]

China Nuclear Engineering & Construction Group

The China Nuclear Engineering & Construction Group (CNEC or CNECC) is a major state entity split off from CNNC in 1998. CNEC is closely linked with the [Beijing Institute of Nuclear Engineering](#) and is also responsible for the construction (including that in Pakistan), equipment procurement, trial testing and operational maintenance of nuclear power plants. It has five subsidiaries including China Nuclear Industry Huaxing Construction Company and China Nuclear Industry No.23 Construction Company (CNI 23) for civil engineering, China Nuclear Industry No.5 Construction Company (CNI 5) for installation, and Beijing Huahui Technical Development Co. for software. [[Index](#)]

China Nuclear Industry Huaxing Construction Co

China Nuclear Industry Huaxing Construction (HXCC, www.cnhxcc.com.cn) is one of five subsidiaries of CNECC and is a major construction and engineering company which is setting up a CNY 1 billion module base plant near Nanjing in eastern China for pre-assembled structural and equipment modules for Westinghouse AP1000 reactors. It claims involvement with most of China's nuclear plant construction, notably Lingao Phase 2, Hongyanhe, Ningde, and Yangjiang (all CPR-1000). CGNPC subsidiary China Nuclear Power Engineering Group Co. Ltd (CNPEC) holds a 13.7% share of HXCC. [[Index](#)]

China Nuclear Industry No.5 Construction Co

China Nuclear Industry 5th Construction (CNI 5) is an installation construction company involved with HXCC in the Haiyang and Sanmen AP1000 projects, and also for Chashma 3 & 4 in Pakistan. [[Index](#)]

China Nuclear Industry No.23 Construction Co

China Nuclear Industry 23rd Construction (CNI 23) is a major engineering company concerned with the installation of nuclear power plants. It had a major role in all CPR-1000 projects and Qinshan

phase III, and is preferred contractor for CGNPC. [[Index](#)]

China Power Engineering Consulting Group Corporation

The China Power Engineering Consulting Group Corporation (CPECC) includes the East China Electric Design Institute (ECEPDI) which was set up in 1953 and designs non-nuclear parts of nuclear power plants such as Taohuaijiang. [[Index](#)]

Beijing Institute of Nuclear Engineering

The Beijing Institute of Nuclear Engineering (BINE) is based in the Haidian university precinct north of Beijing and has 1,800 staff. It is a CNNC subsidiary responsible for basic design of reactors although its focus is shifting towards technology planning as new project design moves from BINE to CNEC. [[Index](#)]

Chinergy

Chinergy Co. Ltd was set up as a 50-50 joint venture between Tsinghua Holding Co. Ltd and CNEC in 2003 as a general contractor for high temperature reactors. In 2007, CGNPC contributed capital to give it a 15% share in the JV. [[Index](#)]

China Nuclear Power Engineering Corporation

China Nuclear Power Engineering Corporation (CNPE) was set up by CNNC in 2006 to rationalise design work for new nuclear plants as well as to help win overseas orders for nuclear plants. It is built on the technology basis of BINE and is also responsible for the construction, equipment procurement, trial testing and operational maintenance of nuclear power plants. Project design and management is moving from BINE to CNPE, allowing BINE to concentrate on technology planning. (NB: distinguish from CGNPC's China Nuclear Power Engineering Co Ltd – CNPEC.) Nuclear projects being undertaken by CNPE included: EPC contracting of Fuqing, Taohuaijiang, and Xudabao nuclear power projects. [[Index](#)]

China Zhongyuan Engineering Corporation

This engineering subsidiary of CNNC is the general contractor for the Chashma 3 & 4 nuclear power plant in Pakistan. The project also involves China Nuclear Industry No.5 Construction Company (CNI 5), which helped build units 1 & 2 at the plant. [[Index](#)]

Nuclear Power Institute of China

The Nuclear Power Institute of China (NPIC) is based in Chengdu, Sichuan Province, and is part of CNNC. It was set up in 1958 for nuclear reactor engineering research, design, testing and operation and has 3700 staff.

It originally focused on the nuclear propulsion system for submarines, but now is a major research institute for Nuclear Steam Supply Systems in PWRs. Its R&D now takes in the Candu design used at Qinshan, and in particular, aspects of its fuel cycle, and since 1997 it has worked on the CNP-1000 design. [[Index](#)]

Shanghai Nuclear Energy Research & Design Institute

The Shanghai Nuclear Energy Research & Design Institute (SNERDI) was founded in 1970 as part of CNNC and worked with BINE and NPIC in detailed design work for the AP1000 projects. However, SNERDI was reassigned to SNPTC in 2007 and remains dedicated to AP1000 design work, particularly development of the CAP-1400 reactor based on it. (It also worked closely with AECL on reactor engineering for the Qinshan Phase III Candu reactors.) [[Index](#)]

SNERDI Engineering Consulting and Supervision Management

SNERDI Engineering Consulting and Supervision Management Co. Ltd (SECSMC) is a wholly-owned subsidiary of SNPTC and is construction supervisor for Sanmen, under contract with Sanmen Nuclear Engineering Consulting Management Co. Ltd. [[Index](#)]

East China Electric Power Designing Institute

The East China Electric Power Designing Institute (ECEPDI) is a project designer and contractor for conventional islands of power plants. It is working with SNERDI on designing Taohuajiang as well as Pakistan's Chashma 3 & 4 reactors, having cooperated on Chashma 1 & 2 and also Qinshan. [[Index](#)]

China Resources Power Holdings

China Resources Power Holdings Co. Ltd (CRPHC) was founded in 2001 as a subsidiary of China Resources Group in Hong Kong-based and invests in a variety of technologies including a 25% share of CNNC's Taohuajiang project in Hunan. It is keen to invest with CGNPC. [[Index](#)]

State Development and Investment Corporation

The State Development and Investment Corporation (SDIC), through SDIC Electric Power, in 2009 secured a 10% share of the Xudabao nuclear power project at Huladao (Hulu Island) in northeast Liaoning. [[Index](#)]

Shandong Electric Power Construction

The Shandong Electric Power Construction Corp. (SEPCO, www.sepcc.net) in Jinan, Shandong province also trades as Shandong Nuclear Power Construction Group Corp. It co-owns Shenzhen Shandong Nuclear Power Construction Co., Ltd ([SEPCNP](#), see below). [[Index](#)]

Shandong Nuclear Power Equipment Manufacturing

Shandong Nuclear Power Equipment Manufacturing Co Ltd (SNPEMC) was set up in 2007 by SNPTC, which holds a 64% share, with subsidiaries of CNNC holding the remainder [China Nuclear Industry 23rd Construction Corporation (CNI 23, 29.33%) and China Nuclear Engineering-Construction Group (CNEC, 6.67%)]. SNPEMC designs and manufactures AP1000 reactor components, containment vessels and equipment. It is responsible for the fabrication of equipment modules, structural modules, primary pipelines and equipment for conventional island, as well as fabrication of equipment for other nuclear power plants. SNPEMC received ASME certification in June 2009. It will also be responsible for CAP1400 components. (For [Shandong Nuclear Power Company](#) see next section below.) [[Index](#)]

State Nuclear Power Engineering Corporation

Based in Shanghai, the State Nuclear Power Engineering Corp. Ltd. (SNPEC, www.snpec.com.cn) is a subsidiary of SNPTC responsible for AP1000 project management and control, design, architectural work, commissioning, procurement *etc.* It will also be responsible for the CAP1400 project. [[Index](#)]

State Nuclear Electric Power Planning Design & Research Institute

The State Nuclear Electric Power Planning Design & Research Institute (SNPDRI) is a subsidiary of SNPTC responsible for designing the Haiyang, Pengze and Taohuajiang AP1000 project conventional islands. SNPDRI was formerly the Shandong Electric Power Engineering Consulting Institute, founded in Jinan in 1958 and transferred to SNPTC in 2007. [[Index](#)]

China Institute of Atomic Energy

The China Institute of Atomic Energy (CIAE) undertakes fundamental research on nuclear science and technology and is the leading body in relation to fast neutron reactors. It is also responsible for R&D on vitrification of high-level wastes. [[Index](#)]

Shenzhen Shandong Nuclear Power Construction

The Shenzhen Shandong Nuclear Power Construction Co., Ltd (SEPCNP, www.sepcnp.com.cn) is a subsidiary of SEPCO, with equity also held by Shandong Luneng Construction Group Co., Ltd. It was the only Chinese contractor to work on the conventional island of the Daya Bay plant and constructed the conventional island of the neighbouring Ling Ao plant. [[Index](#)]

China First Heavy Industries

China First Heavy Industries Corp. (CFHI, www.cfhi.com) is one of China's key industrial enterprises. It produces pressure vessels and pressurisers for nuclear power plants up to 1080 MWe CPR-1000 (*e.g.* Hongyanhe), and components for Qinshan. It has been contracted to supply the pressure vessel for the AP1000 at Sanmen 2. [[Index](#)]

Shanghai Electric Group

The Shanghai Electric Heavy Industries Group Corporation (SEC, www.shanghai-electric.com) includes heavy engineering and it manufactures pressure vessels, steam generators and pressurizers for PWRs. SEC subsidiaries include Shanghai Boiler Works Ltd and Shanghai Electric Nuclear Power Equipment Co Ltd (SENPE) which is increasing ingot capacity to allow fabrication of both AP1000 and EPR components. SEC has been contracted to supply the pressure vessel for the AP1000 at Haiyang 2.

Areva has a joint venture with Shanghai Electric involving a power transformer factory in Shanghai and two more to be built in Wuhan, Hubei province, and near Shanghai. Complementing this Areva is building an ultra high-voltage R&D centre in Shanghai. Siemens has a 40% share in a joint venture with Shanghai Electric to build steam and gas turbines and generators - Shanghai Electric Power Generation Equipment Co Ltd (SEPG). [[Index](#)]

China National Erzhong Group; China Dongfang Electric Corporation; China Erzhong Group (Deyang) Heavy Equipment

China National Erzhong Group Co Ltd (China Erzhong) claims to be the largest heavy machine-

building base in China, and with related company China Dongfang Electric Corporation (DEC) founded in 1984 is based inland at Deyang in Sichuan. DEC specializes in power equipment manufacturing and had supplied 110 GW of generating equipment over 20 years to the end of 2005. Alstom and DEC are supplying the turbines and 1750 MWe generators for CGNPC's Taishan EPR plant, continuing a long-standing relationship among the three. DEC subsidiary Dongfang Turbine Co suffered major damage in the Sichuan earthquake in 2008. China Erzhong Group (Deyang) Heavy Equipment Ltd appears to be another subsidiary of China Erzhong, supplying main steam pipes for AP1000 units. [\[Index\]](#)

Dongfang (Guangzhou) Heavy Machinery

Dongfang (Guangzhou) Heavy Machinery Co (DFHM) has equity from both DEC and China Erzhong, with Guangdong investors, and has a plant at Nansha near the coast – its workshop is a replica of Areva's Chalon/St. Marcel plant in France. It is set up to supply CPR-1000 components for CGNPC, and in June 2009 it delivered the first Chinese-made reactor pressure vessel for a 1000 MWe reactor. [\[Index\]](#)

Dongfang Electric Corporation

Dongfang Electric Corporation Ltd (DEC, formerly Dongfang Electric Machinery Co), is listed in Hong Kong and in April 2009 announced a CNY 5 billion capital raising. Established in 1984, it is located in Chengdu in Sichuan Province. [\[Index\]](#)

Areva DongFang

Areva has a joint venture with DEC subsidiary Dongfang Electrical Machinery Company Ltd (DFEM), set up in 2005. Areva DongFang manufactures primary reactor coolant pumps. It is supplying pumps to CNPEC for three reactors at each of Ningde and Yangjiang. [\[Index\]](#)

Dongfang Boiler Group

The Dongfang Boiler Group Co Ltd manufactures large capacity power plant boilers including components of PWRs and is working with Areva to manufacture all heavy nuclear components for Ling Ao Phase II and other CGNPC projects. [\[Index\]](#)

Harbin Power Equipment

Harbin Power Equipment Co. Ltd (HPEC) is supplying some of the equipment for the 1200 MWe steam turbines and generators for the four Sanmen and Haiyang AP1000 units under licence from Mitsubishi Heavy Industries (MHI). Its subsidiary, Harbin Boiler Company Ltd. (formerly Harbin Boiler Works), is the largest utility boiler manufacturer in the country. Harbin Turbine Company Ltd is another subsidiary of HPEC. [\[Index\]](#)

China Nuclear Power Engineering Group; China Nuclear Power Design

China Nuclear Power Engineering Group Co. Ltd (CNPEC) was set up by CGNPC (90%) in 2004 with Shenzhen Nengzhahui (10%) and plays the leading reactor engineering role in CGNPC. (NB: distinguish from CNNC's China Nuclear Power Engineering Corporation, CNPE.) China Nuclear Power Design Co is a 60% subsidiary (with 40% Guangdong Electric Power Design Institute, GEDI), established in 2005 and responsible for feasibility studies and designs. Both are part of a consortium with Alstom and DEC which is supplying turbines and generators for Taishan nuclear

plant, for which Areva is supplying the nuclear part. Alstom Wuhan Engineering and Technology Co. is supporting the Chinese end of this. CNPEC holds 13.7% of Huaxing and wholly owns Engineering Technology Co (Shanghai). [\[Index\]](#)

Hubei Nuclear Power Equipment Co

Hubei Nuclear Power Equipment Co was founded in August 2010 by subsidiaries of SNPTC, CGNPC and China Shipbuilding Industry Co (Shandong Nuclear Power Equipment Manufacturing Co, China Guangdong Nuclear Power Engineering and Wuchang Ship Heavy Industries, respectively) to fabricate large modules for AP1000 reactors inland for Hubei Nuclear Power Co. [\[Index\]](#)

China Institute for Radiation Protection

The China Institute for Radiation Protection is responsible for R&D on decommissioning. [\[Index\]](#)

Chinese Nuclear Society

The Chinese Nuclear Society focuses on nuclear science popularization and education. [\[Index\]](#)

China Guangdong Nuclear Power Simulation Technology, China Nuclear Power (Beijing) Simulation Technology Corporation

China Guangdong Nuclear Power Simulation Technology Co. (CNPSC), Ltd, and China Nuclear Power (Beijing) Simulation Technology Corporation Ltd build simulators for training nuclear power plant operators, e.g. Ningde, Yangjiang, HTR-PM. [\[Index\]](#)

Owner companies and organisations – power plants

Daya Bay

Daya Bay is owned by Guangdong Nuclear Power Joint Venture Co Ltd, and Ling Ao by the Ling Ao Nuclear Power Co Ltd. Both are subsidiaries of CGNPC. Both sites and Yangjiang are run by [Daya Bay Nuclear Power Operations & Management Co Ltd \(DNMC\)](#), which was formed in 2003 with 50% ownership by each company. In July 2009, its shares were transferred to CGNPC. [\[Index\]](#)

Qinshan

Qinshan is a CNNC enterprise. Phase I is owned by Qinshan Nuclear Power Co, Phase II (including units II-3 and II-4) is owned by Qinshan Nuclear Power JV Co Ltd, with a minority stake in being held by CPI. Qinshan Phase III is owned by Third Qinshan Nuclear Power Co Ltd - also part of CNNC but with China Electric Power Group Corporation, Zhejiang Provincial Electric Power Corporation, Zhejiang Provincial Electric Power Development Corporation, Shenergy (Group) Co Ltd and Jiangsu International Trust & Investment Corporation as other shareholders. [\[Index\]](#)

Jiangsu Tianwan

Jiangsu Nuclear Power Corporation was established in 1997 to construct and operate the Tianwan nuclear plant, with four units planned (Phases I & II) and space for four more. Two units are now operating. CNNC owns 50% share, CPI 30% and Jiangsu Guoxin Group 20%. [\[Index\]](#)

Liaoning Hongyanhe

Early in 2005, Liaoning Hongyanhe Nuclear Power Company Ltd. (LHNP) was established in Liaoning Province by CPI, and will be responsible for the Hongyanhe nuclear power project in Dalian City. 45% is held by CPI, 45% by CGNPC and 10% by Dalian Municipal Construction Investment Corp. CGNPC will be responsible for construction (through CNPEC) and the first five years commercial operation of the plant. CNPDC did the design. [\[Index\]](#)

Shandong Hongshiding

The Shandong Hongshiding Nuclear Power Co Ltd is developer of a new plant at Hongshiding, in Rushan city and has 51% holding by CNEC/CNNC, with Huadian Power International Co and two investment companies. [\[Index\]](#)

Shandong Haiyang

The Shandong Nuclear Power Company Ltd (SDNPC) is a subsidiary of CPI and was established at Yantai in July 2004 to undertake the development, construction, operation and management of the Shandong Haiyang nuclear power project, building AP1000 reactors. CPI owns 61 or 65%, CNNC 5%, with two local entities and two major corporations the balance: Shandong International Trust & Investment Corporation, Yantai Electric Power Development Co, China Guodian Group Corporation, and Huaneng Energy & Transportation Industrial (Holding) Co. Ltd. CHNG is also reported to have some equity in the project. [\[Index\]](#)

Ningde

Ningde Nuclear Power Co Ltd (NDNP) was set up in 2006 by CGNPC and China Datang Corporation. As of early 2008 CGNPC had 46% of the project, Datang International Power Generation Co. 44% and Fujian Coal Industry Group holds 10% in the joint venture to build the first phase of the 6-unit Ningde nuclear plant in Fuding city in Fujian province. [\[Index\]](#)

Fujian Fuqing

The Fujian Fuqing Nuclear Co Ltd was set up in May 2006 by CNNC (51%) as a joint venture company with China Huadian Corp (49%) to build the Fuqing plant in Fuqing city in Fujian province. The first two units of six 1000 MWe reactors are estimated to cost US\$ 2.8 billion. [\[Index\]](#)

Xianning & Guangshui, Hubei

Hubei Nuclear Power Co Ltd was set up by CGNPC and Hubei Energy Group in June 2008 to build the large Xianning AP1000 plant at Dafan in Xishui county, Xianning city, Hubei province. The first two phase involve four reactors, the third phase, four more. The same company is reported to be planning a four-unit AP1000 plant at Guangshui city in the northeast of the province. [\[Index\]](#)

Guangxi Fangchenggang

Guangxi Fangchenggang Nuclear Power Co Ltd is a joint venture of China Guangdong Nuclear Power Holding Company (CGNPC, 61%) and Guangxi Investment Group (39%). CGNPC (40%), CPI (40%) and Guangxi Investment Group Co Ltd (20%) had signed a framework agreement in July 2006 to invest US\$ 3.1 billion in the first two units of the 6000 MWe Fangchenggang (Hongsha) nuclear power plant at Beibu Bay, near Bailong in Guangxi Autonomous Region of southern China.

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Sanmen

CNNC owns 51% of the Sanmen Nuclear Power Company, which was set up in April 2005 to build and own the Sanmen project. Other shareholders are the provincial government's Zhejiang Energy Company (Group) Ltd., China Electricity Investment Nuclear Power Company, China Huadian Company Ltd. and CNEC. [[Index](#)]

Yangjiang

Yangjiang Nuclear Power Co Ltd (YJNPC) was set up in 2005 under CGNPC to construct Yangjiang nuclear power station. CNPEC is responsible for the EPC contract and DNMC will take charge of the operating. [[Index](#)]

Guangdong Taishan

Guangdong Taishan Nuclear Power Joint Venture Company is set up as a CGNPC subsidiary with 30% held by Electricite de France (EDF) to build, own and operate the Taishan nuclear plant. [[Index](#)]

Anhui Wuhu

Anhui Wuhu Nuclear Power Co was set up following agreement in May 2007 by CGNPC (51%), Shenergy Co. of Shanghai (20%), Shanghai Electric Power Co (14%) and Anhui Province Energy Group Co or Wenergy Co Ltd (15%) to build the \$2.9 billion first phase (2 x 1000 MWe) of the Wuhu plant to commence operation in 2015. The first four CPR-1000 units are expected to cost \$7.32 billion. [[Index](#)]

Hainan

The Hainan Nuclear Power Company Ltd was set up by CNNC (51%) and China Huaneng Group (CHNG) as a joint venture to build the Changjiang nuclear power plant on Hainan Island, with two 650 MWe reactors. CHNG, now Huaneng Power International (HPI) in particular, will take the lead in a second phase of the plant. [[Index](#)]

Hunan

Hunan Nuclear Power Company Ltd was set up about 2006 by CPI (45%) with the Hunan government to build the 4000 MWe Xiaomoshan nuclear power plant in Yueyang city on the Yangtze River. As of August 2009 this apparently did not have development approval. [[Index](#)]

Pengze

CPI's Jiangxi Pengze Nuclear Power Project is in Jiangxi province on the Yangtze River and will use AP1000 technology. An investment agreement was signed in October 2009 so that CPI will contribute 55%, Jiangxi Ganneng 20%, Jiangxi Ganyue Expressway 20% and Shenzhen Nanshan Power 5% to establish the Pengze Nuclear Power Co. [[Index](#)]

Taohuajiang

The Hunan Taohuajiang Nuclear Power Co Ltd was set up in February 2007 by CNNC to build the Taohuajiang nuclear power plant at Yiyang city, in inland Hunan province. CNNC (50%) is in joint venture with China Yangtze Three Gorges Project Corporation (20%), China Resources Power Holdings Co Ltd (CRPHC - 25%) and Hunan Xiangtou Holdings Group Co Ltd (5%) to build and operate a nuclear power plant in two stages. Initially this was to be 4x1000 MWe at a total cost of \$5 billion but in 2009 it was confirmed as an AP1000 project. In 2009, China Resources Power Holdings Co Ltd (CRPHC) took a 25% stake in the project. [[Index](#)]

Liaoning Nuclear Power, Xudabao

Liaoning Nuclear Power Co Ltd was set up by CPI in March 2009 to build the Xudabao (Xudapu) nuclear power plant (6 x 1000 MWe) on Hulu Island in Liaoning province with 20% equity from China Datang and 10% from SDIC. Construction was expected to start in 2009, for operation in 2014. Total cost is expected to be over CNY 90 billion. [[Index](#)]

Huaneng Shidaowan

The Shidaowan 210 MWe HTR-PM demonstration plant is being built by Huaneng Shidaowan Nuclear Power Co. Ltd (HSNPC) in Rongcheng city. China Huaneng Group (CHNG) is the lead organization in the joint venture with 47.5% share. China Nuclear Engineering & Construction Group will have a 32.5% stake and Tsinghua University INET 20%. Chinergy is also involved in the project, as main contractor for the nuclear island. [[Index](#)]

Shidaowan

The 4000 MWe Shidaowan nuclear power plant in Rongcheng city, Shandong was to be a joint venture of the Huaneng Nuclear Power Development Corp and CGNPC, with further partners to become involved as State Council approval was sought. In October 2009, the **Shidaowan Nuclear Power Development Company Ltd** was set up with capital contribution 40% China Huaneng Group (CHNG), 30% Huaneng International Power Development Corp. (HIPDC) and 30% Huaneng Power International (HPI). None of these have NNSA permission to construct or operate nuclear plants. Registered capital is RMB 1 billion for the construction, operation and management of four AP1000 reactors and sale of electricity from them. The total investment is estimated at RMB 5 billion. [[Index](#)]

Sanming

In April 2010, CNNC established Sanming Nuclear Power Co Ltd as a joint venture company with the Fujian Investment & Development Corp and Sanming municipal government, CNNC retaining a majority stake. CIAE and CNEIC had signed the agreement with Russia's Atomstroyexport for the two BN-800 fast neutron reactors in October 2009. [[Index](#)]

Yanjiashan

In August 2009, CNNC (51%) signed a joint venture agreement with Jiangxi Ganneng Co. Ltd and Jiangxi Ganyue Expressway Co Ltd (49% between them) setting up Jiangxi Nuclear Power Co to build the Wan'an Yanjiashan nuclear power project at Ji'an in Jiangxi province. [[Index](#)]

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Anhui Wuhu
Areva DongFang
Beijing Institute of Nuclear Engineering
CGNPC Uranium Resource
China Atomic Energy Authority
China Baotou Nuclear Fuel
China Datang Corporation
China Dongfang Electric Corporation
China Erzhong Group (Deyang) Heavy Equipment
China First Heavy Industries
China Guangdong Nuclear Power Group
China Guangdong Nuclear Power Simulation Technology
China Guodian Corporation
China Huaneng Group
China Institute of Atomic Energy
China Institute for Radiation Protection
China Jianzhong Nuclear Fuel
China National Erzhong Group
China National Nuclear Corporation
China North Nuclear Fuel
China Nuclear Energy Association
China Nuclear Energy Industry Corporation
China Nuclear Engineering & Construction Group
China Nuclear Industry Huaxing Construction Co
China Nuclear Industry No.5 Construction Co
China Nuclear Industry No.23 Construction Co
China Nuclear International Uranium Corporation
China Nuclear Power (Beijing) Simulation Technology Corporation
China Nuclear Power Design
China Nuclear Power Engineering
China Nuclear Power Engineering Corporation
China Power Engineering Consulting Group Corporation
China Power Investment Corporation
China Resources Power Holdings
China Uranium Development
China Zhongyuan Engineering Corporation
Chinergy
Chinese Nuclear Society
CNNC Overseas Uranium Holding
Daya Bay
Dongfang Boiler Group
Dongfang Electric Corporation
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East China Electric Power Designing Institute
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Harbin Power Equipment

Hongyanhe
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Further Information

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References

1. See webpage on China Nuclear International Uranium Corporation on CNNC website (www.cnncc.com.cn) [[Back](#)]