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国际煤炭峰会论文集

International Coal Summit 2013 Proceedings



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中国煤炭工业发展现状与前景

王显政

(中国煤炭工业协会)

一、“十一五”以来中国煤炭工业发展现状

煤炭是中国的主要能源,煤炭工业是中国的能源支柱产业。“十一五”以来,煤炭行业坚持以提升煤炭工业发展的科学化水平为主攻方向,以转变经济发展方式为主线,着力推进煤炭结构调整,加快建设大型煤炭基地,培育大型煤炭企业集团,提高产业集中度;坚持科技兴煤战略,提高自主创新能力和生产力总体水平;推行绿色开采,建设生态矿山;发展以煤为基础的循环经济产业,提高资源综合利用水平;强化安全生产基础工作,提高煤矿安全保障能力;深化煤炭市场化改革,促进上下游产业一体化发展;加强国际合作,扩大对外开放;建设和谐矿区,关注矿区民生;改善煤矿井下作业环境,提高煤矿职业健康水平,煤炭行业的整体面貌发生了显著变化。

(一) 煤炭结构调整取得新进展,大基地、大集团、大型现代化煤矿已经形成全国煤炭生产的主体

全国煤矿数量由 2005 年的 2.48 万处减少到 2012 年的 1.4 万处左右,平均单井规模由 9 万 t 增加到 26 万 t;2012 年,全国 10 个产煤省区煤炭产量超亿 t,14 个大型煤炭基地产量 33 亿 t,占全国总产量的 90.4%;通过企业兼并重组,52 家企业产量超千万 t、总产量 27.6 亿 t,其中有 7 家企业产量超亿 t、总产量 12.23 亿 t;全国建成年产 120 万 t 以上的大型现代化煤矿 743 处、产量 23.6 亿 t,其中建成千万 t 级煤矿 53 处、产量 7.3 亿 t;小型煤矿数量下降到 1 万处以下,产量比重由 45% 下降到 17%。全国煤炭生产结构得到了优化调整,供应保障能力大幅增强。煤炭产量由 2005 年的 23.5 亿 t 快速增加到 2012 年的 36.5 亿 t,年均增加 1.9 亿 t,增长 55.3%。煤炭在中国一次能源生产和消费结构中的比重分别占 76.6% 和 67.1%,分别占世界煤炭生产和消费总量的 47.5% 和 50.2%。

(二) 科技创新能力显著增强,煤炭重大基础理论和关键技术攻关取得突破

以企业为主体、市场为导向、产学研相结合的技术创新体系不断完善,科技协同创新平台建设深入开展,科技成果转化速度明显加快。煤炭资源安全高效开发、煤矿重大灾害防治和煤炭转化等基础理论研究取得进展;综采放顶煤理论与厚煤层开采围岩控制技术取得新成果;煤炭百万 t 级直接液化、间接液化、煤制烯烃、煤制气等工业化示范工程建设取得成功,并实现商业化运营;年产 600 万 t 工作面综采成套装备实现了国产化,年产千万吨工作面成套装备工业化试验取得阶段性成果;煤矿瓦斯与地面煤层气抽采利用技术取得进展;露天煤矿开采向设备大型化、开采集中化、工艺连续化、环节合并化方面发展,煤炭生产力总体水平大幅提升,有力地支撑了煤炭工业健康可持续发展。

（三）煤炭绿色开采、生态矿山建设稳步推进，矿区生态环境明显改善

近年来，煤炭行业深入贯彻落实科学发展观，遵循资源开采业发展规律，不断探索煤炭清洁生产、绿色开采、保水开采、矿井热能利用等技术，加大采煤沉陷区治理与生态再建投入力度，矿区环境得到较大改善。坚持煤与瓦斯共采，煤矿瓦斯与煤层气抽采利用量逐年增加。通过加大原煤入选比例，严格商品煤质量标准，煤炭清洁高效利用水平大幅提高。全国原煤入选率由 2005 年的 32% 提升到 2012 年的 56%；2012 年全国煤矿瓦斯与地面煤层气抽采量 141 亿 m^3 ，利用量 58 亿 m^3 ，煤矿瓦斯用户超过 200 万户，瓦斯发电装机 110 万 kW；煤矸石、煤泥综合利用发电装机 2 950 万 kW，每年折合节约 4 600 万 t 标准煤；矿井水利用率达到 62% 左右，矿区土地修复整治率达到 42% 左右；矿区植被覆盖率大幅提升，神华神东矿区植被覆盖率由矿区开发前的 3%~11% 提高到目前的 60%。

（四）煤炭市场化改革取得实质性进展，市场体制机制不断健全完善

2005 年以来，逐步取消了政府主导的煤炭订货制度。自 2013 年起，取消了煤炭重点合同，实现了电煤价格并轨，市场配置资源的基础性作用得到进一步发挥。全国已经建成了 31 个区域性的煤炭市场交易中心，全国煤炭市场交易体系建设工作有序推进。大型煤炭企业公司制、股份制改革不断深化，多元投资机制基本形成。截至 2012 年底，在境内外上市煤炭企业 39 家，直接融资 1 700 亿元；煤炭企业通过参股、控股等发展大型坑口电厂和煤矸石电厂，权益装机总规模超过 1.3 亿 kW；煤电一体化、煤焦化一体化、煤炭现代物流等上下游产业融合发展步伐加快，为煤炭企业做大、做精、做强奠定了坚实基础。

（五）煤矿安全生产长效机制不断健全，促进了安全生产形势明显好转

中国煤矿开采条件复杂，煤矿安全生产一直是困扰煤炭企业和政府的突出问题。中国政府高度重视煤炭安全生产问题，从体制、机制、投入等多方面采取了一系列措施，取得了明显效果。政府出台了煤矿安全生产费用提取和使用管理办法，支持煤矿加大煤矿安全投入，这项政策实施以来，全国煤矿累计提取煤矿安全生产费用约 2 900 亿元。煤炭企业结合矿区实际，开展技术改造、隐患治理和设备更新，煤矿生产机械化、现代化、标准化、信息化和智能化水平明显提高。全国煤矿事故死亡人数由 2005 年 3 306 人降到 2012 年的 1 384 人；煤矿百万吨死亡率由 2005 年的 2.81 下降到 0.347，实现了全国煤矿安全生产形势的明显好转。

（六）国际交流合作步伐加快，对外开放的范围和领域不断扩展

近年来，煤炭行业注重参与国际交流与合作，积极参加具有国际影响力的煤炭峰会、论坛和展览会，国际化水平不断提高。兖矿集团、开滦集团、神华集团等部分大型煤炭企业在澳大利亚、加拿大、印尼等国家合作开发煤炭资源项目取得较大进展；中煤装备、郑煤机等煤机装备出口到俄罗斯、印度、美国等主要产煤国家。自 2009 年我国成为煤炭净进口国以来，煤炭进口量逐年大幅增加，2012 年中国进口煤炭 2.89 亿 t，占全球煤炭贸易量的 24% 左右。

（七）和谐矿区建设取得成效，矿区文化不断繁荣发展

在国家有关推进棚户区改造政策的支持下，煤炭企业主动偿还历史欠账，加大矿区棚户区改造工程投入，一大批煤矿职工喜迁新居，煤矿职工切实享受到了企业改革发展的成果。同时，煤炭企业加强矿区民生建设，关注煤矿职工生活，注重提高职工收入水平。2012 年，全行业职工年平均收入 5.9 万元左右，较“十一五”初期有了较大幅度增长。在推进和谐矿区建设中，煤炭文化建设顺应时代发展需要，举行了两次“寻找感动中国矿工”活动，举办煤炭艺术节、全煤运动会、“乌金杯”、“乌

金奖”赛事等行业文体活动,有力地推进了行业文化建设,煤炭行业文化呈现出健康向上、蓬勃发展的良好态势。

在看到中国煤炭工业快速发展的同时,站在打造中国煤炭工业升级版、提升煤炭工业发展的科学化水平的战略高度,行业发展仍然面临一些深层次的矛盾和问题,主要表现在:

第一,结构调整与转变发展方式的任务依然艰巨。目前全国 30 万 t 以下的小型煤矿有近 1 万处,平均单井规模不足 10 万 t/a;产业结构调整面临布局趋同、非煤产业发展质量不高等问题,现代煤化工产业发展还面临技术、人才等方面制约;多数大型煤炭企业非煤产值超过 50%,但企业利润仍主要来自煤炭产业,调整产业结构仍然存在人才、技术和市场等制约。

第二,煤炭资源开发、环境保护和经济社会可持续发展面临严峻挑战。近年来,我国煤炭产业不断加大资源开发强度、扩大生产规模,给矿区生态环境保护带来了巨大压力;按照国家加强生态文明建设的总体要求,煤炭行业淘汰落后产能、推进煤炭安全高效开发和清洁高效利用、促进节能减排的任务仍十分艰巨。

第三,煤炭产能建设超前,短期煤炭市场供应宽松与长远不足的矛盾依然存在。“十一五”以来的 7 年间,全国煤炭采选业固定资产投资完成 2.25 万亿元,累计新增煤炭产能约 20 多亿 t。截至 2012 年底,全国现有煤矿总产能约 39.6 亿 t,产能建设超前 3 亿 t 左右。但从我国中长期能源生产和消费结构发展趋势分析,到 2020 年,我国煤炭需求将达到 48 亿 t 左右,煤炭市场短期供应宽松与长期总量不足的矛盾依然存在。

二、中国煤炭工业发展前景展望

煤炭是中国的主体能源和重要的工业原料,展望“十三五”及今后更长一个时期,煤炭工业发展,机遇与挑战并存,希望与困难同在。

从中国经济社会发展阶段看,按照全面建成小康社会的战略部署和“两个百年”奋斗目标,今后一个时期,我国经济增长速度将由前些年的两位数增长回落到 7% 左右,煤炭消费弹性系数由前些年的 1.0 左右下降到 0.4 左右,煤炭消费年均增速降至 3% 左右。初步研究预测,到 2020 年,全国煤炭消费量将达到 48 亿 t 左右。煤炭在我国一次能源消费结构中的比重仍在 60% 以上,煤炭工业仍具有较大的发展空间。

从全球煤炭市场贸易看,经过多年的发展,目前我国煤炭市场已经成为世界煤炭市场的重要组成部分。随着世界经济一体化进程的加快,国际、国内两个市场的相互影响将更加深刻,一方面,我国煤炭市场的供需结构及价格变化对国际煤炭市场的影响力不断增强;另一方面,国际煤炭市场供需结构、价格变化也已经成为国内煤炭市场变化不可忽视的因素之一。

从我国生态文明建设看,近期,国务院发布的《大气污染防治行动计划》明确提出了加快调整能源结构,增加清洁能源供应,控制煤炭消费总量等措施。到 2017 年,煤炭占能源消费总量比重降至 65% 以下,原煤入选率达到 70% 以上,非化石能源消费比重提高到 13%,京津冀、长三角、珠三角等区域力争实现煤炭消费负增长,这些政策措施对煤炭生产和消费提出了更高的要求。

面对新时期、新形势,煤炭行业要坚持以提升煤炭工业发展的科学化水平为主攻方向,坚持理念创新,转变近 10 年来快速发展的惯性思维,依靠科技进步,推进结构调整和发展方式转变,着力推动煤炭生产和利用方式变革,打造中国煤炭工业升级版,努力构建资源利用率高、安全有保障、经济效益好、环境污染少、健康可持续发展的新型煤炭工业体系。

(一) 加大煤炭结构调整力度,推进煤炭由燃料向原料与燃料并举转变,转变煤炭经济发展方式

坚持以推进大型煤炭基地建设为依托,推进煤炭企业兼并重组,发展具有国际竞争力的大型企业集团,提高产业集中度。坚持以建设大型现代化煤矿为重点,加大资源整合力度,加强煤矿技术改造,完善退出机制,淘汰落后产能,提高煤矿生产机械化、自动化和信息化水平。坚持以发展煤基循环经济产业为载体,支持煤电一体化、煤焦化一体化发展,促进煤炭由燃料向原料与燃料并举转变,推动煤炭生产利用方式变革。坚持以深化煤炭市场化改革为动力,加强全国煤炭市场交易体系建设,健全煤炭储配体系,发展现代煤炭物流与服务产业,促进煤炭经济由产量、速度型向质量、效益型发展。

(二) 优化煤炭开发布局,提高煤炭长期稳定供应保障能力

统筹考虑煤炭资源赋存条件、市场区位、环境容量、产业布局与经济社会发展,加快建设煤炭铁路、电网、管网、水源等基础设施,落实“控制东部、稳定中部、发展西部”的煤炭开发布局总体思路,有序建设大型煤炭基地,推进煤炭资源“梯级开发、梯级利用”格局的形成,促进安全高效开发和清洁高效利用,提高全国煤炭长期稳定供应保障能力,支撑国民经济平稳较快发展。

(三) 坚持科技兴煤战略,提升煤炭生产力总体水平

深入贯彻落实科教兴煤战略,把科技创新摆在煤炭工业发展全局的核心位置。进一步完善以企业为主体、市场为导向、产学研相结合的煤炭科技创新体系,加快科技协同创新平台建设。加大科技投入,加强基础理论和先导技术研究,努力攻克核心技术和关键技术。加快新技术推广应用和重大成套装备研制,提高煤炭自主创新能力和煤矿重大装备国产化,为煤炭工业健康可持续发展提供新的驱动力。

(四) 推行煤炭绿色开采,建设美丽矿山

树立科学产能理念,根据矿区资源条件、环境容量和生态承载力,合理确定煤炭开发强度,以最小的生态环境扰动获取最大的资源效益,在有条件的矿区推行煤矿充填开采、保水开采等绿色开采技术,减缓或控制煤炭开采对地表生态环境扰动;因地制宜实施矿区生态重建工程,发展循环经济,履行社会责任,促进资源开发、区域经济社会与生态环境协调发展,努力建设生产发展、人民富裕、生态良好的新型矿区和美丽矿山。

(五) 坚持安全发展,促进煤矿安全生产形势根本好转

认真贯彻“安全第一、预防为主、综合治理”的方针,强化安全责任意识和安全生产主体责任;加大安全投入,推进煤矿安全治本攻坚;加强重大灾害防治,实施重大安全工程,加强职业危害防治,推进安全基础和安全长效机制建设;深入贯彻落实煤矿瓦斯防治“十二字”方针,有效防范重特大事故,进一步提高煤矿安全生产水平。

(六) 加强煤炭行业文化建设,推进行业文化繁荣发展

深入挖掘煤矿工人“特别能战斗”精神内涵,把弘扬煤矿工人艰苦奋斗的光荣传统与树立新时期开拓创新精神结合起来,塑造当代煤炭工业新面貌,展现煤矿工人新形象。充分发挥企业文化建设的主体作用,贴近基层、贴近实际、贴近矿工,深入基层,打牢基础,不断提高煤矿工人素质和素养,不断繁荣煤矿职工文化生活,为行业发展营造积极向上、开拓创新、勇于奉献、和谐繁荣的发展环境。

三、加强中国煤炭工业的国际交流与合作

在经济全球化快速发展的进程中,中国的发展离不开世界,世界的繁荣也需要中国。中国在能源发展方面与世界联系日益紧密,中国煤炭工业的快速发展不仅满足了本国经济社会发展的需求,也给世界煤炭工业带来了发展机遇和广阔的发展空间。

从世界煤炭消费增长趋势看,全球煤炭消费总量由2002年的24.1亿t油当量增加到2012年的38.5亿吨油当量,增长59.75%;其中亚太地区由11.9亿吨油当量增加到26.9亿吨油当量,增长126.05%。10年间,煤炭在世界一次能源消费结构中的比重增加了4.7个百分点,亚太地区增加了9.2个百分点。随着煤炭安全高效开采与清洁高效利用技术的发展,煤炭在世界能源结构中的地位和作用依然十分突出。

中国作为世界上最大的煤炭生产和消费国,加强同国际煤炭领域的交流合作,推动煤炭工业的创新发展,积极应对资源约束和气候变化等全球性挑战,促进世界能源安全,更具有十分重要的意义。

中国与世界煤炭工业交流合作与互动机制,必将对推动世界煤炭工业的健康可持续发展产生积极的影响:

一是推动国际煤炭交流互动机制建设。研究在世界主要产煤国之间,国际能源署、世界煤炭协会、世界采矿大会等机构与主要产煤国家政府、行业协会、学术团体、大型能源企业之间,建立更加有效的国际煤炭领域的交流与合作机制,加强对话与合作,在定期举办国际煤炭峰会、展览会、论坛等基础上,组织开展人员互访,相互沟通、相互理解、相互借鉴,促进煤炭行业和企业开展多层次、多方位的合作。

二是加强国际煤炭先进技术研发与推广体系建设。为适应煤炭生产和利用方式变革,促进煤炭资源安全高效开采和清洁高效利用,国际煤炭领域要在煤炭资源精细勘探、煤矿安全高效开采、大型煤机装备研发、煤层气抽采、煤矿灾害防治和大型选煤设备制造、煤炭清洁高效转化技术、矿区土地复垦技术等方面,组织开展国际联合攻关,加强合作,促进优势互补,力争取得突破性进展,提高煤炭资源综合开发与利用效率,让世界各国分享先进的科技成果,支撑世界煤炭工业健康可持续发展。

三是加强国际煤炭贸易体系和市场机制研究。目前,中国已经成为世界上最大的煤炭进口国,进出口贸易量占世界总量的1/4左右;国际、国内两个市场相互补充、两种价格体系相互影响、煤炭现货与期货并存的格局基本形成。在此基础上,希望进一步加强国际煤炭贸易体系和市场机制研究,在履行世贸规则的框架下,建立国际煤炭市场监测预警机制,搭建煤炭行业信息与数据共享平台,为构建资源互补、有序竞争的国际煤炭市场体系做出积极的贡献。

煤炭是中国的主要能源,中国煤炭工业正致力于推进煤炭资源的安全高效开采和清洁高效利用,并取得了显著的成果。开展国际煤炭领域的交流与合作,推动中国煤炭工业的健康可持续发展,既是中国经济社会发展的迫切需要,也是对世界能源工业的巨大贡献。

The Outlook of the Development of Chinese Coal Industry

Wang Xianzheng

(China National Coal Association)

China's coal industry play an very important role in the world's coal industry. The net import in 2012 reached 280 million tons, increase 71.9 million tons at 34.5%, its production and consumption reached almost half of world's total.

China is a country utilizing coal as its main source of energy, and the coal-based energy structure will hard to be changed within a long time in the future. In a long period in the future, China will face both opportunity and challenge.

Brief introduction of coal production and consumption in China

In 2012 China produce 3.65 billion tons of coal, with 220 million tons of anthracite, 3.11 billion tons bituminous and 320 million tons lignite. Consume 3.8 billion tons coal, with 570 mt coking coal, 160 coal for chemical and gasification use, and 3.07 bt steam coal, which 1.98 bt are for power plant accounts 65%.

From 2009 china became net coal importer, and in 2012 china import 289 mt, including 43 mt coking coal.

I . Reform and development achievement of Chinese coal industry

In the Eleventh Five-Year plan, with the support of relevant policies and the continuously strong of macro economy in China, the idea of scientific development have made big change, the reform of marketization makes significant development, the structure adjustment accelerates, independent innovation capability has been strengthened, and the coal production increases substantially. The recovery and control mechanism of coal area environment is established; safety situation in production of coal mine is on the mend, the opening-up is moving forward steadily, which greatly guarantee the stability of national coal supply while the coal industry itself make significant changes.

1. The coal productivity rapidly increases

The accumulative total investment of fixed assets in coal mining and preparation industry reached 1.249 trillion RMB during 11th Five Year Plan period, which was over 5 times of investment during 10th Five Year Plan period, and 2.8 times of the total coal investment during 55 years since the establishment of P. R. China. The national coal production has increased from 2.53 billion tons in 2005 to 3.65 billion tons in 2012, the annual average increase was 187 million tons, which guarantee the demand for national economy and social development.

2. The scientific and technology innovation ability strengthened

New Technical System of Enterprises is building up, and independent innovation achieved

great success. The coal industry have built 14 technical center of state level, 13 large scale national technology demonstration project, accomplished 31 project of National High Technology Research and Development Program and National Basic Research Program of China, 336 key research projects, evaluated 974 industrial scientific and technology award including 30 national prize projects, and some major scientific problem have been solved. The coal direct liquefaction and coal to olefin technology with world stage level and proprietary intellectual property rights have made break through, backfilling mining, geothermal utilization and other environment control technology in coal mine area made progress. The R&D programmed equipment for 6 million tons annual productivity working face come to success, the experiment of underground full working face equipment with 10 million tons annual productivity went well, and the level of domestic coal mine equipment keeps increasing.

3. The industrial structure adjustment is accelerating and eliminating the outdated made outstanding achievements

Nearly 10 thousand coal mines which can't meet the safe production standards have been shut down, annual production of single coal mine increase from 90 thousand tons to 260 thousand tons. The construction of large scale coal mine made progress. China has built 734 large coal mine with annual production over 1.2 million tons, with total production 2.36 billion tons. There are 10 coal producing provinces with annual production over 100mt each, 14 large scale coal base with total production 3.3 billion tons, accounting 90.4% of national production. Diversified development pattern of Coal based company began to start. Coal-electricity integrated complex process accelerated, new type of coal chemical industry began to emerge, non-coal industry value accounted over 50% in most large scale coal enterprises.

4. Enterprise competitiveness increased rapidly

After several years reform and development, the modern enterprise system is commonly established, the independent management capability of enterprises increased remarkably, the scientific management has attained a new level, 32 coal companies is listed on the market. 11 Chinese Coal enterprises listed among top 500 companies of the world at the end of 2012.

5. Safety guarantee ability keep strengthen

The coal mine safety production system and mechanism gradually improve, and coal mine safety situation has steadily improved. By comparing the year of 2012 with 2006, the number of accidents has significantly reduced by 73.5%, from 2945 to 779, the number of fatalities has decreased by 70.8%, from 4746 to 1384, and the number of deaths per million ton of coal production drop to 0.347.

6. The development of recycling economic industry has made progress

Coal preparation capability increased substantially, national coal wash rate reach 56% in 2012 which increase 23% compared with 2005. The demonstration mine area construction of coal recycling economy represented by coal mine recycling economy industrial park in Datong Mining Company have made success, and preliminarily explore the road for development with coal as base, diversified develop, energy saving and emission reduction. The install capacity of power plant using coal waste in China increased to 29.5 million kW, the drainage quantity of coal bed gas reached 14.1 billion cubic meters. Some coal mine use geothermal and back filling technics to

realize producing coal without using coal, which emancipated large quantity of resource and reduce the discharge of solid waste.

Nevertheless, on its road of advanced development, Chinese coal industry is still influenced by the uncertainty of world economic recovery, and the coal industry also face some deep-seated problems, which is mainly manifested in the following aspects.

1. The economic development mode of coal industry need to be changed

Recently, a great deal of coal enterprises still support the increase of economic aggregate by increasing resource exploitation strength, enlarging industrial scale, rapidly increase the production and coal price. The development of coal-based diversified industry, especially high added value industry is just at the early-stage, and restrained by funding, talent and technics, and the coal industry still need hard effort to realize the transform from quantity&speed type to quality&benefit type.

2. The coal consumption continuously increase, the resource development, environmental protection and sustainable development of economic society face severe challenge

In the recent years, the fast increase of coal production in China give huge pressure to the environmental protection in mining area. Our strategic development request to build a resource-saving and environment-friendly society, coal industry still have to work hard on eliminating outdated productivity and realizing target for energy-saving and emission-reduction.

3. The overall level of coal productivity is low

The theory and key technology of safe & efficient mining which is fit for deep coal seam and frequent coal mine natural disaster condition still need to be solved. Compared with advanced coal producing countries, there are still have big gap in large coal mining equipment manufacturing capability, some key technology and equipment still need to import, and the key technology which will influence the coal industry development is not solved.

4. Coal mine safety in production faced stern pressure and challenge

Major coal mine disasters were failed to effectively controlled, the number of disasters is still big, death and casualty disaster happened occasionally, which restricted the healthy development of coal industry.

II . Outlook of the development of coal industry in China

Chinese government attaches great importance to the reform and development of coal industry, and makes the definite claim to uphold energy-saving development, clean development, safe development and sustainable development of coal industry. China will incorporate its response to climate change into the national economic and social development program, and take effective measures to notably lower 40%~45% CO₂ emissions per unit of GDP in 2020 against the 2005 figure while increase the ratio of non-fossil fuels to 15% in the primary energy consumption mix, develop low carbon economy and circular economy, research and promote new technologies and the ratio of coal in the primary energy consumption mix will gradually decline. But the reliability, cheap price and clean burning of coal determine the long term and stable role of coal industry will play in national economy and social development. The energy mix based on coal in China is still the inevitable choice of energy development strategy.

1. Uphold the energy development policy “based on coal while promoting diversified development of energy sources”, which provides a clear direction for the Chinese coal industry to go

In recent years, the Chinese Government has developed a series of major policies and measures to promote the reform of coal industry and achieve notable results. For a period of time to come, acting on the scientific outlook on development, the Chinese coal industry will focus on the present situation while make a long-term plan, be open to the world and take coordinated actions; it will strive to guarantee energy security and seek breakthroughs in deepening the institutional reform; and it will strengthen resource conservation and environmental protection, accelerate the clean development and efficient utilization of coal, intensify efforts on international cooperation of mutual benefits, and promote the development of renewable energy in an orderly fashion, so as to build a China-specific modern coal supply guarantee system featuring safety, cleanness, efficiency and coordination.

2. Strongly promote coal restructuring, and effectively change the way of coal economy develops

For a period of time to come, China will fully consider the coal resource condition, environment of mining areas, coal mining technology, disaster prevention and control, and coal transportation, and further implement the principle of “Consolidation the production of Eastern Region, stabilized the production rise of Center Region, Development of Western Region”. China will uphold the concept of coal scientific production, strongly promote restructuring, build large modern coal mines and safe & high efficient underground coal mines, accelerate the construction of large scale coal bases, and drive industrial cluster development; China will raise the coal industry access standard, move forward with optimization and upgrading of industry, product and organization structure, improve competitive of coal industry and steadily increase the quality of coal economy development.

3. Uphold the strategy of developing coal depend on science and technology, which will raise the overall productivity level of coal industry

For a period of time to come, the Chinese coal industry will strive to make breakthroughs in the basic coal theory and key technology while promote the integration of coal industrialization with information technology; it will accelerate the research on high-definition coal geological prospecting technology as well as the promotion and application of such advanced technology, so as to increase the accuracy of coal prospecting; it will accelerate the research on the technology of mine construction in deep coal fields, in a way to improve the coal production and supply capability in China's eastern regions; it will also accelerate the research and development of the technology and equipment for building large modern coal mines, striving to increase the manufacturing capability for heavy coal mining equipment, which are indispensable to the digitalization and modernization of coal production. The notable increase in independent innovation capabilities related to coal has clearly provided strong intellectual support to the healthy, sustainable development of Chinese coal industry.

4. Work hard to make advances in energy saving and emission reduction and the harmonization of environmental protection and resource development

For a period of time to come, China will formulate technical standard of coal mine energy saving and emission reduction, put in place of catalogue of eliminated equipment with high energy

consumption and outdated technology, promote the application of new technology and technique, increase the resource comprehensive utilization, accelerate the low carbon development of coal industry, and effectively respond to the challenge of global climate change. We will uphold the integration of coal mining and methane extraction, effectively control the methane emission of coal mines and improve the development and utilization of coal bed methane; vigorously promote the green development technology, fundamentally improve the ecological environment of the mining zones, increase the capacity of sustainable development of coal industry.

5. Uphold the principle of safe development, which will dramatically improve the work safety situation at coal mines

For a period of time to come, China will conscientiously implement the principle “Safety First, Prevention Centered and Comprehensive Control”, strengthen the enterprise responsibility system, increase safety investment and deepen the hazards check and control; Education and training will be enhanced so as to improve the safety competence of miners. Conscientiously implement the 12 Character hazards control principle “Mining after gas drainage, production based on air volume, gas monitoring and control”. The principle that gas drainage must take place prior to coal mining will be followed, and the gas control campaign will be deepened, so as to bring major accidents in check; and obviously, the continuous, steady improvement in the national coal mine safety conditions will provide a solid basis for the healthy, fast development of Chinese coal industry.

煤炭在全球能源结构中的作用： 停滞不前还是全速前进？

法提赫·比罗尔

（国际能源署）

尽管煤炭不像其他燃料备受关注，但截至 2010 年，煤炭近十年的需求增量几乎等同于天然气、石油、可再生能源（包括水能、风能、生物能和太阳能等）以及核能需求增长的总和。即使按照百分比计算，煤炭 10 年来的使用量增速也超过了可再生能源，原因是得到了政府的广泛支持。煤炭在全球能源构成中的重要性达到自 1971 年以来的最高点。煤炭是生产电力的坚实保障，为新兴经济的快速工业化提供能源基础，帮助上亿的人口提高生活质量并摆脱能源贫乏。

截至 2010 年的十年中，全球煤炭使用量增长了 53%，甚至在大萧条最严重的 2009 年时也处于增长状态，并在 2011 年（增长幅度超过 5%）和 2012 年在全球经济增长缓慢的情况下继续保持用量增幅。在这一系列令人印象深刻的数据后面隐藏着的是经合组织国家与非经合组织国家之间的分歧。在经济合作与发展组织（以下简称经合组织）国家中，即使过去 10 年中电力需求一再增加，煤炭在发电领域燃料的比重仍从 42% 下降到 38%，其市场份额由天然气取代。例如，在美国，天然气已迅速取代煤炭成为发电的主要燃料，原因是新型非常规天然气（页岩气）产量的快速增加导致了天然气价格大幅下跌。而在非经合组织国家中，煤炭则推动了电力和工业方面的重大改革：过去十年中，非经合组织国家电力行业的能源需求量增长了 60%，从而使得煤炭使用量加倍。工业的能源使用量已增长约五分之三，其中四分之三是由煤炭和电力（主要是火力发电）提供。在中国和印度，火电厂电力产量在 10 年中分别增长了 2 500 MW，是当今德国用电量的五倍。由于两种不同的发展趋势，非经合组织国家的煤炭使用量占全球用量的 70%，而中国的煤炭使用量就占全球用量的 50%。

在煤炭用量的增长之外，中国和印度都大幅提高了电力的使用量，并减少了使用传统生物能做饭的人数。中国在这一方面取得了伟大的成就，在 1990 年起便有 5 亿的农村人口有电可用。在印度，农村和城市使用电力的人数比例为 67% 和 94%，比三年前的 56% 和 93% 有所增幅。许多亚洲国家的电力使用比例在过去十年中由很小比重到几乎全都使用。电力使用比例的增加对经济发展具有重要作用；这意味着食物可以储存在冰箱里，儿童可以完成家庭作业，小型企业可以正常运营。而不可否认的是，生产这些电力的燃料正是煤炭。

尽管如此，许多非经合组织国家的电力使用情况仍在非常低的比例上，仅为经合组织用电比例的五分之一。在中国，人均用电量为经合组织国家的三分之一，在印度甚至少于十分之一。此外，根据最近印度的使用情况，仍有许多工作需要完成已确保新兴经济有可靠、安全的电力供应。发电电力传输和分配领域需要大量的新投资资金注入。在中国和印度，这些投资已完善地投入使用，数百个十亿瓦特的火力发电站正在建设当中。