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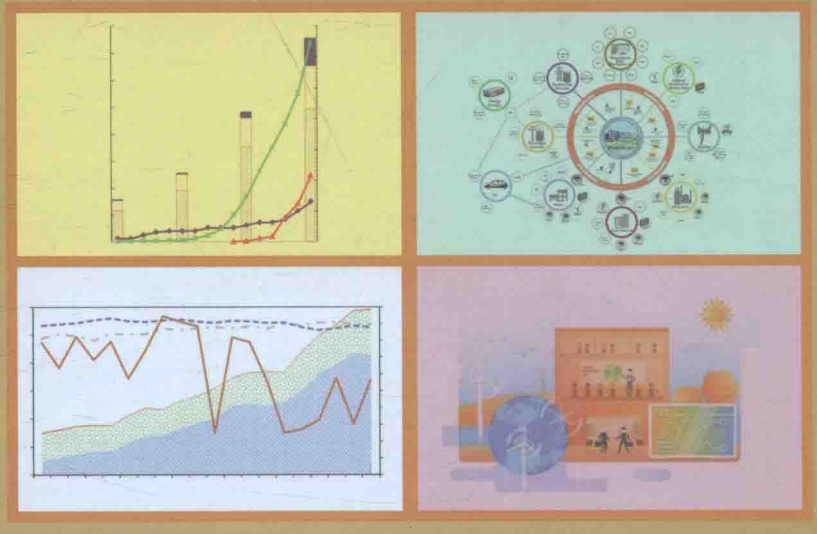

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内 容 简 介

能源市场是国际社会和学术界广泛关注的热点问题。中国能源市场是国际能源市场重要的组成部分，主要包括中国能源生产者、消费者、市场结构和价格形成机制等因素，也包括不同能源品种的生产量、消费量、贸易量及影响因素等多方面内容。

本报告是《中国能源报告》系列研究报告的第六卷。在经济新常态和推进“一带一路”战略的国际背景下，本报告从能源经济的视角入手，总结并提炼国际和中国能源市场的发展特点，从时间和空间维度研究中国能源市场，梳理能源市场化演进的历程和发展。针对能源市场基本特征、能源市场监管、能源市场准入、能源市场化改革面临的机遇和挑战等重要问题开展了系统研究，同时也探讨了新能源汽车、清洁能源投资、能源市场“互联网＋”等新特点和新问题。

《中国能源报告》是系列研究报告，自 2006 年以来，每两年出版一卷。根据国际和国内能源经济与气候政策形势的变化，每卷选择不同主题，开展有针对性的研究。突出研究的实证性和政策性，在深入研究的基础上，为国家相关决策部门提供参考和信息支持。

本报告适合能源经济与管理、环境与气候政策等领域的政府公务人员、企业管理人员、高等院校师生、科研院所人员及对该领域感兴趣的学者和相关工作者阅读。

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作者简介

魏一鸣，教育部“长江学者奖励计划”特聘教授（2008年）、国家杰出青年科学基金获得者（2004年）、中国科学院“百人计划”（2005年）、“百千万人才工程国家级人选”（2004年）。现任北京理工大学管理与经济学院院长、北京理工大学能源与环境政策研究中心主任、国家自然科学基金创新研究群体“能源经济与气候政策”学术带头人。兼任中国优选法统筹法与经济数学研究会副理事长、能源经济与管理研究分会理事长等。受邀担任9个国际期刊的编委或副编辑。曾任中国科学院科技政策与管理科学研究所副所长（2000～2008年）、研究员。

长期从事管理系统工程、能源经济管理的研究和教学，在能源经济预测与决策建模、资源与环境管理、能源经济与气候政策等领域开展了有创新的研究工作，并做出了贡献。先后主持国家重点研发计划项目、国家自然科学基金创新研究群体项目、国家自然科学基金重大国际合作项目、“973”计划、国家科技支撑计划项目、国家自然科学基金重点项目、欧盟FP7等40余项科研课题，出版专著10余部；发表学术论文370余篇，其中，SCI/SSCI收录113篇，EI收录100余篇。据Web of Science数据，发表的SCI/SSCI论文被引用1463次，其中严格他引1280次，论文H指数22；据Google Scholar统计，论著被同行引用超过1万次、H指数52。曾连续两次入选中国高被引学者（Most Cited Chinese Researchers）榜单（2014年、2015年）。

8项成果曾获省部级科学技术、自然科学奖或哲学社会科学奖，其中一等奖4项。向中央和国务院提交了多份政策咨询报告并得到了重视。研究成果在学术界和政府部门均有较大影响。

廖　华，男，1980年生，江西南康人。北京理工大学能源与环境政策研究中心教授、博士生导师、副主任。从事能源经济与气候政策研究。合作发表论文60余篇、合著专著9部。已主持国家重点研发计划课题1项、战略性先导科技专项课题1项、国家自然科学基金项目5项、霍英东高校青年教师基金课题1项、澳大利亚国立大学项目1项，讲授《能源经济学》课程。完成的部分专报信息被中办、国办采用。曾获国家优秀青年科学基金项目，曾入选教育部新世纪优秀人才支持计划、“长江学者奖励计划”首批青年学者项目，曾获茅以升北京青年科技奖、省部级一等奖4项、中国科学院院长奖等。

唐葆君，女，1972年生，江西泰和人。教授，博士生导师。现任北京理工大学管理与经济学院副院长，北京理工大学能源与环境政策研究中心副主任。从事能源金融、碳金融研究。发表论文40余篇、出版专著及合著6部。主持国家及省部级重要课题20余项，包括国家自然科学基金面上项目（2项）、北京市自然科学基金面上项目、北京市哲学社科重点项目、国家科技支撑计划等科研任务，曾在日本名古屋大学合作研究。主要讲授《国际金融》《金融经济学》等课程。曾获国家能源局能源软科学研究优秀成果奖一等奖、教育部高等学校科学研究优秀成果奖（科学技术）科技进步奖二等奖、中国电子学会电子信息科学技术奖二等奖、国家能源局能源软科学研究优秀成果奖三等奖。

郝　宇，男，1983年生，湖北黄石人。德国汉堡大学经济学博士，北京理工大学能源与环境政策研究中心副教授。从事能源经济、环境经济、环境政策等方面的研究。主持包括国家自然科学基金在内的研究课题6项。迄今为止已在*Environment and Development Economics*、*EnergyPolicy*、*Applied Economics*、*Applied Energy*、中国软科学等国内外重要学术期刊上发表论文30余篇。讲授《高级宏观经济学》《环境经济学》等课程。指导多个本科生团队完成能源经济、环境经济方向国家级和北京市级大学生创新训练项目，并获评2016年度北京理工大学“十佳优秀大学生创新训练项目”指导教师。

前　言

能源市场是指各种能源作为商品进行交易的场所，它包括市场主体（生产者和消费者）、市场客体（各品种能源商品）及市场行为（定价、交易、能源、金融等）。中国是世界上最大的煤炭交易市场，是世界煤炭市场的重要决定性力量；随着中国对石油天然气的需求逐渐增长，石油天然气进口量不断扩大，中国油气市场是世界油气市场的重要内生性因素。同时，能源作为一种战略资源，和其他商品有着一定的区别，能源市场在配置资源时的重要性和影响也更加深远。

从市场构成而言，能源市场和其他市场一样，具有市场主体、市场客体及市场行为这些要素。中国能源市场的主体，即能源的消费者和供给者。中国石油和天然气这两种能源的供给，主要依靠国内三大能源公司（中国石油天然气集团公司、中国石油化工集团公司、中国海洋石油总公司）的生产及进口能源。煤炭供给者较多，其市场集中度较石油和天然气而言更低。

自 2015 年 6 月以来，人民币出现较大幅度贬值，煤炭进口量下降，出口量增加。虽然目前中国煤炭出口相对进口数量而言规模很小，但是在国内产能过剩的背景下，人民币贬值达到一定程度，可能使中国再次成为煤炭净出口国。另外，中国经济增长速度逐步回落，符合中国经济发展规律，进一步需要改变过去传统的粗放式、高能耗的发展方式，实现产业结构低碳化转型。中国经济再平衡背景下，能源新常态的内涵表现为能源需求总量增速放缓、结构加速转型，能源效率提升和能源消费结构低碳化、清洁化等。利率不断市场化，作为货币政策的重要工具，将会对能源价格形成冲击，财税政策可以有效支持能源市场发展。与此同时，可再生能源在建筑领域得到推广，新能源汽车产业的发展日益受到重视。因此，通过进一步推进能源市场化改革，让市场在能源供给领域发挥主导作用，对促进经济可持续增长具有重要的战略和现实意义。

《中国能源报告（2016）：能源市场研究》作为《中国能源报告》系列研究报告的第六卷，是北京理工大学能源与环境政策研究中心团队成员，对近年来中国能源市场相关重大问题，在长期研究过程中形成的总结。期望本书的出版，能使中国能源市场的相关问题得到国内外学术界和政府相关部门更多的重视，并为未来能源市场的建设提供政策支持和决策依据。本报告以能源经济的分析框架为基础，围绕以下问题展开深入研究。

（1）全面总结和梳理世界和中国能源市场发展形势。自第五卷《中国能源报告（2014）：能源贫困研究》出版以来，世界与中国经济出现了新的局面。世界经济增长格局显著分化，美国乐观、中国下行、欧洲回升、日本惨淡、俄罗斯重创，美元指数走强，大宗商品价格大跌。中国经济进入“新常态”，经济增速进入一个相对较低的区间且不稳定、不牢固，主要大宗工业品产能过剩，经济结构出现部分好转迹象，一些长期性的社会矛盾凸显。中国是国际能源市场重要的内生性因素，这不仅仅体现在生产量、

消费量和贸易量的占比方面，更体现在增量（边际量）占比方面，还体现在预期及其变化方面。在上述背景下，报告归纳了世界经济发展与能源市场的基本特征、世界能源格局的新变化、世界能源市场正在发生的新调整、中国经济与能源发展的基本特征，以及中国能源市场正在面临的新变化与新挑战。

（2）分析中国能源市场供给和需求的特点。本书从不同的能源品种入手，对能源市场中供给者和消费者的行为及其特点分开讨论，研究认为：中国的能源市场供给仍然以煤为主，近年来，清洁能源比例不断上升，能源消费结构不断优化。同时各种能源的准入门槛、市场集中度及定价情况都不尽相同。在消费环节中，工业的能源消费量最大，占总社会总能耗的70%左右。能耗量居第二的是生活能耗，近年来居民整体的能耗结构发生变化，城乡之间的消费结构差异也愈加明显。紧随其后的是交通运输、仓储和邮政业，该行业的能耗增长高于同时期的社会总能耗。

同时对主要能源的成本核算和定价机制的历史沿革进行系统的梳理，提出在能源成本核算方面的不足之处，也为能源的成本核算和定价指出改革方向。能源行业是较为特殊的行业，受到政府的宏观调控范围较广。在如今的能源市场中，政府的定位需要进一步明晰和优化；中国能源企业管理的改革方向是政企分开、职责明确。

（3）讨论新常态下宏观政策对能源市场的影响。中国经济再平衡背景下，能源新常态的内涵体现为能源需求总量增速放缓、结构加速转型，能源效率提升和能源消费结构低碳化、清洁化等，要求严控高碳行业增长，强调能源效率提升。人民币贬值将减少煤炭进口，可能使中国再次成为煤炭净出口国，报告就人民币汇率变化对中国石油进出口贸易的影响进行实证分析。利率作为货币政策工具对能源价格形成冲击，主要影响可再生能源的投资和中国企业海外投资。因此，应充分利用利率杠杆，促进能源市场发展。财税政策可以有效支持能源市场发展。对于资源税，应采取“小步走”的渐进式方案。可再生能源在建筑领域得到推广，发展新能源汽车产业日益受到重视。当前，产能过剩是供给侧结构性改革的重要原因，供给侧结构性改革重点是提高供给质量和全要素生产率。报告提出基于“新供给经济学”的供给侧结构性改革从四个方面影响能源市场，并归纳为“去产能、去库存、去杠杆、降成本、补短板”的特点及最新动向。

（4）建立稳定、健康的能源市场已经逐渐成为世界各国经济社会发展必不可少的部分。能源市场并不是一个独立的个体，而是会受到消费者行为、金融市场和政府政策的共同影响。因此，能源市场的风险防范对于政府政策制定、企业生产者设定目标和投资者规划策略尤为重要。本报告主要从影响整体能源市场的三大类因素入手：首先分析宏观经济波动对能源市场的传导机制，并且从供给和需求的角度分析能源市场面临的不同风险；其次关注全球资本市场危机对能源市场的短期溢出效应，进而又影响到能源供需的风险；最后阐述由于各国能源政策变革，可能会对不同类型能源产品供需、价格造成冲击。针对相应风险，在宏观、中观和微观三个层面提出相应政策建议。

（5）分析中国能源期货市场的现状、存在的问题与发展趋势。能源期货市场是目前中国能源金融市场的主体，是能源现货市场和金融市场相互渗透融合的产物。交易品种包含石油和煤炭。原油和天然气期货的上市工作也在积极推动中。未来，“互联网＋能

源期货”发展模式将为中国能源期货的平台升级、市场扩展、争夺定价权与话语权提供有力支撑。

针对国内石油期货市场的研究表明，目前燃料油与石油沥青市场的价格发现机制以现货为主导，期货市场的定价功能极为薄弱，难以为能源企业提供有效的风险规避手段。鉴于中国的石油期货体系尚不健全，远不能满足市场主体的套保需求；结算制度、准入制度与合约设计的不尽完善导致交易流动性低，市场参与度低。此外，市场监管中也存在维持市场活力与避免过度投机的两难局面。

(6) 目前，煤、电、油、气作为中国依赖的主要能源，总体的资源储量丰富但地域分布不均。煤炭、油、气资源整体呈北多南少的特点；电力呈“火电为主，水电辅之”的发电结构特征，资源禀赋具有集中性的分布特点；而能源需求量较大的省份主要集中在东、中部工业发达地区，能源生产与消费在空间上的不匹配促使中国展开跨区域间的能源贸易。现阶段中国能源的贸易现状呈现以“西煤东运、北煤南运”为主导的煤炭贸易、以“西电东送”为主导的电力贸易、以“北油南调、西油东输”为主导的石油贸易和以“西气东输”为主导的天然气贸易。为促进跨区域间的能源贸易，国家加大了对交通网络和能源基础设施的建设，针对油气矿产资源对外依存度高等问题，国家大力发展“一带一路”战略，深化与中亚、南亚、西亚等国家的交流合作，进一步巩固中国的能源安全。在此背景下，本报告通过考察能源资源的分布禀赋及能源贸易的发展状况，从理论上对中国现阶段能源贸易仍存在的问题进行空间配置的优化，同时针对“一带一路”背景下的大区域能源市场间的贸易结构及变化趋势进行分析。

(7) 新中国成立以来，中国煤炭行业得到了快速的发展，在能源生产和消费结构中长期处于主导地位，同时也保证了中国经济的快速发展。然而，自 2012 年下半年以来，受经济增速放缓、环境和二氧化碳减排约束趋紧等影响，国内煤炭需求疲软，价格持续下降，供给过剩现象突出，煤炭行业形势严峻。立足于中国国情，重点分析中国煤炭市场的供给与需求特征，全面考察煤炭市场经历的“完全计划、多层次计划、价格双轨制、煤炭价格机制市场化”四个阶段的定价机制与驱动因素，探讨当前煤炭行业发展在市场、环境、安全等领域所面临的问题与挑战，针对中国煤炭市场运行与建设、行业布局与规划、国际煤炭市场地位提升等方面提出建议。

(8) 探讨中国电力市场从寡头格局到市场化改革的特点和影响。研究发现：世界各国高度重视电力市场改革，依据本国国情选择合理的市场模式，以安全、高效、清洁为目标，以电价改革作为电力市场建设的核心，以需求侧作为市场调节的重要手段，构建跨区域电力市场，促进资源优化配置；中国电力市场先后经过集资办电、政企分开、厂网分离等多轮改革，在优化能源资源配置、调节市场供求关系、促进电力工业可持续发展等方面取得了显著的成绩。面对生态文明建设和应对气候变化新目标、保障国家能源安全，促进电力行业提质增效，新一轮电改已经拉开序幕，以“监管中间，放开两头”为主，改革的核心依然是电价改革，新一轮电改有利于统一开放、竞争有序的电力市场体系建设，促进能源结构调整和新能源行业的发展。

(9) 基于国际油价低迷的背景，探讨我国石油行业发展变化的特征。自 2014 年 7 月以来，油价持续低位震荡。在低油价背景下，由于中国石化产业链的不同环节对油价

波动的敏感程度各不相同，石油市场开始呈现出分化发展的特点：勘探开发领域受到直接冲击，业绩大幅下滑；油田服务行业仍依靠存量经营，盈利增速放缓；炼油与化工行业受益于成品油地板价设立和低成本，盈利有所增长；销售行业通过改善库存管理，业绩稳定；而一体化公司（中石油与中石化）则由于各板块业务占比不同，业绩出现了一定程度分化。鉴于石油对中国经济发展的重要性，在石油市场稳定发展的同时，石油安全也成为我们关注的重点。近年来，中国石油贸易规模加大，进口渠道也更加多元化，但海外投资风险较大、安全形势仍然复杂，不容忽视。以低油价为契机，我国持续推行成品油定价机制改革与油企混合所有制改革，虽成效显著，但面临的挑战依然存在，各方力量和各种机制需要协调配合，方能有序稳健发展。

（10）“十二五”规划末，中国天然气消费量增速大幅回落，主要驱动因素已经从经济增长和价格优势转向生态文明建设，但仍有较大的发展潜力。预计 2020 年全国天然气消费量在 2700 亿立方米左右，2030 年可达 3900 亿立方米，替代煤炭是主要发展方向。从供应角度看，中国天然气资源潜力十分丰富，非常规天然气特别是页岩气的发展已经取得了较大突破，未来仍有较大发展空间，煤制气项目则面临较大的问题。“十三五”规划期间，进口管道气和进口 LNG 都将继续快速增长，但资源过剩问题已经显现并不断加剧。

经过 30 多年的改革发展，中国天然气价格机制不断完善，但与欧美地区成熟的“气对气竞争法”的市场化定价模式仍有较大差距，净回值定价法仍需进一步完善，天然气交易体系应该是发展的重点。当前中国天然气管网领域自然垄断与行政垄断并存，储运基础设施能力仍严重不足，政策的不确定性更加制约了天然气管网的发展。建议从问题导向、系统思维、循序渐进的角度出发，加快完善天然气行业管理体制机制，建立公平开放、自由竞争的市场规则和秩序。

目前，中国在能源的市场化进程中已经取得了一定的成就。煤炭价格从新中国成立初期至今，经历了完全计划阶段、多层次计划阶段、价格双轨制、煤炭价格机制市场化四个阶段。2012 年 12 月，国务院发布了《关于深化电煤市场化改革的指导意见》，标志历时 16 年的煤炭价格双轨制和几十年的“煤炭订货会”在 2013 年正式退出舞台，煤炭价格全面实现市场化。在电力市场上，上网电价主要由政府制定，现从资源优化配置和能源效率提高的目标出发，已经开始探索市场定价机制；输配电价按照电网结构和电网企业经营管理体制分为跨区、跨省和省级电网三个层次；销售电价由政府制定，按用电性质和用途划分。梳理中国和世界其他国家在推进能源市场化方面的政策和措施，可以更理性地评判中国在能源领域建立市场经济的合理性和科学性，并为中国政府未来的职能定位及相关资源产品的市场化政策的制定提供参考和借鉴。在能源市场不断发展的今天，一些挑战也越来越急迫。煤炭在中国能源消费结构中处于主体地位，然而，近年来随着中国经济增速放缓，中国煤炭市场供需格局发生了巨大变化，产能过剩问题日益凸显，使得煤炭行业陷入困境。石油市场上，中国大型国有石油企业处于垄断地位，因而在国际油价大幅下跌，导致国内石油企业面临亏损的情况下，政府以行政手段参与成品油定价，目的是确保中国石油市场安全稳定发展。然而，正是由于这种“保护机制”的存在，中国成品油定价机制进程缓慢，甚至出现反复和逆行。展望未来，在新常态背

景下，为进一步促进能源市场化发展，中国政府制定了一系列措施，推动新一轮改革。针对煤炭行业产能过剩，以供给侧结构性改革为切入点，严格控制增量、淘汰落后产能，逐步消化过剩产能；电力市场新一轮的改革，将利于统一开放、竞争有序的市场体系建设，促进能源结构调整和新能源产业的发展；同时新能源和可再生能源的发展，也将提高能源效率，优化能源供应格局，推动能源革命纵深发展。

Preface

Energy market, which is the trading place for a variety of energy that are taken as commdities, includes maket players (producers and consumers), market objects (all varieties of energy products) and market behaviers cpricing, trading and energy finance etc. China is the largest coal trading market in the world, and China holds the important decisive power in the world's coal market. With an increase of China's demand for petroleum and natural gas, the import volume of petroleum and natural gas has been constantly expanding, which is important to the world's petroleum and natural gas market. Meanwhile, energy market, as a kind of strategic resource, differs from other commodities; and the importance and influence on energy market are more profound.

From the perspective of market structure, energy market possesses the same elements with other commodity markets, such as market subject, market object, and market behavior. The subjects of Chinese energy market are the consumers and suppliers of energy. The supply of petroleum and natural gas in China mainly relies on the production and import of three domestic companies (China National Petroleum Corporation, Sinopec Group, and China National Offshore Oil Corporation). There are a lot of coal suppliers which are the leading enterprises in the coal industry, such as China Shenhua Energy and China National Coal Group Corporation. Their market concentration rate is relatively lower than that of petroleum and natural gas.

Since June 2015, the significant devaluation of RMB contributes to the higher coal price and leads to the reduction of coal import volume and the increase in coal export volume. Although China's current coal import largely exceeds the export and faces the domestic overcapacity, China may become the coal net exporter again when depreciation of RMB exchange rate reaches a certain degree. In addition, the growth is slowing down, which conforms to the economic development law. The past traditional development pattern of extensive and high energy consumption shall be further improved, and consequently, the low-carbon transformation of industrial structure is realized. Under the background of China's economic rebalance, the connotation of energy 'new normal' represents itself in a slow growth of total energy demand, accelerating structure transformation, improvement of energy efficiency, low-carbon and clean energy consumption structure, etc. The interest rate, as the important tool of monetary policy, tends to marketization, and it will shock the energy price, while fiscal taxation policy can effectively support the energy market. Meanwhile, renewable energy is popularized in the field of architecture and automobile industry. Therefore, to further promote the energy market

reformation and to improve the leading role of market in the energy supply field possess the imprtant strategic and practical significance for elevating the sustainable economic growth.

"China Energy Report (2016): Energy Market Research", as the sixth installation of the CEEP's report series, is expected to provide policy support for both public and private decision makers. This report will involve the following issues based on energy economic analysis.

(1) Possibilities of the global as well as China's energy market development are comprehensively summarized and systematized. Since the release of "China Energy Report (2014): Energy Poverty Research", the world economic growth pattern is changed significantly, and the situation is listed as follows: United States' economy is optimistic; China is experiencing a downturn; Europe is recovering; Japan carries out economy painstakingly; Russia is undertaking a heavy hit; US dollar goes strong; and the price of bulk commodity falls greatly. It's worth noting that China's economy enters into the 'new normal' which enters into a relatively low, unstable and loose stage. China is important to the international energy market in the aspects of proportion of production, consumption, trade volume, increment (margin), expectation and its change. Under the above backgrounds, the report summarizes the basic characteristics of the world's economic development and the energy market, the new change of the world's energy pattern, the new changes and new challenges faced by China's energy market.

(2) Characteristics of supply and demand of the China's energy market are analyzed. The behaviors and characteristics of suppliers and consumers are discussed respectively from the different energy species. The report shows that the supply in China still gives priority to coal. In recent years, the share of clean energy is rapidly increasing, and the energy consumption structure is constantly being optimized. Meanwhile, requirements for market access, market concentration rate, and pricing situation of each energy are different. The industrial energy consumption is the largest, which accounts for about 70% of the total energy consumption. Residential energy consumption ranks second. In recent years, the overall energy consumption structure of residents has been changed, and the consumption structure difference between city and countryside is evident. Followed by transportation, the energy consumption increase of warehousing and postal service is higher than the total energy consumption.

Meanwhile, the history of cost accounting and pricing mechanism of the main energy is systematically summarized. The inadequacies of energy cost accounting methods are proposed, and simultaneously, the reformation direction of the energy cost accounting and pricing is also pointed out. The energy industry is the relative special industry, and it is greatly controlled by the government's macroscopic readjustment and control. In today's energy market, the role of the government needs to be further clarified and it is

time for Chinese energy enterprises to perform separation on operations from administration.

(3) The influence of macropolicies on energy market in the context of 'new normal' is discussed. Under the background of Chinese economic rebalance, the connotation expression of energy new normal is with slow growth of total energy demand, accelerating structure transformation, improvement of energy efficiency, low-carbon and clean energy consumption structure, etc. It is required to strictly control the growth of high carbon industry and emphasize the improvement of energy efficiency. RMB devaluation will reduce the coal import, and China may become the coal net exporter again because of the RMB depreciation. An empirical analysis on the influence of the change of the RMB exchange rate to Chinese petroleum import and export trade is conducted in this report. As the monetary policy tool, the interest rate impacts the energy price, and it mainly influences the investment of renewable energy sources and the overseas investment of Chinese enterprises. It proposes that we shall fully utilize the interest rate lever and promote the development of energy market. The fiscal taxation policy can effectively support the development of energy market. For resource tax, the gradual model scheme of "walk small steps" shall be adopted. Renewable energy sources are popularized in the field of architecture, and it becomes increasingly important to develop new energy automobile industry. Currently, over capacity is the important cause of supply side structural reform, and supply side structural reform lays emphasis on improving the supply quality and total factor productivity. The report proposes that supply side structural reform based on "new supply economics" influences the energy market from four aspects, and summarizes the characteristics of "de-capacity, de-stocking, de-leverage, cost reduction, and short slab repair" and the new trend.

(4) Establishing a stable and healthy energy market has become an essential part of the economic and social development in all countries around the world. Energy market is not a separate entity, and it is jointly influenced by consumers' behaviors, financial market and the government's policies. Therefore, the risk prevention of energy market is especially important for the formulation of the government's policies, the goals setting of enterprise producers, and the strategic planning of investors. This report mainly starts from three categories of factors influencing the whole energy market: firstly, the transmission mechanism of macroeconomic fluctuation to the energy market is analyzed, and the different risks faced in the energy market are also analyzed from the perspectives of supply and demand; secondly, it pays attention to spillover effects in the short term of the global capital market crisis to the energy market, and consequently, the risks of energy supply and demand are influenced; lastly, it states that products supply and demand and price of different types of energy may be impacted because of the energy policy transformation of all countries. The corresponding policy suggestions are pro-

posed aiming at the corresponding risks in macro, meso and micro levels.

(5) The current situation, existing problems, and development tendency of Chinese energy futures market are analyzed. The energy futures market is the subject of Chinese current energy financial market, and it is the product of the permeable fusion between energy spot market and the financial market. Trading products include petroleum and coal, and the listing of crude oil and natural gas is actively promoting. In the future, the development mode of new 'internet plus' strategy for energy futures will powerfully support the platform upgrading, market expansion, pricing power and speaking right fighting.

Research on the domestic petroleum future market shows that, currently the market price discovery mechanism of fuel oil and petroleum asphalt gives priority to the prompt goods, and the pricing function of futures market is extremely weak, which is difficult to provide the effective risk aversion means for the energy enterprises. In consideration of the unsound Chinese petroleum futures system, the hedging demand of the market subject can not be satisfied; the imperfect settlement system, access system and contract design lead to low trading liquidity and low market participation. In addition, in the market supervision, there is also the dilemma of maintaining the market vitality and avoiding excessive speculation.

(6) Nowadays, coal, electricity, petroleum and gas are the main energy which China depends on with uneven geographical distribution. Coal, petroleum, and gas resources present the characteristics of "a few in south but much in north" overall, while the electric power presents the electricity generation structural characteristics of "thermal power is given priority and hydroelectric power is supplemented". Resource endowment possesses the concentrative distribution characteristics, while the provinces of great energy demand are mainly centralized in the east and central industry developed regions. The mismatching of energy production and consumption on the space promotes China to develop the transregional energy trade. At the present stage, the current situation of Chinese energy trading presents the coal trade led by "transport coal from west to east China and transport coal from north to south China", the electric power trade led by "transmission of electricity from west to east China", the petroleum trade led by "transport petroleum from north to south China, and transmission of petroleum from west to east China", as well as the natural gas trade led by "transport the natural gas from west to east China". In order to promote the energy transregional trading, the country increased the construction in transportion network and energy infrastructure. Aiming at the problems of high external dependency of petroleum gas mineral resources, the country energetically proposes the Belt and Road Initiative, deepens the communication and cooperation with the countries in Central Asia, South Asia, and West Asia, and further strengthens the energy safety in China. Under this background, the space

configuration optimization to the existing energy trading problems in China is implemented in this report through investigating the distribution endowment of energy resources and the development situation of energy trading; meanwhile, the trading structure and change tendency among energy markets in big areas under the background of the Belt and Road Initiative are analyzed.

(7) Since the founding of new China, Chinese coal industry has been promoted rapidly, which takes a leading position in energy production and consumption structure for a long term; meanwhile, it also guarantees the rapid development of Chinese economy. However, since the second half of 2012, influenced by the slow economic growth, severe environment and carbon dioxide emission reduction constraint, the domestic coal demand is weak, and the price declines constantly; the excess supply is prominent and the coal industry situation is severe. Based on China's national condition, the supply and demand characteristics of Chinese coal market are analyzed emphatically; the pricing mechanism and driving factors of four stages (complete plan, multi-level plan, dual-track price system and coal price mechanism marketization) experienced in the coal market are comprehensively investigated; the current coal industry development's problems and challenges faced in the market, environment, and safety and other fields are investigated; the corresponding suggestions in the aspects of Chinese coal market operation and establishment, industry layout and planning and the international coal market status improvement, etc. are proposed.

(8) The characteristics and influence of Chinese electric power market from oligopoly pattern to market-oriented reform are discussed. Research results show that firstly all countries in the world pay high attention to the electric power market reform; countries select the reasonable market mode according to their national conditions, construct transregional electric power market and promote the resource optimization allocation by taking safety, high efficiency and clean as objective; the electricity price is the core of electric power market construction, and the demand is an important means of market regulation; secondly, through several rounds of reform in raising money for electricity, separation of enterprise from administration, and separation of plant and grid, etc., Chinese electric power market has achieved significant results in the aspects of optimization of energy resources allocation, adjustment of market relationship between supply and demand, and promotion of the sustainable development of electric power industry. A new electric transformation has been started facing the ecological civilization construction and coping new target of climate change, guaranteeing the national energy safety, and promoting electric power industry to improve quality and effectiveness. Giving priority to "regulation in the middle, open at both ends", the core of reform is still the electricity price reform. The latest round of electric transformation is beneficial to the unified, open, and orderly competitive electric power market system construction, and

promote the energy structure adjustment and new energy industry development.

(9) In the context of slow growth in international oil prices, characferistics of China's oil industry development are explored. Since July 2014, the petroleum price has kept at a low level shock. Under the background of low petroleum price, because of different sensitive degrees of different links of China's petrochemical industry chain to the petroleum price fluctuation, the petroleum market starts to present the characteristics of diversified development: exploration and development field is directly impacted with the greatly declined performance oilfield service industry still depends on stock with the slowing earnings growth ; refining and chemical industry is benefit from petroleum products floor price setting and low cost with the slightly increased profit; the performance of sales industry is steady through improving the inventory management; while the performance of integrated companies (China National Petroleum Corporation and Sinopec Group) is differentiated because of the different business ratio of each plate. In terms of the importance of petroleum to Chinese economy development, the petroleum safety also becomes the emphasis we concerned when the petroleum market develops steadily. In recent years, Chinese petroleum trading scale has been enlarged, and the import channels become more diversified, but the overseas investment risk is big, and the safety situation is still complex and can not be ignored. In virtue of the opportunity of low petroleum price, petroleum products pricing mechanism reform and mixed petroleum and companies ownership reform in China have been promoted constantly. Although the outlook in many ways positive, major challenges still remain. Its orderly, steady, and healthy development requires the coordination and cooperation of all parties' efforts and all kinds of mechanisms.

(10) At the end of "Twelfth Five-Year Plan", China's natural gas consumption growth fell sharply, and the main driving factors were changed from economic growth and price advantage to the ecological civilization construction, but there is still a huge development potential. It is predicted that by 2020, the national natural gas consumption will reach about 270 billion cubic meters, while in 2030, it will reach 390 billion cubic meters, and the substitute coal is the main development direction. From the perspective of supply, China's natural gas resource is very rich, and the development of unconventional natural gas especially the shale gas has made big breakthrough, and there is still a big development space in the future, while the coal gasification project is faced with massive problems. During "Thirteenth Five-Year Plan", the import pipeline gas and import LNG will be risen rapidly, but the problem of excess resources is there and it is still growing.

Through more than 30 years of reform and development, China's natural gas' pricing mechanism has been perfected constantly, but there is still the gap compared with the mature "gas for gas competition law" market-based pricing model in European

and American areas. Net back value pricing method needs to be further perfected, and the natural gas trading system shall be the emphasis of development. Currently, the natural monopoly and administrative monopoly are coexisted in China's natural gas pipe network field, and storage and transportation infrastructure ability is severely inadequate; moreover, the uncertainty of policy restricts the development of natural gas pipe network. It is suggested to start from the perspectives of problem-orientated, systematic thinking and step-by-step, to speed up the improvement of the natural gas industry management system and mechanism, and to establish the fair, open and free competitive market rules and order.

Currently, certain results are achieved in the process of Chinese energy marketalization. For example, the coal price has experienced complete planning stage, multi-level planning stage, dual-track stage, and marketization price formation stage since the initial stage of the founding of new China. In December 2012, the State Council issued Instruction on Deepening Reform of the Coal Market, which marked that coal dual-track pricing system of 16 years and "coal ordering meeting" for decades officially seceded in 2013, and the coal price fully realizes marketization. In the electric power market, the feed-in tariff is mainly formulated by the government. Starting from the objects of resource optimization allocation and energy efficiency improvement, the market pricing mechanism is started to explore; transmission distribution electricity price is divided into three levels of trans-regional, trans-provincial and provincial power grid according to electric power network composition and electrical network enterprise operation and management system; the selling electricity price is formulated by the government, and it is divided according to the electrical property and purposes. The policies and countermeasures of China and other countries in promoting the energy marketization are summarized, which can more rationally judge the rationality and scientificity for China establishing market economy in the energy field, and moreover, the references for Chinese government's future function orientation and the market-oriented policy formulation of the related resources products are proposed. Nowadays, energy market develops unceasingly, and some challenges become more and more urgent. Coal plays the dominant role in China's energy consumption structure. However, with the slowing Chinese economic growth in recent years, the coal production ability has been expanded constantly. The supply and demand pattern in Chinese coal market has been changed greatly, and the problem of overcapacity becomes increasingly important, which makes the coal industry in trouble. In the petroleum market, China's large state-owned petroleum companies occupy a monopoly position. Therefore, In the case of the stunning fall in international oil prices resulting in a loss of domestic oil companies, the government participates in oil pricing with administrative means to ensure the safe and stable development of China's oil market. However, it is exactly because of this kind of "protection mechanism" that