

# 跨世纪重大工程 技术经济论证

李京文等 编著

社会科学文献出版社

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# 跨世纪重大工程 技术经济论证

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## 摘 要

建设项目技术经济评价是投资决策的重要依据。本书汇集了俄罗斯科学院外籍院士、中国社会科学院数量经济与技术经济研究所所长李京文教授和他的合作者们对一批跨世纪的超大型建设项目的技术经济评价研究成果,包括对三峡工程、京沪高速铁路工程和南水北调工程等跨世纪的超大型工程的论证成果,为广大读者具体了解工程项目技术经济评价的理论、计算方法及其重要作用,提出了生动、具体的论述和案例。此外,本书还收集了我国由计划经济体制向社会主义市场经济体制过渡过程中,建立大江大河防洪投资体系和建材工业跨世纪发展战略的研究成果。本书可供经济管理和工程技术界的专家、干部参考,也可作为工商管理、产业经济、技术经济等专业的教学参考书。

## ABSTRACT

Techno-economical evaluation of a project is an important basis for investment policy. This book is a collection of some of the results of the techno-economical evaluation on a few super-large trans-century projects (including the Three Gorges Project, the Beijing-Shanghai Express Railway Project and the Projects to Divert Water from the South to the North, etc. ). The research results are achieved by Professor Li Jingwen, the foreign academician of Russian Academy of Sciences, and his collaborators. Their achievements provide vivid and specific exposition and cases for readers to learn the theories, calculating methods and importance of project's techno-economical evaluation. In addition, the book also collects some study results on the establishment of anti-flood investment system of major rivers and the development strategy for building materials industry during the transition period from centrally planned economic system to socialist market economy system. This book can either serve as the reference book for specialists, experts and cadres in the fields of economic management and engineering, or for students majoring in business administration, industrial economics or technical economics.

# 前 言

本书是由我国著名技术经济、数量经济专家李京文教授和由他牵头的课题组对工程建设项目技术经济论证(评价)研究与实践的部分成果汇编。

工程建设项目技术经济论证(评价)是工程技术工作的重要组成部分,是决定项目取舍和经济效益高低的关键性环节。改革开放以来,在中央领导同志关于建设项目必须经过科学论证才能上马的指示精神的指导下,在国家计委、经委、科委、建委、建设部的领导下,经过广大工程技术、经济管理人员的共同努力,在我国已经逐步确立了工程建设项目的科学论证制度,技术经济评价已经成为所有工程建设项目立项、设计、施工与投产运营的首要步骤,技术经济论证的理论、方法逐渐充实、完善,实践经验不断积累,对我国每年上万亿元(1996年23600亿元)固定资产投资的科学决策、提高投资效益起了重大作用。

李京文教授是我国著名的经济学家,他长期研究技术经济理论与方法,并直接参与了我国工程项目可行性研究制度的创建与实践。改革开放以来,又主持或领导课题组参加了我国几个跨世纪重大工程(如三峡工程、京沪高速铁路工程、南水北调中线工程)的技术经济评价工作或项目审订工作,为这些超大型工程项目的科学决策作出了重要贡献。为了推进技术经济的研究与应用,并迎接建所18周年。特将李教授和他的同事们在这一领域的部分研究或工作成果编辑成书,供领导、专家和同志们参考。

本书由五个部分组成。第一部分为综合篇,收集了五篇李京文教

授在改革开放后不同时期关于技术经济理论方法的论述,目的是介绍工程建设项目技术经济论证在技术经济学中的地位、作用及其在我国的发展过程。其中第四篇《关于可行性研究的理论与方法》,是李教授在改革开放初期所写有关工程建设项目可行性研究的内容、方法及在我国开展这项工作的重大意义与紧迫性的数十篇文章中的一篇,是李教授在1980年由中国科协、国家机关党委为培训司局级干部联合举办的技术经济专题讲座上的讲稿,这次讲座由当时的科协主席裴丽生同志主持,是国内首次在较高层次上宣讲当时在我国尚未被普遍接受的建设项目可行性研究的理论与方法,因此这篇讲稿具有一定的历史意义,故被收编入本书。

本书第二部分是关于三峡工程的部分论证资料。三峡工程是举世瞩目的重大工程,经过长期的论证国务院曾于1984年原则批准了工程的可行性研究报告。由于种种原因,1986年6月中共中央和国务院又决定重新论证,一直到1992年七届人大五次会议通过工程上马,历时7年的论证与审查工作,吸收了400多位专家学者和领导干部参加。在此期间,李京文教授被指定担任了三峡工程论证综合经济评价专家组副组长,协助组长(先后由苏哲文同志和游吉寿同志担任)主持完成了《三峡工程综合经济评价专题论证报告》的研究与编制工作。1990年7月,国务院在听取了重新论证情况后,决定成立了国务院三峡工程审查委员会,下设10个专题预审组,163位专家和国务院有关部门的负责人参加了专题预审。李京文教授又被邀请担任经济预审组专家和综合预审组专家,参加了预审工作的全过程。本书收集了李教授在论证和预审会议上的部分发言。在参加上述工作的同时,李教授主持了国家科委委托数技经所承担的“三峡工程经济评价研究”课题组的工作,该课题成果获国家科委科技进步一等奖,这个课题的部分成果也被收入本书第二部分。

本书第三部分是关于京沪高速铁路重大技术经济问题的部分论证资料。为了加强我国的基础设施建设,缓解南北通道的“瓶颈”制约,回答如何解决京沪铁路持续、全面的运输紧张和要不要修建京沪

高速铁路,技术上、经济上是否可行等问题,国家科委、铁道部会同国家计委、经贸委、体改委于1993年4月共同领导组织了“京沪高速铁路重大技术经济问题前期研究”课题组,李京文教授和数技经所部分同志应邀参加了课题组,李京文教授被推选担任课题总体组成员、技术经济组组长(铁道规划院何璧院长为副组长),主持了京沪高速铁路财务评价、国民经济评价、国力分析和对沿线地区经济发展影响等分课题的论证工作。这部分论证成果同整个论证成果一起,先后获得了国家科委科技进步一等奖、国家科技进步二等奖。

本书第四部分是关于南水北调工程的几份研究成果。南水北调工程是关系北方广大地区人民生活和经济发展的重大项目,各方面专家对这项工程进行了长期研究论证,李京文教授带领数量经济与技术经济研究所部分同志也参加了这项工作,本书收录的关于中线工程经济效益的分析就是其中成果之一。1996年春,国务院决定成立以邹家华副总理为首的南水北调工程审查委员会,李教授又被指定为审委会委员,并作为审委会下设的5个预审组之一的综合预审组副组长参加审查工作(组长由刘国光同志担任)。

本书第五部分是有关水资源开发利用和建材工业发展战略、规划的研究成果。“文化大革命”后期,李教授从“五七”干校回京后曾在国家建委和建材工业部工作,参加主持制订了“建材工业发展纲要”、“建材工业技术政策”等重要文件并获得了国家的奖励。1994年春,国家建材局党组提出制订《中国建筑材料工业跨世纪发展战略》,组成了研究队伍,由局长、党组书记张人为同志为领导小组组长,李京文教授被邀请任领导小组第一副组长并和建材规划院院长刘赋捷一起任课题组长。李教授和他的几位同事参加了总报告和部分分报告的起草工作,本书收集的就是上述部分研究成果。

李教授要求我们说明,本书虽有一部分是李教授个人的研究成果,但大多为集体成果。我们认为,在这些集体成果中,既凝结了许多技术经济专家团结协作、勤奋工作的心血,又反映了李京文教授组织领导集体攻关的才能与成果。李教授作为课题组负责人,在课题研究



中做了大量工作,特别是在课题申请、设计、理论与方法研究、组织协调和研究报告起草修改、定稿等方面,做出了突出贡献,对课题的优质完成起了决定性作用。

本书各篇章均保持了最初成果提供时的原貌,并未做修改更动。由于情况不断变化,本书各个部分中的计算结果和数字也必然会不断修正更新,计算的方法也会不断有所改进。因此,本书不是(也不可能是)某个建设项目的建设方案及其最终论证结果,而只是对建设项目技术经济论证科学方法的理论与应用的具体案例,其作用在于宣传和推广技术经济论证的科学理论与方法,为在我国进一步完善建设项目的科学论证制度,提高我国的技术经济论证水平,提高我国的投资效益做出自己的贡献。由于我们的水平所限,在本书编辑过程中缺点错误在所难免,请领导和专家以及其它读者予以指正。

编辑组

1997年6月18日

## PREFACE

This book is a collection of some of the research and practice results on techno-economical proof (evaluation) on projects by Li Jingwen, China's well-known expert in technical and quantitative economics, and his research team.

The techno-economical proof (evaluation) on projects is an important part in a project and the key link that determines the fate of the project and its economic returns. Since reform and opening to the outside world, under the guidance of the instructions of state

leaders that construction can only be started after scientific proof, under the leadership of the State Planning Commission, the State Economic Commission, the State Science and Technology Commission, the State Construction Commission and the Ministry of Construction, through the joint efforts of engineers and managers, the system of scientific proof on projects has been gradually built up. The techno-economical evaluation has become the primary step for the approval, design, construction and operation of all projects. The theory and methodology on techno-economical proof are increasingly improved, experience from practice increasingly accumulated, which plays an important role in the decision making and in increasing the returns on thousands of billions yuan of investment in fixed assets each year (2360 billion yuan in 1996).

Professor Li Jingwen, one of the first generation of technical-economists in China, has long been studying the theory and method of technical economics. Working successively in the State Planning Commission, the State Construction Commission, the Ministry of Building Materials Industry and the Chinese Research Society of Technology — Economics, he took part in creating and practicing China's techno-economical evaluation system on projects. In 1985 he was transferred to work in the Institute of Quantitative and Technical Economics under the Chinese Academy of Social Sciences. Then he led his research team to participate in or preside over the techno-economical evaluation on several large trans-century projects (such as the Three Gorges Project, the Beijing-Shanghai Express Railway Project, the South-to-North Water Diversion Middle-line Project, etc.) and made great contributions to the scientific decision-making of these super-large projects. In order to celebrate the 18th anniversary of the Institute, we compile some of

the achievements in Professor Li and his colleagues' scientific research and work into a book for leaders, specialists and comrades to refer to.

This book is composed of five parts. Part I is a collection of four articles by Professor Li Jingwen. The four articles, written in different periods of reform and opening to the outside world, are on the theories and methods of technical economics, aiming to give an introduction of the status and role of techno-economical evaluation on projects in the technical economics as well as its development in China. The fourth paper among them, On the Theories and Methods of Feasibility Study, one of ten articles written by Professor Li in the initial period of reform, is on the theories and methods of projects' feasibility study as well as the significance and urgency to start feasibility study in China. Originally they were speeches by Professor Li at the seminar on technical economics held by the Chinese Society of Science and Technology and the Party committees of state organs in 1980 to train senior officials. The seminar was presided over by Comrade Pei Lisheng, the former Chairman of the Chinese Society of Science and Technology. It was the first time in China that the new theories and methods about the feasibility study of projects were advocated at such a high level seminar. So this speech is included into this book owing to its historic significance.

The second part of the book is an incomplete collection of the proof materials about the Three Gorges Project. The Three Gorges Project is a very significant project that attracts world-wide attention. The State Council approved in principle the feasibility study report on the project after a long time proof. Then, due to complex reasons, the Central Committee of the Chinese Communist Party and the State Council decided in June 1986 that the project be

proved once again. Before the project was ratified in the Fifth Session of the Seventh National People's Congress in 1992, the proof and examination lasted seven years and over 400 specialists, experts, scholars, and senior officials were involved in the work. During this period, Professor Li Jingwen was appointed as the deputy head of the expert group in charge of the synthetical economical evaluation in the proof of the Three Gorges Project. He assisted head of the group (Comrade Su Zhewen and later You Jishou) in studying and compiling "the Proof Report about the Synthetical Economical Evaluation of the Three Gorges Project". In July, 1990, after having heard the new proof, the State Council decided to set up the Three Gorges Project Examination Committee under the leadership of the State Council. Under the Committee there were ten pre-examination groups on special subjects and 163 specialists, experts and senior officials of relevant departments of the State Council joined in the work. Professor Li Jingwen was once again invited as expert in the economical pre-examination group and the synthetical pre-examination group to work from the beginning to the end in the pre-examination. This book collects some of Professor Li's speeches at the proof and pre-examination meetings. At the same time, Professor Li also presided over the work of the research team on "the Three Gorges Project Economical Evaluation Study" assigned by the State Science and Technology Commission. The final achievements of the research team were awarded the first prize of the Commission. Some of the achievements are also edited into the second part of the book.

The third part is an incomplete collection of the proof materials about the significant techno-economical issues of the Beijing-Shanghai Express Railway Project. In order to strengthen China's

infrastructure construction and ease the "bottleneck" restraint on the north-south thoroughfare, in April, 1993, the State Science and Technology Commission, the Ministry of Railways as well as the State Planning Commission, the State Economic and Trade Commission and the State Commission for Economic System Restructuring jointly led and organized the research team of "the Pre-Study on Significant Techno-economical Issues of the Beijing-Shanghai Express Railway". The research team was to answer the following questions: how to ease the sustained and overall heavy pressure on Beijing-Shanghai railway transport capability; the necessity of a Beijing-Shanghai express railway and the possibility in technical and economical aspects. Professor Li Jingwen and some comrades from the Institute of Quantitative and Technical Economics were invited to join the research team. Professor Li Jingwen was elected as the member of the team's overall group and head of the technical-economics group (the deputy of the group was assumed by He Bi, head of Institute of Railway Program and Planning), taking charge of the proof on the sub-topics, such as the financial evaluation, national economic evaluation, analysis on national strength and influences on the economic development in the areas along the railway, etc.

The fourth part includes two papers about the development of water resources and the Projects to Divert Water from the South to the North. The Projects to Divert Water from the South to the North are so important that they are closely related to the lives of the people and economic development in the extensive areas of the North. Long-term proof has been carried out on the projects by specialists and experts from all fields. Together with some comrades from the Institute of Quantitative and Technical Economics,

Professor Li Jingwen also participated in the research work. The Analysis on the Economical Returns of the Middle-line Project in this book is one of their achievements. In the spring of 1996, the State Council decided to establish the Examination Committee in this regard. Professor Li was appointed as a member of it and worked as the deputy head of the synthetical pre-examination group (the head was assumed by Comrade Liu Guoguang) which was one of the five pre-examination groups under the Examination Committee.

The fifth part of the book deals with the research results of the development strategy and long-term planning of building materials industry. In the end of the "Cultural Revolution", Professor Li came back to Beijing from the "May 7 Cadre School" to work in the State Construction Commission and the Ministry of Building Materials Industry. He was one of those drafting some important documents, such as "The Development Outline Of Building Materials Industry" and "The Technical Policy Of Building Materials Industry", etc. And he continued his research work in this field even after he was transferred out of the construction sector. In the spring of 1994 the State Building Materials Bureau proposed to draw up the "Trans-Century Development Strategy for the Chinese Building Materials Industry" and set up the research force. The leading group was headed by Comrade Zhang Ren, head of the Bureau and Professor Li Jingwen was invited to be the first deputy head of the leading group and besides, he also assumed head of the research team together with Liu Fujie, head of the Institute of Building Materials Program and Planning. Professor Li and his colleagues took part in drafting the master report and some of the separate reports. Some of their research results are included in this book.

Professor Li asked us to declare that some research results were achieved by himself, but the others are collective achievements. We hold that even with regard to the collective achievements Professor Li, as head of many research teams, has made great contributions to and played a decisive role in excellently completing the researches through hard work, especially in the application, design, theory and method studying, organization and coordination as well as drafting, correction and finalizing of the study report.

All papers or articles in the book are kept just as they were furnished without any alteration. Due to the fact that situations are always changing, the calculation results and figures in the book will surely be continuously updated and corrected and the calculating methods will be improved. Hence, this book is not (and can not be) the final construction plan or final proof about some projects, but specific theoretical and application cases about the scientific methods of projects' techno-economical proof. The objective of the book is to advocate and promote the scientific theories and methods of techno-economical proof, in order to make our own contributions to perfecting the projects' scientific proof system, improving China's techno-economical proof work and raising our returns on investment. Finally, we extend our sincere thanks to the readers who would write to us about the errors in the book.

The Editing Group

June 18, 1997

# 目 录

摘 要 .....	(I)
前 言 .....	(1)

## 第一篇 理论与方法

摘 要 .....	(1)
论技术经济学的理论来源、研究对象与研究方法 .....	李 京 文 (3)
实现技术与经济的最佳结合	
——技术经济学及其出版物述评 .....	李 京 文 (24)
发展和完善技术经济学 .....	李 京 文 (36)
关于可行性研究的理论与方法 .....	李 京 文 (41)
近年来技术经济学的新发展 .....	李 京 文 (71)

## 第二篇 关于三峡工程的技术经济评价

摘 要 .....	(75)
从经济的角度看三峡工程应抓紧上马 .....	李 京 文 (78)
关于三峡工程经济评价的几个问题 .....	李 京 文 (85)
三峡工程应当积极准备上马 .....	李 京 文 (92)
关于三峡工程技术经济论证的一些情况和问题	
.....	李 京 文 张 奔 钟学义等 (98)
三峡工程对国民经济的促进作用	
.....	《三峡工程技术经济评价》课题组 (125)



兴建三峡工程有利于国民经济

.....《三峡工程技术经济评价》课题组(131)

经济评价中影响三峡工程决策的因素分析

——超大型建设项目的决策选择

.....《三峡工程技术经济评价》课题组(137)

### 第三篇 关于京沪高速铁路工程的技术经济评价

摘 要.....(151)

京沪高速铁路的经济评价.....李京文(155)

建设京沪高速铁路的国力分析

.....《京沪高速铁路前期研究技术经济评价》课题组(160)

京沪高速铁路国民经济评价

.....《京沪高速铁路前期研究技术经济评价》课题组(177)

京沪高速铁路的财务评价

.....《京沪高速铁路前期研究技术经济评价》课题组(190)

京沪高速铁路对沿线地区经济发展的影响

.....《京沪高速铁路前期研究技术经济评价》课题组(209)

### 第四篇 关于南水北调工程的技术经济评价

摘 要.....(223)

南水北调中线工程经济、社会效益分析.....(227)

南水北调中线供水区域概况及中线调水的必要性

.....《南水北调中线工程经济、社会效益分析》课题组(228)

南水北调中线供水社会效益分析

.....《南水北调中线工程经济、社会效益分析》课题组(238)