中国水资源管理制度建设高级圆桌会议

材 料 汇 编

Proceedings of High - Level Roundtable on Water Resources Management System Development in China

全球水伙伴中国委员会
Global Water Partnership China
2012年7月
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前　言

中国水安全问题严峻，中国政府高度重视水利工作，2011年的中央1号文件和中央水利工作会议提出了要实行最严格的水资源管理制度，要基本建成防洪抗旱减灾体系、水资源合理配置和高效利用体系、水资源保护和河湖健康保障体系以及有利于水利科学发展的制度体系，从而对流域综合管理提出了更高要求。

2012年1月，中国国务院发布了关于实行最严格水资源管理制度的意见，强调要以水资源配置、节约和保护为重点，强化用水需求和用水过程管理，通过健全制度、落实责任、提高能力、强化管理，严格控制用水总量，全面提高用水效率，严格控制入河湖排污总量，促进水资源可持续利用和加快节水型社会建设；明确了水资源开发利用控制、用水效率控制和水功能区限制纳污三条红线的主要目标，以及实行最严格水资源管理制度的主要措施。

为进一步贯彻执行2011年中央1号文件精神和2012年国务院关于实行最严格水资源管理制度的意见，推进最严格水资源管理制度建设和完善流域水资源管理制度，探讨建立责权清晰、分工明细、行为规范、运转协调的水资源管理工作机制，探讨促进流域与区域和谐发展的合作与协调机制，探讨以水资源综合管理促进最严格水资源管理，全力保障流域水资源安全和生态环境安全，促进流域水资源管理相关行业和部门之间的交流与合作，并借鉴国外先进经验，加强国际交流和合作，在中国水利部和中国环境保护部的支持下，由全球水伙伴中国委员会主办，亚洲开发银行、世界自然基金会北京代表处、联合国教科文组织北京办事处、大自然保护协会等协办的《中国水资源管理制度建设高级圆桌会议》于2012年4月20日在北京召开。

会议由十一届全国人大财经委员会副主任委员、全球水伙伴中国委员会主席汪恕诚主持，水利部陈雷部长、国家发展发改委杜鹰副主任、环保部万本太总工程师出席会议并致辞，国务院南水北调工程建设委员会办公室副主任于幼军出席会议。欧盟驻华代表

议并致辞。水利部水资源司司长陈明忠、环保部总量控制司司长赵华林做了主旨报告，七位国内外专家做了特邀报告。

国务院各相关部委、水利部有关司局、联合国机构驻华代表处、欧盟驻华代表团、荷兰、法国、加拿大等国家驻华使馆、亚洲开发银行以及世界自然基金会、大自然保护协会、世界自然保护联盟、世界资源研究所等国际组织代表、相关科研单位、高等院校、企事业单位和非政府组织等单位及有关媒体的代表共140多人到会。会后，多家中央媒体对会议进行了详细报导。

本次会议是全球水伙伴中国委员会举办的第九次高级圆桌会议，旨在探讨建立责权清晰、分工明细、行为规范、运转协调的水资源管理工作机制以及促进流域与区域和谐发展的合作与协调机制，以水资源综合管理促进最严格水资源管理，推进最严格水资源管理制度建设和完善流域水资源管理制度。会议得到代表们的积极评价，有的代表还提出了合作意向，达到了预期目的并取得圆满成功。

2011年中央1号文件和中央水利工作会议明确提出，把严格水资源管理作为加快转变经济发展方式的战略举措，把建设节水型社会作为建设资源节约型、环境友好型社会的主要内容。实行最严格水资源管理制度是一项极为复杂的系统工程，是对传统增长方式的革命性变革，需要全社会共同努力。

通过此次会议，各方达成以下共识：中国政府的1号文件和相关的法规政策，是应对水资源短缺和水污染等严重挑战的战略性举措;落实相关政策需要进一步进行机制和体制改革，加强配套的法律法规;落实最严格的水资源管理制度，涉及到涉水的多个政府部门的合作，需要建立协调合作的机制并同时促进社会公众、企业、非政府组织的广泛参与；全国的水资源、水环境和水生态需要全面的监测信息系统，河湖健康也需要相应的评价体系；开展国际合作可以有利于各国在水资源管理方面的先进理念、模式和技术的分享，这也是执行中国最严格的水资源管理制度的重要部分。

为使会议取得的成果在水资源综合管理领域中发挥更大的作用，决定由全球水伙伴中国委员会秘书处编辑出版此次会议材料汇编。

由于编辑时间仓促，加之水平有限，难免有不足和错误之处，敬请批评指正。

全球水伙伴中国委员会秘书处

2012年7月

Preface

The Chinese Government has attached great importance to the water sector as a result of severe challenges of water security. The No.1 Policy Document on Reform and Development in Water Sector issued by the Chinese Central Government in early 2011 and the Central Water Working Conference of 2011 pointed out that the strictest water resources management system should be developed. The system will be supported by sub-systems on flood control, drought prevention and disaster reduction, rational allocation and efficient use of water resources, water resources protection and river-lake health security and water scientific development. There is also higher demand on integrated river basin management.

"The Regulations for Strictest Water Resources Management " was issued by the State Council in January, 2012 which, with emphasis on allocation, conservation and protection of water resources, requires the strengthening of water demands and uses management to promote the sustainable development of water resources and the building of water-saving society through establishing a sound system, fulfilling responsibilities, building capacity and improving management and identifies the targets of the "three red lines": controlling total water consumption, improving water-use efficiency and limiting pollutant discharges into water-function zones. It also formulates the key measures to implement the strictest water resources management system.

Aiming at better implementing the above-mentioned "No.1 Policy Document" issued in 2011 and "The Regulations" issued by the State Council in 2012, developing the strictest water resources management and better river basin management systems, building the water management mechanism with well-defined duties, rights and responsibilities, standard actions and collaborative operations, the cooperation and coordination mechanisms for the harmonious development of river basins and regions and promoting the strictest water management of river basins through the integrated water resources management approach for water security of river basins and eco-environment security and further exchanges and cooperation between all river basins, the water- related sectors and countries, with the support of the Ministry of Water Resources and Ministry of Environmental Protection, the Global Water Partnership China (GWP China) organized the "High-Level Roundtable on Water Resources Management System Development In China" on April 20, 2012 in Beijing with the co-sponsors of Asian Development Bank (ADB),

World Wild Fund (WWF) for Nature China, the UNESCO Office Beijing and The Nature Conservancy (TNC).

Chaired by Mr. Wang Shucheng, the Vice Chair of Financial & Economic Committee of the 11th National People's Congress (NPC) and Chair of GWP China, the Roundtable was started with the addresses of Mr. Chen Lei, the Minister of Water Resources, Mr. Du Ying, Vice Minister of the National Development and Reform Commission and Mr. Wan Bentai, Chief Engineer of the Ministry of Environmental Protection. Mr. Yu Youjun, Vice Minister of the Office of The South-To-North Water Diversion Project Construction Committee of the State Council attended the meeting. Slots were also given to Dr. Markus Ederer, Ambassador of EU Delegation to China; Mr. Paul J. Heytens, Country Director of Asian Development Bank PRC Resident Mission; Mr. Jim Gradoville, CEO of WWF-China and Mr. John Metzger, Head of Network Officers of GWPO. Two keynote speeches were given by Mr. Chen Mingzhong, Director General of the Department of Water Resources Management, Ministry of Water Resources and Mr. Zhao Hualin, Director General of the Department of Total Pollutants Control, Ministry of Environment Protection and other seven invited specialists delivered presentations afterwards.

The meeting attracted more than 140 participants from the key water-related ministries under the State Council, and relevant departments of the Ministry of Water Resources, UN organizations' offices in China, EU Delegation to China, foreign embassies in Beijing (including the Netherlands, France, Canada and etc.), international organizations such as World Bank,ADB, WWF, TNC, IUCN, WRI, universities, research institutes and companies. The results of the meeting were also widely reported by several national media.

This is the ninth High Level Roundtable organized by the Global Water Partnership China with the targets of the construction of water management mechanism with well-defined duties, rights and responsibilities, standard actions and collaborative operations; the cooperation and coordination mechanisms for the harmonious development of river basins and regions as well as facilitation of the strictest water management of river basins through the integrated water resources management approach. The Roundtable achieved the anticipated objectives and had a complete success on the basis of positive evaluation of participants and the further cooperation intentions expressed by some organizations.

According to the 2011 No.1 Document and proposed at the Central Working Conference on

Water Resources in 2011, the implementation of the strictest water resources management system is taken as a strategic measure for accelerating the economic growth mode transformation. The development of a water-saving society has been highlighted as the main content of the building of resources-conserving and environmentally-friendly society. Implementation of the strictest water resources management system is a complicated and systematic approach and a revolutionary reform to the traditional growth model. Joint efforts of the whole society are required.

This High Level Roundtable meeting was resulted with the following common understanding and consensus:
The implementation of No.1 Policy Document and relevant laws are strategic measures to the severe challenges of water scarcity and pollution; implementation of relevant regulations requires promoting further reform of mechanisms and system as well as formulating coordinated laws and rules; implementation of the strictest water resources management system involves different water- related sectors and building of coordination mechanisms and the methods of promoting widespread participation of the public, the private and the NGOs are required; the information monitoring system of water resources, environment and ecosystem and the evaluation system of lake and river health must be completed; one of significant elements of implementing the strictest water resources management system is to develop the international cooperation and share the advanced concepts, models and technologies of water management from other countries.

In order to enable the meeting achievements to be shared by others and contribute to the integrated water resources management, the GWP China Secretariat edits and publishes this production.

There are inevitable shortcomings and mistakes that are subject to your correction owing to the short time and limited ability.

Global Water Partnership China Secretariat
July 2012

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Mr. Chen Lei, Minister, Ministry of Water Resources(MWR)

国家发改委副主任杜鹰
Mr. Du Ying, Vice Minister, National Development and Reform Commission(NDRC)

亚洲开发银行驻中国代表处首席代表保罗·海登斯
Mr. Paul J. Heytens, Country Director, PRC ADB Resident Mission

欧洲联盟驻华代表团大使马库斯·艾德和
Dr. Markus Ederer, EU Ambassador to China

环境保护部总工万本太
Mr. Wang Bentai, Chief Engineer, Ministry of Environment Protection(MEP)

主旨演讲与致辞
Keynote Speeches and Addresses

世界自然基金会北京代表处首席执行官关德辉
Mr. Jim Gradoville, CEO of WWF ChinaCommission(NDRC)

全球水伙伴总部业务主任
约翰·麦兹格
Mr. John Metzger, Head of Network Officers, GWP Commission(NDRC)

全球水伙伴中国委员会主席
汪恕诚
Mr. Wang Shucheng,Chair of Global Water Partnership ChinaCommission(NDRC)

水利部水资源司司长陈明忠
Mr. Chen Mingzhong, Director General, Department of Water Resources Management, MWR

环境保护部污染物总量控制司司长赵华林
Mr. Zhao Hualin, Director General, Department of Total Pollutants Control, MEP

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中国欧盟流域管理项目技术援助专家组组长范敏泊
Mr. Paul Van Meel, Team Leader of EU-China River Basin Management Programme

北京市水务局处长冉连起
Mr. Ran Lianqi, Division Director, Beijing Water Authority

亚洲开发银行水资源主任专家伊恩·马金
Mr. Ian Makin, Principal Water Resources Specialist, ADB

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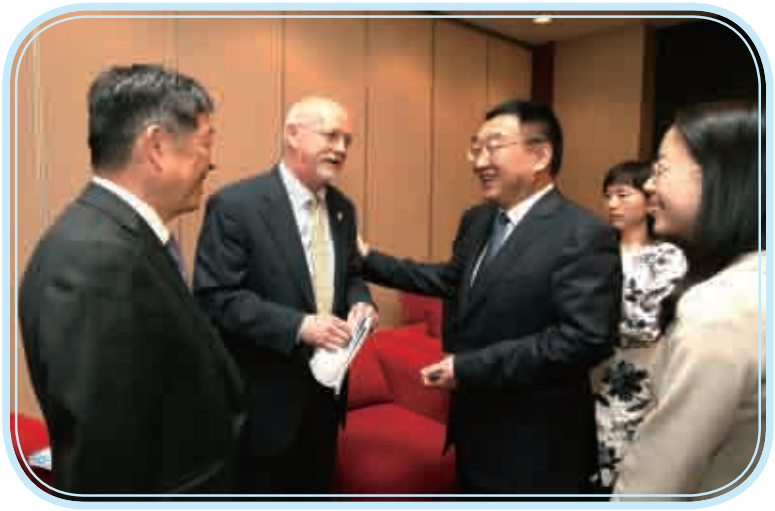
山东省水利厅高希星处长
Mr. Gao Xixing, Division Director, Department of Water Resources, Shandong Provincial Water Resources Department

世界自然基金会北京代表处生物多样性保护与实施总监凌林
Dr. Ling Lin, Conservation Director of Biodiversity and Operations, WWF China

黄河流域水资源保护局局长司毅铭
Mr. Si Yiming, Director General, Water Resources Protection Bureau, YRCC

大自然保护协会中国部可持续性水电经理安楷
Mr. An Kai, Sustainable Hydropower Manager, TNC Beijing Office

会前嘉宾会见
Guests Meeting Before the Roundtable



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闭幕辞

在中国水资源管理制度建设高级圆桌会议上的致辞

中华人民共和国水利部部长　　陈雷

尊敬的汪恕诚主席，

各位来宾，女士们、先生们：

在中国各地深入贯彻中央加快水利改革发展决策部署、全面落实中国政府关于实行最严格水资源管理制度意见的关键时刻，我们迎来了由全球水伙伴中国委员会举办的中国水资源管理制度建设高级圆桌会议。首先，我代表中华人民共和国水利部对会议的召开表示热烈的祝贺！向长期关心和支持中国水利改革发展的联合国相关机构、有关国际组织和各界人士表示衷心的感谢！

水是生命之源、生产之要、生态之基。近年来，随着世界人口快速增长、经济不断发展、全球气候变化影响加剧，水资源问题已经成为全球经济社会可持续发展的主要制约因素，成为世界各国共同关注的重大现实挑战。中国政府高度重视并着力解决水问题，改革开放30多年来，建成了世界上规模最为宏大的水资源配置调控工程体系，初步形成了具有中国特色的水资源节约保护制度框架，解决了3亿多农村人口的饮水安全问题，提前6年实现联合国水与卫生千年发展目标；以年均1%的用水低增长支撑了年均近10%的经济高速增长，在农业用水连续30多年保持零增长的情况下，粮食产量提高了78%，实现了2004年以来的八连增。中国以占世界6%的淡水资源和9%的耕地，保障了占世界21%人口的粮食安全、饮水安全，促进了经济社会的平稳较快发展，这是了不起的成就，也是对世界繁荣与发展作出的重大贡献。

当前和今后一个时期，是中国全面建设小康社会的关键时期，也是中国深化改革开放、加快转变经济发展方式的攻坚时期，解决发展中不平衡、不协调、不可持续的问题，任务十分艰巨。中国人多水少，水资源时空分布不均，人均水资源量仅为世界平均水平的28%，年均缺水500多亿立方米，三分之二的城市不同程度缺水，农村近3亿人口饮水不安全，地下水严重超采，水生态环境恶化。随着工业化、城镇化、农业现代化加

快发展，粮食增产区、重要经济区、能源基地等用水将较快增长，工程性、资源性、水质性、管理性缺水长期存在，加之受全球气候变化影响，水资源分布更加不均，水资源供需矛盾更加突出、水生态环境保护任务更为繁重。

为解决日益复杂的水资源问题，实现水资源高效利用和有效保护，2011年中央1号文件和中央水利工作会议明确提出，把严格水资源管理作为加快转变经济发展方式的战略举措，把建设节水型社会作为建设资源节约型、环境友好型社会的主要内容。今年1月，中国政府出台了关于实行最严格水资源管理制度的意见，对实行最严格水资源管理制度作出系统安排，明确了水资源开发利用控制、用水效率控制、水功能区限制纳污“三条红线”控制指标：到2020年，全国用水总量控制在6700亿立方米以内，万元工业增加值用水量降低到65立方米以下，农田灌溉水有效利用系数提高到0.55以上，重要江河湖泊水功能区水质达标率提高到80%以上；到2030年，全国用水总量控制在7000亿立方米以内，万元工业增加值用水量降低到40立方米以下，农田灌溉水有效利用系数提高到0.6以上，水功能区水质达标率提高到95%以上。

实行最严格水资源管理制度是一项极为复杂的系统工程，是对传统增长方式的革命性变革，需要全社会共同努力。一要牢固树立以人为本、人水和谐的理念，加快从供水管理向需水管理转变，从开发利用为主向开发保护并重转变，从粗放低效利用向节约高效利用转变，从注重行政管理向综合管理转变，推动经济社会发展与水资源、水环境承载能力相协调。二要抓紧落实水资源开发利用控制、用水效率控制、水功能区限制纳污“三条红线”控制指标，尽快将指标分解量化到各流域和行政区域，落实到水资源管理各个环节。三要加快建设水资源配置和江河湖库水系连通工程，逐步构建“四横三纵、南北调配、东西互济”的水资源宏观配置格局，以及引排顺畅、蓄泄得当、丰枯调剂、多源互补、调控自如的江河湖库水网体系，强化水资源统一调度、科学调度。四要全面推进节水型社会建设，突出抓好工业、农业、城市生活等领域的节水防污，搞好废污水处理回用、雨水集蓄利用、海水直接利用与淡化利用。五要建立健全水资源合理配置、高效利用、有效保护的规划体系，抓紧完善相关配套法规、制度和标准，细化各项政策举措，大力推进水资源管理法制化进程。六要强化水资源监控能力和科技支撑，逐步建立中央、流域和地方水资源监控管理平台和信息管理系统，全面提高监控、预警和管理能力。七要深化水资源管理体制、水务管理体制、水价形成机制等重点领域和关键环节

的改革攻坚，积极探索建立水权和水市场制度，着力破解水资源管理的体制机制障碍。八要落实地方政府水资源管理责任主体，强化考核评估和监督，加大国情水情宣传，加强部门之间、流域之间、地方之间协调配合力度，形成水资源管理的合力。

女士们，先生们！水资源问题事关人类生存发展和各国人民福祉，需要各国政府和国际社会共同携手应对。全球水伙伴组织长期致力于推动世界各国的水资源综合管理并为此做出了卓越贡献，全球水伙伴中国委员会在推动中国水资源保护、管理以及促进国际交流与合作方面也发挥着重要作用。今天，来自不同地区、部门、区域、行业及各相关组织的代表，围绕最严格水资源管理制度这一主题，交流经验，分享成果，凝聚共识，共话发展，意义重大而深远。今后，我们将继续推进和支持政府与非政府间组织的国际交流合作，学习借鉴国际先进理念、经验和做法，进一步加强中国的水资源管理，推进传统水利向现代水利的转变，以水资源的可持续利用保障经济社会的可持续发展。

最后，预祝会议取得圆满成功！

在中国水资源管理制度建设高级圆桌会议上的致辞

国家发展改革委副主任　　杜鹰

尊敬的汪恕诚主席、陈雷部长，各位来宾，女士们、先生们：

很高兴参加全球水伙伴中国委员会举办“中国水资源管理制度建设高级圆桌会议”。在此，我谨代表国家发展改革委对会议的召开表示热烈的祝贺。下面，我就中国水资源管理制度建设谈几点看法，供大家参考。

一、明确政策导向，把严格水资源管理作为加快转变经济发展方式的战略举措

加快转变经济发展方式是中国国家“十二五”规划纲要的主线，也是推动科学发展的必由之路。长期以来，我国经济增长付出了较大的资源环境代价，在水资源、水环境领域表现的尤为突出，不少地方水资源开发已超出承载能力，缺水和水污染严重、水生态环境恶化等问题突出。与此同时，一些地方水资源粗放利用的方式还没有根本转变，资源短缺与用水浪费并存。发达国家200多年工业化过程中分阶段出现的资源与环境问题，已在我国集中显现。随着我国工业化、城镇化、农业现代化深入发展和全球气候变化影响加大，用水需求在一定时期内还将持续增长，水资源供需矛盾将更趋尖锐。严峻的水资源形势凸显了加强水资源节约集约利用和转变经济发展方式的必要性、紧迫性。

党中央、国务院高度重视水资源问题。2011年的中央1号文件和中央水利工作会议明确要求实行最严格的水资源管理制度，确立用水总量控制、用水效率控制、水功能区限制纳污“三条红线”，将实行最严格的水资源管理制度提升到与实行最严格的耕地保护制度同等高度。最近，国务院出台了《关于实行最严格水资源管理制度的意见》，明确提出了“三条红线”的控制指标及分阶段目标，对实行最严格水资源管理制度作了全面部署。这是中央从经济社会发展全局和我国基本国情水情出发做出的重大战略决策，是今后一个时期加快水利改革发展的重点任务。守住“三条红线”，确立水资源要素在我国经济布局和产业发展中的约束性、控制性、先导性指标的地位，有利于引导各地自觉转变发展方式，调整经济结构，优化发展布局；有利于推动经济社会发展与水资源、

水环境承载能力相协调，实现可持续发展。

二、完善规划体系，优化流域和区域水资源开发利用保护与配置总体格局

规划是开发、利用、节约、保护水资源和加强水资源管理的基础性依据。要在已编制完成全国水资源综合规划、各流域综合规划、水利发展“十二五”规划等规划基础上，按照实施区域发展总体战略和主体功能区战略的要求，加快编制实施全国水中长期供求规划、水资源保护规划、节水型社会建设规划等重要规划，进一步细化和分解落实各项目标任务，要强化规划的执行和监督检查，充分发挥导向和约束作用。

要切实转变规划思路，按照总量控制、高效利用、保护生态、突出重点的原则，突出节约用水和科学用水，加强供需双向调节，科学预测用水需求，合理确定水资源配置管理目标和优先次序，统筹安排各项建议任务，增强规划的科学性、民主性。要针对不同地区的主体功能定位、水资源条件、环境状况及经济发展阶段差异，在水资源管理上实行差别化政策，因地制宜，分类指导，优先保障重点和优化开发区域用水需求，引导各种资源要素向目标区域合理流动。国民经济和社会发展规划以及城市总体规划的编制、重大建设项目的布局，应与当地水资源条件和防洪要求相适应，并进行科学论证。

三、突出改革创新，强化用水需求和用水过程管理

我国水资源短缺，用水效率不高，仍以传统的以需定供方式谋求供需平衡，既不现实，也不符合经济规律和科学发展观的要求。为此，必须在加强水资源配置工程建设、提高供水保障能力的同时，进一步强化用水需求和用水过程管理。以明晰水权和改革水价制度为重点，创新完善相关制度安排，通过法律、技术、经济等多种手段，增强节水激励与约束，努力抑制不合理的用水需求，不断优化用水结构，提高用水效率和效益，走内涵式发展道路，促进人水和谐。

要加快建立和完善国家水权制度，制定主要江河水量分配方案，明晰初始水权，积极推进用水权和排污权交易，培育水权转让市场，规范水权转让活动，充分运用市场机制和经济政策促进增加供给、减少排放、厉行节约和技术创新。近年来，甘肃省张掖市、武威市结合黑河、石羊河流域近期治理工作，探索实行“明晰水权、总量控制、定额管理、水票运行”的水权管理方式，有效促进了节水和水资源高效利用，取得了本地

经济社会发展和下游生态改善的双赢。建立健全水资源开发权许可制度，引导和规范市场主体通过公开公平竞争获得水资源开发权。完善水资源有偿使用制度，科学制定水资源费征收标准，严格征收、使用和管理。断续推进水价改革，完善水资源费、水利工程供水价格和城市供水价格政策，充分发挥水价的调节作用，兼顾效率和公平，大力促进节约用水和产业结构调整。以地方政府为责任主体，将水资源开发、利用、节约和保护的主要指标纳入地方经济社会发展综合评价体系，强化考核评估和监督。进一步健全政策法规，扩大公众水资源管理参与和监督。

四、总结治理实践，加快实施流域水资源综合管理

以流域为基础实施水资源综合管理，已被越来越多的国家和地区所认可。近年来，中国在流域综合管理体制改革方面取得了积极进展，积累了一些好的做法和经验。在“十一五”，“十二五”连续两个水利发展五年规划中，都明确把流域综合管理体制改革作为重点工作，2007年以来开展的流域综合规划修编工作中也融入了许多流域综合管理的理念。这里，我想就国家发展改革牵头的太湖流域水环境综合治理工作的有关情况向大家做一个简单介绍。

2007年5月太湖暴发大面积蓝藻，水源地水质遭受严重污染，引发无锡市近百万居民供水危机后，按照国务院的要求，国家发展改革委牵头，会同环保、水利等有关部门及环太湖江苏、浙江、上海两省一市政府紧急启动了太湖流域水环境综合治理总体方案编制实施工作。2008年5月，国务院批复了《总体方案》。《总体方案》特别注重治理措施的综合性和体制机制的创新，提出了控源、截污、引流、清淤、修复以及调整产业结构、工业布局、城乡布局等一揽子综合性治理措施；明确要求建立健全统一协调的流域水环境管理体制，并由国家发展改革委牵头建立了太湖流域水环境综合治理省部际联席会议制度，统筹协调流域水环境综合治理的各项工作。

《总体方案》实施5年来，在党中央、国务院的领导下，各有关部门和两省一市大力推进太湖治理饮用水安全保障、水资源保护、水污染防治等各项任务，目前太湖流域水环境各项主要指标均有不同程度改善，与《总体方案》2012年近期目标相比，高锰酸盐指数和氨氮已经稳定达到要求，总磷接近达标；污染物排放总量进一步下降，蓝藻水华程度有所减轻。太湖水环境综合治理工作的实践，带给我们许多有益的启示，主要是：要统筹考虑流域污染物排放总量和水环境容量，提高标准，从源头上狠抓控源节

污，要把工程治理与生态修复相结合，把提高环境容量和地区产业结构相结合，坚定不移的走综合治理的路子。

要充分考虑水资源的多重属性和流动性特点，完善流域管理与区域管理相结合的水资源管理制度，建立事权清晰、分工明确、行为规范、运转有效的协调管理体制。按照谁污染谁治理，谁受益谁补偿的原则，建立水资源污染保护的机制，充分发挥市场调节作用，广泛吸纳公众参与。这些基本经验，我们将在今后的工作中继续给予坚持。

2011年9月，国务院颁布了《太湖流域管理条例》，通过立法将实践证明行之有效的各项综合措施纳入了规范化制度化轨道，下一步我们将按照国务院批复的水利发展“十二五”规划的要求，充分借鉴太湖等流域综合治理的实践经验，进一步加快推进流域综合管理改革，努力把水资源管理提高到一个新的水平。

最后，预祝本次会议圆满成功。

谢谢大家！

在中国水资源管理制度建设高级圆桌会议上的致辞：

强化水污染防治　保障水资源安全

环境保护部总工程师　　万本太

尊敬的主席，女士们、先生们：

上午好！很高兴参加全球水伙伴中国委员会举办的“中国水资源管理制度建设高级圆桌会议”。借此机会，我谨代表中华人民共和国环境保护部对会议的召开表示热烈的祝贺！

随着社会经济的迅速发展和人民生活水平的不断提高，人类对水的数量与质量的要求越来越高，但目前地球上可以为人类所用的水资源数量十分有限，因此水资源紧张已经成为 21 世纪的一个全球性问题，水危机甚至“水资源争夺战”的现实正在逐步向人类逼近。另一方面，当前日趋严重的水污染又进一步加剧了水资源短缺的矛盾，水污染防治工作迫在眉睫。随着我国经济高速发展，工业化、城市化、农业现代化进程的不断加快，大量污染物进入水体并逐渐超过其承受能力，水环境质量从量变到质变，水质性缺水和水量性缺水问题并存，总体上呈不断加重趋势。具体表现为：水环境污染已从陆地蔓延到近海水域，从地表水延伸到地下水，从单一污染发展到多元污染，形成点源、面源与内源污染共存、生活污水和工业废水排放叠加、各种新旧污染与二次污染相互复合以及常规污染物、有毒有机物、重金属、藻毒素等水污染二次衍生物相互作用的复杂的流域性复合污染态势，严重危及到水资源保障、水生态系统健康、饮用水安全和人体健康，已成为制约我国经济社会可持续发展的巨大瓶颈。

加大水污染防治工作力度，努力改善水环境质量，保障水资源安全，是中国建设生态文明、实现经济社会又好又快发展时必须着力加以解决的重要课题。中国水污染防治的基本原则：一是遵循自然规律树立生态理念。要让江河湖泊休养生息，给水环境以必要的时间和空间，充分发挥水生态系统的自我修复、自我更新功能，以水环境容量和承载力为基础，统筹环境与经济关系，积极主动给江河湖泊以人文关怀，采取综合手段，

提高水环境的生态服务功能，使生态系统得以恢复、发展，实现人水和谐。二是水质与水量统筹协调。严格执行主要水污染物排放总量控制制度和水资源管理制度，以流域为单元，水质、水量有机结合，跨部门、跨地区统筹协调，推进水环境、水资源的有效保护。三是点源与非点源统一控制。以污染减排为抓手，进一步深化点源污染治理工作，加强源头减量、过程控制和末端治理工作。重点湖泊要强化面源污染控制工程，航运发达的水域要对流动污染源进行严格的管理与治理。四是流域与近岸海域协同保护。统筹协调流域治理与近岸海域生态环境保护的关系，充分考虑近岸海域环境容量要求，不断加强流域和入海河流的水污染控制。

按照以上要求，中国政府提出要全面贯彻“让江河湖海休养生息”的战略指导思想，以污染减排为中心，以饮用水水源保护为重点，以跨行政区域水质目标考核为手段，做好“十二五”水污染防治工作。具体将采取以下对策：继续抓好主要污染物减排工作，严格环境准入；严格饮用水水源保护区划分与管理，定期开展水质全分析，实施水源地环境整治、恢复和建设工程，提高水质达标率；开展地下水污染状况调查、风险评估、修复示范；继续推进重点流域水污染防治，根据“一个控制单元，一种防治措施”，明确各重点流域的优先控制单元，实行分区控制，完善考核机制；加强鄱阳湖、洞庭湖、洪泽湖等湖泊污染治理，加大对水质良好或生态脆弱湖泊的保护力度；综合防控海洋环境污染和生态破坏，加强入海河流污染治理与入海排污口监督管理，重点改善渤海和长江、黄河、珠江等河口海域环境质量。

女士们，先生们！

中国政府正在为实现保障国家水环境安全的崇高目标而不懈努力。我们高度重视和不断加强水生态环境保护方面的国际合作。多年来，我们与联合国驻华机构、国际金融组织以及外国政府相关机构合作开展了一系列水生态环境系统管理与保护项目，得到了国际社会的关心与支持。在此，我谨代表中华人民共和国环境保护部，对支持中国的国际机构和有关国家表示衷心的感谢！

最后，预祝会议取得圆满成功！

在中国水资源管理制度建设高级圆桌会议上的致辞

尊敬的陈雷部长、杜鹰副主任，
各位来宾，女士们、先生们：

1. 中国和欧盟在水利上是重要的合作伙伴

高级圆桌会议正值中国和欧盟关系走到一个特殊时刻举办，我今天出席此次会议的最简单也是最有力的原因在于：欧盟与中国已经将水资源的可持续管理作为全面战略伙伴关系的一部分内容。

五年的欧盟-中国流域管理项目的成功合作，给我们的特别关系打下了坚实基础，这是我们与中方进行的最大规模的合作项目。在项目执行期间，我们将欧洲的先进经验与中国两个部委（水利部与环保部）以及两个流域委员会进行分享。

这项合作成果已经在五个星期前得到了延续。在法国马赛举行的第六届世界水论坛上，陈雷部长与欧盟轮职主席国共同开启“中欧水平台”，达成政策上的良好共识。

2.联合学习曲线与2012年的水蓝图范例

众所周知，全世界经历各种挫折。当今我们不仅面临金融危机；如果不采取行动，我们还会面临气候和资源危机。水作为生命之源也将会变成引起全球产生摩擦的问题。在这些问题发生之前，水的保护和管理应该成为我们的共识。

当然，这种蓝色的财富也是一种有限又脆弱的资源，保护水资源也是实现农业、渔业、交通、能源、旅游和许多产业发展和繁荣的一种途径。

很可惜，无论在欧盟还是在中国都没有找到“万全之策”，更不用说对整个地球的

有效方法了。我们在具体情况下做具体应对处理时，也能从双方的经验中得到启发。因此，我认为中欧就共同面临的挑战而建立联合学习曲线非常重要，继续交流水资源管理的良好实践经验，有利于双方和整个世界。

关于继续学习这方面，我想举一个例子，即我们目前在欧洲水利方面正在进行的一项工作。我们对我们的立法做了“体检”，对法律执行情况进行了评估，期间我们认识到执法上一些现有的不足都是因为一些挑战造成的。

“欧洲水资源保障2012蓝图”将提出欧盟在政策上的应对措施。蓝图将是欧盟规划的资源高效使用路线图的水利里程碑，我们很愿意通过“中欧水平台”的活动或欧盟的高层环境对话会，将蓝图的内容进行更多的交流。

3.“中欧水平台”下一步的行动

陈部长，贵部与欧盟主席国丹麦将共同统领中国-欧盟水平台，同时还有葡萄牙作为联合主席国共同参与。

现在我们共同的任务就是开展下一步行动，让平台的工作运转起来。

丹麦的同仁告诉我，他们在欧洲的利益相关者之中进行了咨询，力图把更多的人们吸引到平台上来。这是我们合作的关键阶段，持久合作的动力非常重要。

最后，我要感谢全球水伙伴中国委员会，感谢在过去五年中对我们工作的支持、肯定和促进。

预祝高级圆桌会议取得圆满成功。

谢谢。

在中国水资源管理制度建设高级圆桌会议上的致辞

尊敬的各位来宾，女士们、先生们：
早上好。

今天我很荣幸参加在中国举办的《中国水资源管理制度建设高级圆桌会议》。在此，我谨代表亚洲开发银行感谢全球水伙伴中国委员会和水利部举办这次会议。此外，还要对来自不同部委、科研院所、高等院校、国际组织以及其他单位的所有参会人员表示热烈欢迎。亚洲开发银行非常高兴能共同组织此次盛会。

介绍：水危机及其应对

今天我们将讨论中国甚至全人类所面临的日益严重的威胁即水危机及其应对的问题。世界上约20%的人口在中国，而中国却只有7%的水资源。促进国家经济发展的关键因素以及中国发展的成就都在于淡水资源。随着中国的城市化、工业化和人口的增长，对于水、食品和能源的需求量正在成倍增加。再加上气候变化的影响，这使得岌岌可危的水状况在未来的前景更加变化莫测。

到2030年，解决1.4亿人口的吃饭问题将要求通过用更少的水来生产出更多的食物以及提高农业用水效率的方式进行改善。城市化的加快以及对饮用水需求的增加将给现有水源带来压力。能源需求量将在未来20年增长两倍甚至更多；水力发电将是生产清洁能源的一个关键因素。除了这些人类活动的需求，保证环境流量和维持生态系统的用水也非常重要。

此外，气候变化在中国使得更为严重的暴雨和旱灾发生的可能性越来越大。2011年，中国西南地区发生罕见特大旱灾；2010年，作为世界上最大的盆地之一的长江流域，虽然一直以充分降雨量而为人所知，却也不能免于气候变化以及不可持续用水的影响。

中国用水和供水的不断变化带来的挑战突出了水在任何发展和增长计划中的重要性。国家增加居民用水、农业用水、工业用水和环境用水的能力将取决于更好的水资源管理和更多跨部门的规划和统一工作。随着中国许多地区水安全的衰减，加强贫困地区和贫困人口适应气候变化的能力变得至关重要。不仅要保证今后的供水，也要防止食品和能源的价格波动，食品和能源对于全球有着重大影响。

亚洲开发银行与中国在水利方面的伙伴关系

亚洲开发银行与中国的伙伴关系至关重要，合作关系可以追溯到25年前甚至更早。中国在1986年成为亚洲开发银行成员国之后不久，我们就以技术援助方式对农田灌溉管理进行完善，并资助京津地区水资源的研究。自此，双方开始了水资源管理方面的合作。在这个开创性工作之后，我们很快在1994年为《大连市供水项目》提供贷款。此外，对于水利的多种战略选择所做的研究为1988年颁布的《水法》的修改起到辅助作用。《水法》在2002年做了进一步修订，使之更加行之有效。

自此，亚洲开发银行已经在中国支持了多个与水有关的项目。这些项目使更多人喝到干净的水，减少水污染，加强城市污水管理，推动试点地区的节水灌溉技术，并提高了黄河流域和湖南省的非工程性洪水管理技术。此外，我们还资助重点流域和湿地的恢复，例如：松花江流域，海河流域，三江平原，白洋淀和巢湖。亚洲开发银行还提供1.5亿美元的贷款，合作资助《贵阳市水资源管理总体规划（2006-2020年）项目》。这也是中国首次大规模在省会级城市开展以水资源综合管理为基础的项目。另外，我们还鼓励私营部门在成都、哈尔滨和其他较小的城市为水利基础设施的建设进行投资。

总体来看，中国与亚洲开发银行的伙伴关系为水资源管理的根本转变做出了贡献。根据“十二.五计划”，亚洲开发银行将继续加强这一重要的伙伴关系，并继续在水资源管理和水安全的关键战略领域给予支持。

今天，亚洲开发银行将举办两本新书的首发仪式。第一本为《干涸》，讨论中国如何应对干旱问题；第二本为《中国洪水风险管理》。这两本书汇总了亚洲开发银行近年来在改善灾害危机管理以及水资源管理方面技术援助项目的研究成果。这些研究成果也体现了水利部近期的工作思路，亚洲开发银行与水利部在这两本书的撰写过程中一直保持着紧密的合作关系。书中的内容也反应出水利部关于中国面临的最大挑战 、建立有效

制度、恢复失缺资源和用水责任等 问题。

这两本书都强调了综合性方法对于缓解洪水危机以及在旱季时保护生态系统功能将起着重要作用。《中国洪水风险管理》一书特别谈到了明确认识洪水风险、量化和调整洪水损失、调整风险、减少连带的环境损失以及均衡使用工程性和非工程性措施的重要性。

《干涸》一书提出了需求管理是提高应对干旱能力和生态保护的一种途径。书中围绕这条途径提出了风险管理、优化基础设施建设以及生态系统性管理的三种方法。

展望未来

考虑到水危机的加剧，中国政府一直将水管理视为头等大事，未来十年将在水利上投资40万亿人民币(约6000亿美元)。此外，中国也公布了令人瞩目的规划，到2020年减少工业和农业用水量，预计到2020年的单位国内生产总值用水将比2008年用水量减少一半。为保障可持续性发展， 中国政府将用水量维持在现有水平上。

亚洲开发银行将与中国政府进行紧密合作，通过良好的法制框架、行之有效的制度安排、创新型技术以及更多的公众参与来推动水管理向前发展。

女士们、先生们，虽然现在水资源匮乏，但从不同的角度看待水安全，我们也可以将危机变成机遇，亚洲开发银行决心与中国通过合作来实现这一目标。我们还要提醒自己，今天我们所有的决定将事关未来的居住环境。因此，要珍惜每一滴水，水显得越来越珍贵。

今天的会议为高层决策者和科学界人士提供了一个前所未有的合作机会，将缺水、气候变化、自然灾害和逐渐恶化的生态系统等问题结合在一起去解决。我相信通过这类会议来广泛交流，我们将会寻找到多种方法来改善治水并继续推动水资源综合管理。

再次衷心感谢全球水伙伴中国委员会和水利部共同举办此次会议。希望通过为期一天的讨论能够获得更多的成果。

非常感谢。

在中国水资源管理制度建设高级圆桌会议上的致辞：

凝聚企业力量，提升水资源管理水平

世界自然基金会中国首席代表　　关德辉

尊敬的陈雷部长、汪恕诚主席、杜鹰副主任、女士们、先生们，

大家上午好！能够代表世界自然基金会出席本次高级圆桌会议，本人深感荣幸。在座各位多是世界自然基金会的老朋友，能够与各位汇聚一堂，共商中国水资源管理大计，我感到非常高兴。相信本次会议也将成为我们开启新的合作，共建新的友谊的起点。

水是人类生存之根本，也是生态健康之关键。全球有很多从事水资源保护的国际组织，如全球水伙伴等长期致力于维护世界水安全和水资源综合管理，在推动水资源的可持续利用方面扮演着重要的角色。世界自然基金会作为问世51年，在华开展工作31年的全球规模最大的自然保护组织之一，也是其中的一员。我们一直并将继续把淡水生态系统的保护作为我们的优先领域之一。在座的各位都非常清楚，水资源问题是当前各个国家都面临的重大挑战。世界资源研究所的研究指出，在上个世纪，水资源的使用量以多于 人口增长率2倍以上的速率迅速增加，而根据世界卫生组织和联合国儿童基金会的研究数据显示，截止2010年，全球仍有11%（7.83亿）的人口缺乏安全的饮用水。毋庸置疑，我们今天的决心和行动将决定明天的健康与繁荣。

水资源不仅是自然生态系统的重要组成部分，更是人类生存和发展的基本要素，是生命的关键所在。然而，当前社会在快速发展的同时却常常疏于规划，使得水源安全性和可达性等问题显得更为复杂，也面临更大的挑战，解决水资源问题迫在眉睫。

事实上，去年中央一号文件就已旗帜鲜明地提出“ 水是生命之源、生产之要、生态之基 ”，此外，针对近年来水资源开发利用过程中存在的问题和挑战，国务院于今年发布了《关于实行最严格水资源管理制度的意见》。

与此同时，《全国水资源综合规划》、《全国主体功能区规划》、《全国重要江河湖泊水功能区划》等国家政策文件的出台，都表明了水问题在中国的极端重要性，也充

分展示了中国政府应对这一挑战，解决水资源危机的强大决心。

世界自然基金会工作中的保护实践与中国政府在水资源管理领域的决策理念紧密契合。在过去14年中，世界自然基金会淡水项目与水利、环保、林业、发展改革、农业等部门的合作伙伴共同努力，在淡水生态系统保护和水资源管理领域开展了一系列的理论研究、实践探索和政策倡导。

借此机会，我想与各位分享一下世界自然基金会淡水项目的优先工作领域：

第一，倡导环境流理念，确保河流生态系统的长期健康稳定；

第二，参与第三轮中国流域综合规划修编的进程并提供技术支持；

第三，世界自然基金会通过发起长江论坛、支持黄河国际论坛等国际合作平台以推动流域综合管理；

第四，关注农村饮水安全问题，探索农村水源地保护、生活灰水处理、水生态系统修复的有效措施；

第五，与亚洲开发银行等机构共同倡导流域生态有偿服务，在赤水河流域探索建立公私合作的创新资金机制。

然而，“一朵鲜花打扮不出美丽的春天”，面对日益严峻的水资源问题，不仅需要决策者的努力，更需要企业和其他利益相关方，包括当地社区的通力协作。企业不仅仅是水资源的使用者，他们的决策与行动还会对全球淡水生态系统的未来产生重要的影响。

世界自然基金会认为，企业不仅应是高效的水资源使用者，更应是水资源有效管理的先行者，通过与其他利益相关方携手共同减少其在整个流域中的水足迹。基于此，以企业和所有利益相关方共同行动为核心的参与式的水管理应运而生，其主旨是引导和鼓励企业通过一套系统的流程，加强与其他利益相关方的合作，实现重点流域的水资源有效管理，同时降低企业及所有相关方所面临的水风险。

参与式的水管理理念自提出以来，已得到国际社会的广泛认可。世界自然基金会自

2010年开始在中国启动参与式的水管理项目，并与可口可乐和拉法基等全球领先的企业共同努力，将更有效、更可持续的水管理技术融入其生产供应链，帮助其积极应对未来的水资源危机，提升自身收益。此外，参与式的水管理中国网络也将于今年成立，从而为企业和各利益方开展参与式的水管理项目提供信息交流的平台。

“参与式的水管理”的关键要领是打破企业原有的管理模式，超越企业社会责任的固有思维，推动企业成为水资源最佳管理模式的先行者，并通过与企业、非政府组织（如世界自然基金会和GWP）和其他利益相关方的紧密合作，促进水资源管理模式创新性的变革。

作为“参与式的水管理”项目的一项重点内容，世界自然基金会与德国投资与开发有限公司合作开发了水风险评估工具《全球水风险评估工具》，并运用此工具分析展示了全球主要流域的水风险。为深入探讨中国流域水风险，世界自然基金会的研究成果《中国水风险研究》将于6月发布。该研究运用《全球水风险评估工具》方法，分析中国十个一级流域的水风险状况，帮助企业和决策者更细致地了解中国主要流域面临的水风险状况，以采取措施，减缓水风险，从而实现更好的水资源管理。

由于时间关系，请允许我做以下总结：落实最严格的水资源管理制度，必须凝聚全社会之力，推动多利益相关方的参与，而企业在其中起着不可或缺的作用。世界自然基金会将继续倡导企业开拓创新，在水资源管理上采取积极行动，为中国水资源管理制度的建设和落实提供有力的支持。

与此同时，世界自然基金会也将继续推动水资源管理的相关科学研究，并与政府部门及全球水伙伴等机构深化合作，共同促进环境流、生态系统有偿服务等工作的产出。此外，我们也将继续倡导流域综合管理的理念和实践，支持构建并维护长江论坛、黄河论坛等高层合作平台。

面对当前全球水资源的重重危机，我们任重而道远；但巨大的挑战之下，我们坚定而乐观——构建人水和谐的地球家园是我们共同的使命！

预祝本次圆桌会议圆满成功，也感谢全球水伙伴给予我此次发言的机会！

谢谢大家！

在中国水资源管理制度建设高级圆桌会议上的致辞

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尊敬的陈雷部长，

各位来宾，女士们、先生们：

很荣幸代表全球水伙伴参加这次会议，也欢迎各位代表出席《中国水资源管理制度建设高级圆桌会议》，谢谢。

全球水伙伴中国委员会与其他单位共同举办这次会议，此次跨行业的会议将不同部门和不同利益的合作单位和利益相关者组织在一起，为此我感到自豪。事实上，这也显示出全球水伙伴在中国和其他地区的重要战略，即：我们的伙伴单位网络就是提供一个“中性平台”，将人们和各组织汇集在一起，围绕水管理的重大问题进行商讨。

全球水伙伴的另一个重要战略就是“水资源综合管理”。在过去15年中，全球水伙伴一直在倡导这一方法并宣传了实践水资源综合管理的一系列工具和案例。其实，根据联合国在全球范围的最新调查显示，世界上80%的国家都在其水法和相关政策中反映了水资源综合管理的方法，中国也在其中。

水资源综合管理可分为三大类：

1. 有利于环境的内容，例如：政策和法规，财政和激励性框架内容；

2. 建立机制，通常是通过国家或国际河流的组织机构来实现；

3. 管理工具，例如：汇总和分享数据和信息；开展国家或地区的水资源评估；制定规划；进行磋商以促成合作；进行资助以及最终形成立法，这些内容今天我们都会讨论到。

就如何运用这些工具，我们有专门的工具箱网站(http://www.gwptoolbox.org/)提供世界上的各类案例，其中许多都是中国的案例。这些内容可以有助于水资源可持续性管理和开发，将利益最大化。

今天上午有许多讲话都谈到，气候变化引起气候的多变，全球人口压力和环境管理的不足造成的水管理危机。这些问题在中国也很突出，刚才陈雷部长在致辞中也谈到这点。

在西方，我们一说到“危机”势必是坏事。但是从中国的语言中，我理解到“危机”有两层含义：一层是“危险”；另一层则落在“机”这个字上，体现“机遇”的意思。

这是一种平衡之法，我希望能与大家一起努力来解决中国水安全所面临的挑战，从“危机”中既看到“危险”，也有“机遇”，以此来提高对有限水资源的管理和开发，通过使用水资源综合管理的方法，将利益最大化。

希望能听取今天有趣的讨论内容，也期盼在座的各位能给这次圆桌会议留下新鲜的理念，以改善中国未来的水资源管理。

陈雷部长，尊敬的各位嘉宾，女士们、先生们，再次感谢各位，预祝大会圆满成功。

中国水资源管理战略举措
实行最严格的水资源管理制度
——在中国水资源管理制度建设高级圆桌会议上的发言

中华人民共和国水利部水资源司司长　　陈明忠

水是生命之源、生产之要、生态之基。人多水少、水资源时空分布不均是中国的基本国情和水情，水资源短缺、粗放利用、水污染严重、水生态恶化等问题已成为制约经济社会可持续发展的主要瓶颈。实行最严格的水资源管理制度，解决日益复杂的水资源问题，以水资源的可持续利用保障经济社会的可持续发展，已成为中国水资源管理的重大战略举措。

一、中国水资源的基本状况

1、中国水资源基本特点。由于特殊的地理和气候条件，加之人口众多，中国水资源具有以下特点：一是人均占有量低。中国水资源总量2.8万亿，居世界第六位，但人均水资源量仅为2100立方米，仅为世界人均水资源量的28%。二是时间分布不均。降水量和河川径流量的60%-80%主要集中在汛期，年际间丰水年的降雨是枯水年的2-8倍，连续几个丰水年或连续几个枯水年的情况时常发生。三是空间分布不均。北方地区国土面积占全国的64%，人口占46%，耕地占60%，而水资源量仅占全国的19%。四是水生态环境脆弱。中国约有39%的国土面积为干旱半干旱地区，降雨少，蒸发大，植被覆盖低，生态环境十分脆弱。

2、中国水资源管理取得的卓著成效。新中国成立以来，中国水资源开发利用取得了巨大成就，水资源管理水平显著提高，对经济社会快速发展起到了重要的支撑和保障作用。一是水资源供给保障能力不断增强。目前已建成水库约8.8万座，总库容近7200亿立方米；2010年全国总供水量已达6022亿立方米，经济社会发展用水基本得到保障。2001-2010年累计解决了2.77亿农村人口的饮水安全问题，提前6年实现了联合国千年发展目标。二是用水效率显著提升。从1979年改革开放30多年来，中国以年均1%的用水低

增长率，支撑了年均约10%的经济高增长率；在保持农田灌溉用水量零增长的情况下，粮食产量提高近50%，以占世界6%的淡水、9%的耕地解决了占世界近21%人口的吃饭问题，对世界发展与繁荣做出了重大贡献。1997～2010年，中国万元GDP用水量下降了69%，万元工业增加值用水量下降了68%，农田灌溉水利用系数由0.4提高到了0.5。三是水资源保护和水环境治理得到加强。实施水功能区划管理，强化入河排污口监督管理，加强饮用水水质源地保护，加快治理水污染， 2006-2010年5年间全国城市污水处理率由52%提高到77%。四是初步形成了以《水法》为主体的水资源管理法律法规体系。实施了取水许可、水资源有偿使用、水功能区划等重要管理制度，确立了流域管理与区域管理相结合的水资源统一管理体制，完成了全国水资源综合规划。

3、突出问题。在取得巨大成效的同时，随着中国工业化、城镇化深入发展，加之全球气候变化影响，中国水资源正面临着以下突出问题：一是水资源供需矛盾突出。多年平均情况下年缺水量500亿多立方米。二是水资源过度开发问题突出。不少地方水资源开发已经远远超出水资源承载能力，引发了一系列生态与环境问题。三是水资源利用方式比较粗放。现状单方水GDP产出仅为世界平均水平的1/3；万元工业增加值用水量高达120立方米（以2000年不变价计，下同），是发达国家的3～4倍；农田灌溉水有效利用系数仅为0.50，与世界先进水平0.7～0.8有较大差距。四是水体污染严重。水功能区水质达标率仅为46%。随着工业化、城镇化深入发展，水资源需求将在较长一段时期内持续增长，中国水资源面临的形势将更为严峻。

二、中国水资源管理重大战略举措—实行最严格的水资源管理制度

中国政府高度重视水资源管理问题，2011年中央1号文件《关于加快水利改革发展的决定》明确要求实行最严格水资源管理制度，把严格水资源管理作为加快转变经济发展方式的战略举措。2012年1月，国务院发布了《关于实行最严格水资源管理制度的意见》，进一步对实行最严格水资源管理制度工作进行了全面部署和具体安排。

（一）总体思路

实行最严格水资源管理制度的总体思路是：以水资源配置、节约和保护为重点，强化用水需求和用水过程管理，通过健全制度、落实责任、提高能力、强化监管，严格控制用水总量、全面提高用水效率，严格控制入河湖排污总量，加快节水型社会建设，促

进水资源可持续利用和经济发展方式转变，推动经济社会发展与水资源水环境承载能力相协调，保障经济社会长期平稳较快发展。

（二）主要内容

实行最严格水资源管理制度的主要内容是确立水资源管理“三条红线”，实施“四项制度”：

1、确立水资源管理“三条红线”

确立水资源管理“三条红线”，就是在保障经济社会发展合理用水的同时，将经济社会系统对水资源和水生态系统的影响控制在可承载范围之内，实现水资源可持续利用和经济社会可持续发展。

一是确立水资源开发利用控制红线。确立水资源开发利用控制红线，主要是严格控制用水总量过快增长，防治水资源过度开发，使水资源开发控制在水资源承载范围之内。具体目标是：到2030年全国用水总量控制在7000亿立方米以内。

二是确立用水效率控制红线。确立用水效率控制红线，主要按照建设节水型社会的要求，着力遏制用水浪费，全面提高用水效率。具体目标是：到2030年中国用水效率达到或接近世界先进水平，万元工业增加值用水量（以2000年不变价计）降低到40立方米以下，农田灌溉水有效利用系数提高到0.6以上。

三是确立水功能区限制纳污红线。确立水功能区限制纳污红线，主要是着力加强水污染防治和水资源保护，使入河湖排污总量控制在水环境承载能力范围之内，确保水资源能够满足使用功能要求。具体目标是：到2030年全国主要污染物入河湖总量控制在水功能区纳污能力范围之内，水功能区水质达标率提高到95%以上。

水资源管理“三条红线”涵盖了水资源开发、利用、保护全过程，互为支撑、相互关联，是一个有机的整体。

2、建立水资源管理“四项制度”

为确保实现“三条红线”目标，提出了建立水资源管理“四项制度”：

一是建立用水总量控制制度，促进水资源合理利用。建立覆盖流域和省市县三级行政区域的取用水总量控制指标体系，制定主要江河流域水量分配方案，严格控制流域与区域取用水总量；严格规划管理和水资源论证，国民经济和社会发展规划以及城市总体规划的编制、重大建设项目的布局，应当与当地水资源条件和防洪要求相适应；严格实施取水许可，对取用水总量已达到或超过控制指标的地区、暂停审批建设项目新增取水，对取用水总量接近控制指标的地区、限制审批新增取水；严格地下水管理和保护，实行地下水取水总量控制和水位控制，防治地下水超采；强化水资源统一调度，协调好生活、生产和生态用水。

二是建立用水效率控制制度，全面建设节水型社会。全面加强节约用水管理，把节约用水贯穿于经济社会发展和群众生活生产全过程；严格用水定额管理，制定实施节水强制性标准；大力发展农业节水灌溉，不断提高农业节水水平；强化工业企业和城市生活节水技术改造，淘汰落后工艺、设备和产品；大力推进污水处理回用，积极发展海水淡化和综合利用，充分利用雨水和微咸水。

三是建立水功能区限制纳污制度，加快治理水污染。严格水功能区监督管理，从严核定水域纳污容量；强化入河湖排污口监督管理，严格控制入河湖排污总量；加快污染严重江河湖泊水环境治理，改善重点流域水环境质量；严格饮用水水源地保护，确保供水安全；维持河流合理流量和地下水的合理水位，确保基本生态用水需求。

四是建立水资源管理责任与考核制度，强化水资源监督管理。将水资源开发、利用、节约和保护的主要指标纳入地方经济社会发展综合评价体系，县级以上地方人民政府主要负责人对本行政区域水资源管理和保护工作负总责；严格考核管理，考核结果作为地方人民政府相关领导干部和相关企业负责人综合考核评价的重要依据；强化水资源监督管理，有法必依、执法必严、违法必究。

三、全面落实最严格水资源管理制度的工作措施

为加快实行最严格的水资源管理制度，将从以下几个方面强化工作措施：

1、加快构建最严格水资源管理目标体系。一是将全国层面的“三条红线”控制指标及阶段性管理目标逐级分解，形成覆盖各流域和各省、市、县三级行政区域的水资源管理硬约束指标体系。二是加快水量分配，力争用5-10年时间，基本完成主要跨省江河流域水量分配方案。三是完善用水定额指标体系，严格用水定额管理，提高各行各业用水的准入门槛。四是核定水功能区水域纳污能力，明确各流域、区域水功能区污染物限制排污总量指标，制定重要江河湖泊水功能区限制排污总量方案。

2、加强水资源配置和调控能力。一是实施河湖水系连通，进一步优化水资源战略配置格局。在科学论证、保护生态的基础上，建设一批骨干水源工程和江河湖库水系连通工程，加快南水北调等跨流域、区域调水工程建设，建设引排顺畅、蓄泄得当、丰枯调剂、多源互补、调控自如的江河湖库水网体系。二是切实加强水资源统一调度，制订主要江河水资源调度方案和调度计划，坚持区域调度服从流域统一调度，水力发电、供水、航运等调度服从流域水资源统一调度。

3、加快完善水资源管理制度和政策法规体系。一是抓紧制定节约用水、地下水管理、水资源论证管理、水功能区监督管理等方面的法规。二是抓紧建立水资源管理责任与考核制度，明确责任主体和考核内容，建立考核评价体系。三是抓紧制订水资源开发、利用、配置、节约和保护方面的技术标准。

4、强化水资源监控能力建设。一是建立国家水资源管理信息系统。从今年起用3--5年时间，基本建立起重要取水户、重要水功能区和主要省界断面三大监控体系，保障“三条红线”控制指标可监测、可评价、可考核。二是进一步优化现有水文站网布局，提高水文监测、预警预报能力；三是加快推进国家地下水监测工程建设，建立国家地下水监测站网。

5、推进水资源管理体制和机制创新。一是强化流域水资源统一管理，加强流域水资源的统一规划、统一管理和统一调度。二是加快推进城乡涉水事务一体化管理，对城乡供水、水资源综合利用、水环境治理和防洪排涝等实行统筹规划、协调实施。三是加快完善流域管理与行政区域管理相结合的水资源管理体制，建立事权清晰、分工明确、行为规范、运转协调的水资源管理工作机制。

6、强化水资源管理科技支撑。一是围绕实行最严格水资源管理制度全局性、基础

性、实践性问题，重点研究中国水资源演变趋势、水资源要素参与国家宏观调控方式方法、水生态系统保护与修复等方面重大课题。二是研究并推广应用水资源实时调度、各行业节水减污、非常规水利用、取用水信息获取等关键技术或工艺设备。三是充分借鉴世界各国先进的水资源管理和技术经验，进一步加强沟通、交流与合作。

中国正在实践着一条有效解决水资源问题的途径。我们愿与世界各国同行一道，进一步加强沟通、交流与合作，共同分享水资源管理领域的成功经验，努力解决共同面临的水资源问题。

中国水污染防治的法律制度体系

——在中国水资源管理制度建设高级圆桌会议上的发言

环境保护部污染防治司同长　　赵华林

尊敬的主席，女士们、先生们：

上午好！很高兴参加全球水伙伴中国委员会举办的“中国水资源管理制度建设高级圆桌会议”。众所周知，水安全状况与经济社会和人类生态系统的可持续发展紧密相关，水安全已成为国家安全的一个重要内容，与国防安全、经济安全、金融安全有着同等重要的战略地位。水环境安全则是水安全的重要组成部分。水环境问题危害人民群众健康，影响社会稳定和生态环境安全，严重制约经济社会的可持续发展。加大水污染防治工作力度，努力改善水环境质量，提高水环境安全水平，是中国建设生态文明、实现经济社会又好又快发展时必须着力加以解决的重要课题。要做好水污染防治工作，首先要做到有法可依、有章可循。今天，我就中国水污染防治面临的形势，水污染防治的立法历程和几项主要的制度，与在座的各界朋友进行交流和探讨。

一、水污染防治面临的形势

中国水问题严重，水资源短缺、水环境恶化、水旱灾害频发等问题日益突出。虽然近些年来，我国环境保护取得明显成效，局部地区水环境质量有了较大改善，但是水环境污染恶化的趋势总体尚未得到根本扭转。水环境保护正处于艰难的负重爬坡阶段。“十二五”期间，污染因子将不断增加，出现复杂的流域性污染态势，水环境压力将继续加大。

第一，我国产业结构、能源结构和经济社会发展所处阶段对环保工作压力巨大。一是产业结构亟待优化。二是能源结构不尽合理。三是我国正处于城镇化和工业化加速发展阶段。虽然已经成功实现“十一五”减排目标，但我国化学需氧量和二氧化硫排放量仍高居世界第一，远远超过我国环境的承载力，环保工作将长期面临严峻的挑战。

第二，部分地区环境污染比较严重，环境污染的总体形势不容乐观。近四分之一的监测断面超过劣V类水体，90%城市河段受到不同程度污染。城市内湖污染十分严重，湖泊富营养化问题突出，约一半城市市区地下水污染比较严重。113个环保重点城市集中式饮用水水源地取水量仍有20%以上不达标。海洋环境状况有恶化趋势。

第三，工业污染防治形势不容乐观。工业污染防治总体水平较低，环境资源代价过大，重化工业等重点行业对工业污染排放总量贡献突出。企业排放稳定达标率仍处于较低水平，工业污染防治科技投入严重不足，部分地区工业布局不合理。工业污染呈现出由经济发达地区向不发达地区、由城市向农村转移的态势，乡镇地区工业污染事件频繁发生。我国现阶段比任何一个发达国家在工业化进程中所面临的环境挑战都要严峻得多。

第四，环境安全形式十分严峻。我国已经进入环境污染事故高发期，因环境污染引发的社会矛盾日益突出，严重影响社会和谐稳定。一些流域区域水环境安全处于预警状态，水资源匮乏，生态恶化事件和污染事故频发，部分地区饮用水安全难以保障，化工等重污染行业多分布在大江大河附近，环境安全隐患较大。近年来，由安全生产和交通运输导致的危险化学品突发环境事件频繁发生，人体健康和生态环境受到严重威胁。

二、水污染防治的立法历程

水污染防治立法既包括《水污染防治法》，也包括《水法》、《水土保持法》、《清洁生产法》等法律中涉及水污染防治的内容，以及一系列排放和检测标准。

我国从上世纪50年代起就开始了对水污染的治理工作，1979年9月通过了《中华人民共和国环境保护法（试行）》，以法律的形式，对环境包括水资源的保护予以规范，为水环境保护法律制度的建立奠定了基础。

中国第一部防治水污染的综合性专门法律是1984年制定的《水污染防治法》，该法就水污染防治的原则、监督管理体制和制度、地表水和地下水污染的防治、法律责任等作了全面的规定。在1988年国家制定的《水法》中，也对合理开发利用水资源和防治水环境污染做出了规定。1989年7月，国务院批准实施了《水污染防治法实施细则》。1995年国务院首次以行政法规的形式针对淮河制定了《淮河流域水污染防治条例》，1996年5

月全国人大常委会通过了新修改的《水污染防治法》。

1996年修订实施的水污染防治法适用了十多年，从实施情况看，随着水资源的匮乏和水危机事件的频频爆发，水污染排放总量居高不下，水体污染相当严重，部分流域水资源的开发利用程度过高，加剧了水污染的恶化趋势，城乡居民饮用水安全存在极大隐患。而1996年的水污染防治法久未更新，已经不能面对更为严峻的水环境。因此，水污染防治法在2007年不可避免地走上重修之路。新修订的《水污染防治法》总结了现行水污染防治法实施的经验教训，结合我国水污染防治工作面临的新形势，对已实施11年的水污染防治法进行了大量修改，经过全国人大常委会三次审议，2008年2月28日下午，十届全国常委会第三十二次会议全票通过了《水污染防治法》修订案。当天，国家主席胡锦涛签署第87号主席令，公布了这部法律。修订后的《水污染防治法》于2008年6月1实施。现行的《水污染防治法》共8章92条，结构上比旧法增加了一章的内容，法律条款亦增加了34条。其指导思想明确，内容和结构更为丰富和完善，制度更符合实际。为水污染防治工作由被动应对转向主动防控、让江河湖泊休养生息奠定了坚实的法律基础。

三、几项主要的法律制度

第一，不断完善的饮用水水源保护区制度。饮用水的安全问题，直接关系到人民群众的身体健康，是环保工作的重中之重。《水污染防治法》对饮用水水源和其他特殊水体保护设专章作了规定，明确了饮用水水源保护区规定相关和争议解决机制，完善了饮用水水源保护区分级管理制度，对饮用水水源保护区实行严格管理，以及饮用水准保护区内实行积极的保护措施，加重了危害饮用水行为的处罚，从而真正做到了将“保护饮用水安全”放在了首位，显示了政府高度重视和治理饮用水危机的决心。

“十一五”期间，我们开展了全国县级以上城市和乡镇的饮用水水源地环境状况调查，组织评估环保重点城市226个集中式饮用水水源状况，督促落实环保要求。编制发布《全国城市饮用水水源地环境保护规划（2008-2020年）》，提出到2015年，水质达标的饮用水水源地比例不低于90%，到2020年达到并稳定在95%以上。下一步，我们要严格饮用水水源保护区划分与管理，定期开展水质全分析，实施水源地环境整治、恢复和建设工程，提高水质达标率。

第二，严格的污染物排放总量控制制度。为了体现预防为主的原则，加强对水污染

物的源头消减和排放控制，国家对重点水污染物排放实施总量控制制度。“十一五”期间，在经济快速增长、能源消耗不断增大的整体情况下，严格实施总量制度减低了主要污染物排放总量，2010年全国化学需氧量、二氧化硫排放总量比2005年分别减少12.45%和14.29%；推动了产业结构调整升级，淘汰落后炼铁产能1.1亿吨、炼钢6860万吨、水泥3.3亿吨、焦炭9300万吨、造纸720万吨、酒精180万吨、味精30万吨、玻璃3800万重量箱；促进了环境基础设施建设，新增污水处理能力超过5000万吨/日，全国城市污水处理率由2005年的52%提高到75%以上。

“十二五”期间，污染减排约束性指标新增氨氮和氮氧化物减排10%。同时，各地可增设地方特征性污染物控制因子并实施考核。水污染物总量控制还将把农业源纳入总量控制范围。

第三，逐步法制化的“区域限批”制度。区域限批制度又称流域限批制度,该制度规定对超过重点水污染物排放总量控制指标的地区,有关人民政府和环境保护主管部门应当暂停审批新增重点水污染排放总量的建设项目的环境影响评价文件,区域限批制度的法制化,使区域限批制度从过去一时的治理运动变成常规化的法律制度,在调整产业结构、转变经济增长方式、实现减排目标和打击环境违法行为方面发挥更大的作用,其对政府责任作出了最严格的规定,对污染行为形成一种长期的威慑。

2006年以来,我部对不符合要求的813个项目环评文件作出不予受理、不予审批或暂缓审批等决定,涉及投资2.9万多亿元,给“两高一资”、低水平重复建设和产能过剩项目设置了不可逾越的“防火墙”。多次采取“区域限批”、“行业限批”措施,有效遏制了环境违法行为。

第四，强化地方政府责任的考核制度。地方保护主义是地区水污染恶化的一个重要原因,一个政府管理政府导向将会决定本地区的环境发展情况，中国的环境保护政策和管理制度必须以地方政府的强力支持为后盾方能有效进行,我们规定了“水环境保护目标责任制和考核评价制度”,将水环境保护目标完成情况作为地方人民政府及其负责人考核评价的内容,作为地方政府政绩考核的重要标准。

2009年,国务院办公厅转发《重点流域水污染防治专项规划实施情况考核暂行办法》,重点流域省界断面水质考核制度全面建立,成为重点流域水污染防治的关键抓手。

截至2010年底,列入规划的治污项目完成率达到87%,比“十五”提高了22.8个百分点,黑龙江、吉林、内蒙古三省(区)团结奋战,松花江流域综合整治取得明显进展。河北省在全省七大水系201个断面实行水质考核,并建立全流域生态补偿机制。江苏省率先实行“河长制”,太湖水质有所改善。山东省采取“治、用、保”方式,省控重点污染河流全部恢复鱼类生长。

第五，日益完善的环境应急处置体制机制。水污染事故与公共危机往往如影随形,水污染事故应急处置不好,对公众健康、经济发展,社会稳定甚至是外交局势都会造成重大损失。2005年发生的松蓊江特大水污染事件,造成的沉痛后果至今还在人们心头留有强大阴影。为此,我部专门组建应急中心,建立环境应急专家库。全国约有1/3以上的省级环保部门成立了专门环境应急管理机构,“十一五”期间,共处置突发环境事件912起,一批社会高度关注的重特大环境事件得到妥善处置。汶川、玉树地震和舟曲特大山洪泥石流灾害发生后,应急监测科学快捷,有效防范了次生环境灾害。

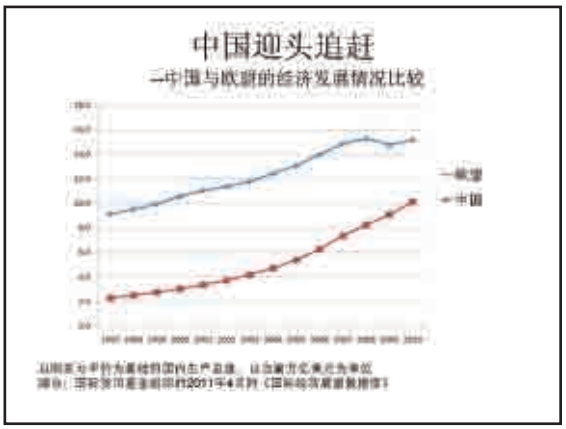
第六，稳步推进的流域生态补偿制度。流域生态补偿制度主旨在于鼓励保护水环境,统筹区域发展,对一些为保护水环境作出贡献的位于水源上游的经济不发达地区,通过财政转移支付等方式给予生态保护补偿,对保护江河源头的生态环境,扭转上、下游地区发展失衡的现象产生积极作用。我部积极探索建立流域生态补偿机制,在新安江、东江、九龙江等流域深入开展流域生态补偿试点,目前新安江流域水环境补偿试点工作已正式启动，截止2011年底,中央财政已下达补偿资金2.5亿元。下一步,我部将进一步推进引滦入津流域生态补偿试点工作,逐步建立健全全国重要流域,尤其是饮用水水源地保护的生态补偿机制,并科学评估生态补偿效果。

女士们,先生们!

水安全问题是当今国际社会普通关注的全球性问题,全球水伙伴中国委员会以及相关国际组织在推动中国水资源保护方面做了大量卓有成效的工作,我们坚信,通过各部门、各行业和全社会的共同努力和通力合作,水环境保护一定能够取得新进展！中国将把加强水环境保护,促进生态文明建设放在更加突出的位置,通过坚持不懈努力,切实改善水环境质量,保障水环境安全,不遗余力地工展国际环境合作与交流,积极参加与应对水资源短缺等全球性环境问题的挑战,为全世界人民享有更加美好的明天,促进人类的进步做出贡献。

欧盟 - 中国流域管理项目的经验、成果和遗产

中国欧盟流域管理项目专家组组长　　范敏泊



中国欧洲水资源交流平台

大量的合作机会：

- 创新知识和技术的交流
  - ➢工业节水和清洁技术的推广
  - ➢早期预警与决策系统
- 通过学术研究提高中国和欧洲研究学者的学术水平
- 与中国和欧洲其他相关平台联系，如欧洲供水和卫生技术平台
- 为企业集团搭建桥梁，共同开发和实施具体解决方案

国务院发展研究中心与欧盟-中国流域管理项目组联合研究并交流战略知识

第一阶段

对比研究一号文件和欧盟水框架指令(2011年10月到2011年12月)

向欧盟水管理人员介绍中国的水资源管理和中央一号文件

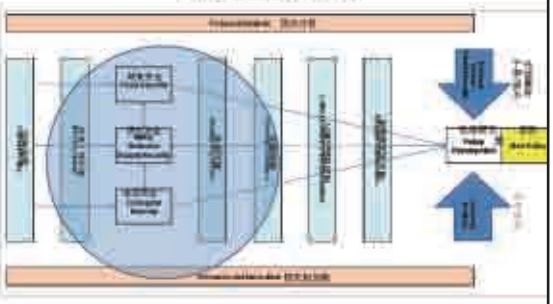
国务院发展研究中心与欧盟-中国流域管理项目组联合研究并交流战略知识

第二阶段

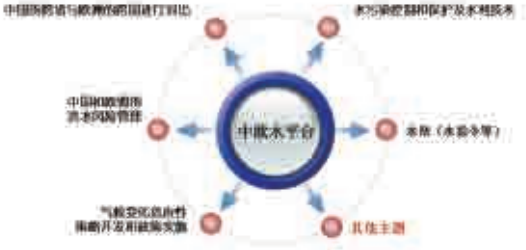
战略知识交流项目(2012年1月到6月)

向中方水管理人员介绍与中央一号文件实施相关的欧盟水框架指令经验

知识交流过程

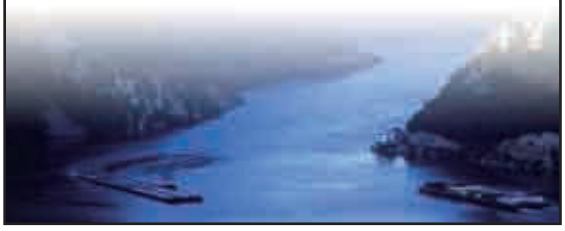


平台的主要议题



谢谢！

www.euchinarivers.org or www.cewp.org



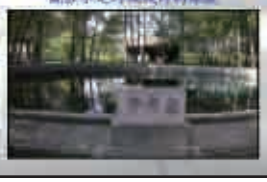
人与水

——需要建立怎样的关系

北京市水务局处长　　冉连起

受季风气候影响，降水时空严重不均，对山西晋的民族和他们生产生活方式产生了重要影响。

战争与和平、政治与经济往往因水的困扰在这里演绎，永定河、潮白河等河流见证了这种漫长的历史图景。



800年间，永定河冲积扇的西隅，形成中国的首都，同它的天然形胜，同有着源源不断水源补给密切相关。

北京古河床变迁

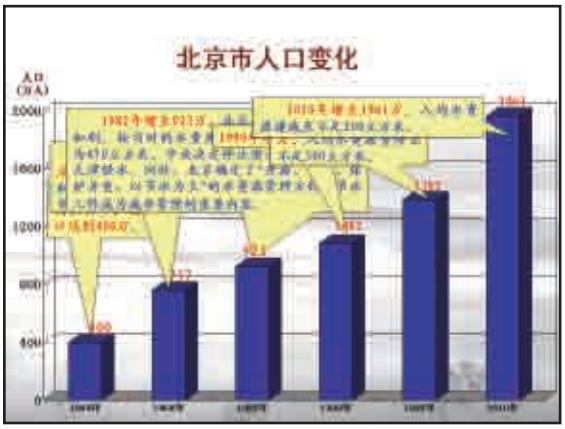
800年间，永定河冲积扇的西隅，形成中国的首都，同它的天然形胜，同有着源源不断水源补给密切相关。

北京古河床变迁

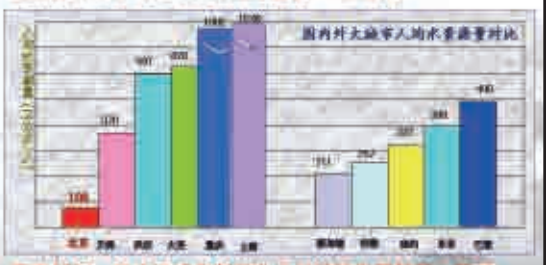
○在以农作为主的小生产时代，北京地区演变北方重镇并进而为首都，人口最多不过200万。

古籍京山水城图

而当现代化及生产生活方式同这个城市结缘后，人口扩张，经济发展给水的保障出了难题。



由于北京遭遇连续十几年干旱，实际形成的可利用水资源量远远小于多年平均量，如果以当年实际可利用水资源计算，实际的人均水资源量仅有100立方米。



毫无疑问，缺水已成为制约北京可持续发展的第一瓶颈。

制度 — 调节人水矛盾的有效方式

○北京人多水少的矛盾在城市发展扩张中不断加剧，在过去以工程方式、行政方式解决人水矛盾的基础上，开始探索以制度的方式解决，以制度形式确立人与水的新型关系。

制度设计是针对问题进行的，成功而有益的制度有助于解决问题，而不好的制度会使情况变得更遭。

北京从上世纪八十年代开始治水方式开始转型，由大规模通过工程建设开发水资源，到以制度建设为重点科学管理水资源。（从自然基础方面分析，此时的北京北京除了部分地下水可深度开发，地表水资源已基本被工程控制）。

北京针对不同时期的水问题，或者说随着解决水问题的需求变化，制定了一系列管理制度约束取用水行为，这些制度考虑即时环境，着眼于解决现时问题，又考虑目标环境，有前瞻性和目标的可实现性。

在不断地解决发展中问题的过程中，制度建设不断完善，科学化、体系化，这些制度是成体系的，仅北京市制定的涉水地方性法规就有46部、政府规章239部、规范性文件363部。

这些制度主要有：

➢水资源保护方面的如，北京市水污染防治条例、北京市两库一渠道保护管理条例等。

这些制度主要有：

节水方面的如，制定水法实施办法、北京市节约用水办法，强化计划用水、节约用水管理，实施定额管理。

这些制度主要有：

调整用水结构的如，促进工业农业节水的一系列产业政策和措施。

这些制度主要有：

制定《21世纪初期首都水资源可持续利用规划》，改变以往只关注工程建设的思路，制定包括管理规划、应急规划在内的综合规划。

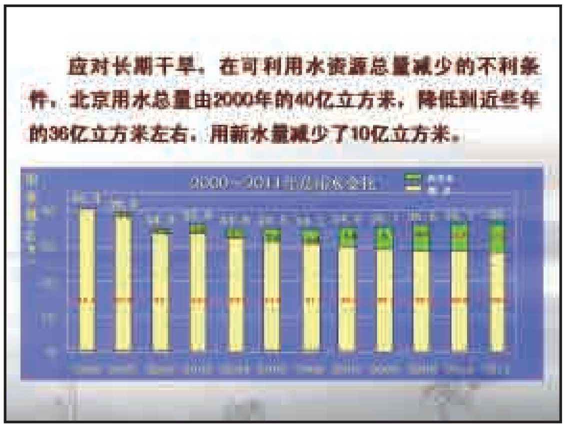
提出水管理体制、水法规、水价调整的方案。

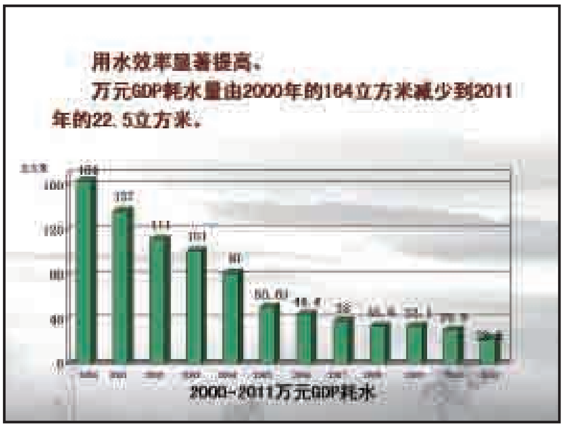
这些制度主要有：

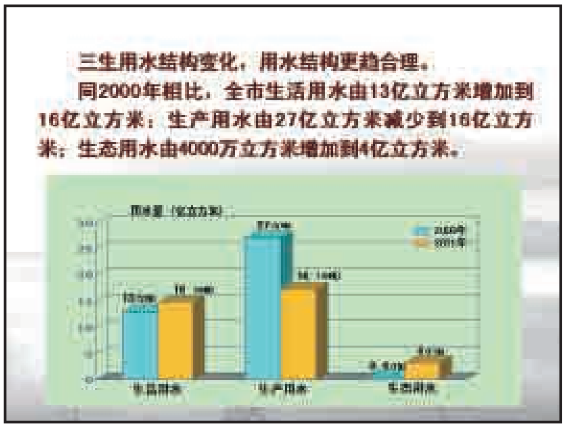
落实规划的26水资源管理和节水措施等。

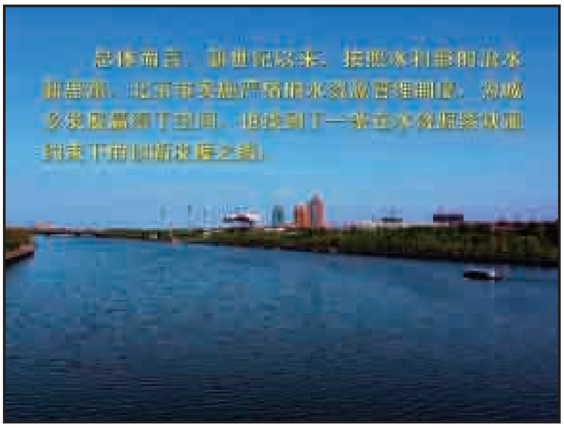
从宏观管理的水资源配置方案，到取消稻田、农业用水准确计量的具体措施。使管理制度建设与解决发展中的问题紧密结合在一起。

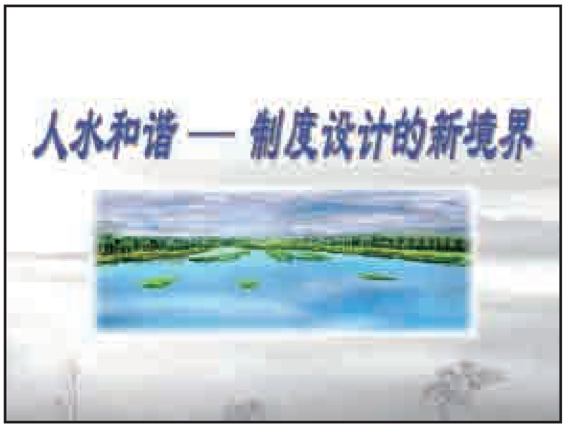

这些制度在化解人水矛盾，支撑北京发展上发挥了重大保障作用，与培育科学用水观念，培育节水的生产生活方式共同作用，使水资源有效保护、科学开发、高效利用成为可能。


应对长期干旱，在可利用水资源总量减少的不利条件，北京用水总量由2000年的40亿立方米，降低到近些年的36亿立方米左右，用新水量减少了10亿立方米。

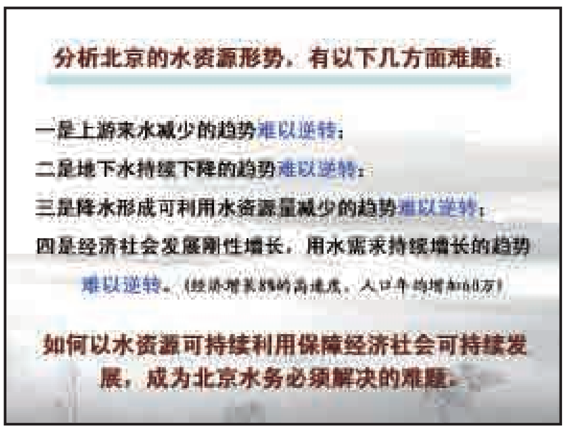

用水效率显著提高。
万元GDP耗水量由2000年的164立方米减少到2011年的22.5立方米。
2000~2011万元GDP耗水


三生用水结构变化，用水结构更趋合理。
同2000年相比，全市生活用水由13亿立方米增加到16亿立方米；生产用水由27亿立方米减少到16亿立方米；生态用水由4000万立方米增加到4亿立方米。
生活用水
生产用水
生态用水




人水和谐 — 制度设计的新境界


北京成功举办奥运会后，城市发展进入到了新阶段。北京市委市政府确立了建设有中国特色世界城市新的战略目标。
新的发展目标对北京水务工作，特别是对水资源保障提出了严峻的挑战。


分析北京的水资源形势，有以下几方面难题：
一是上游来水减少的趋势难以逆转；
二是地下水持续下降的趋势难以逆转；
三是降水形成可利用水资源量减少的趋势难以逆转；
四是经济社会发展刚性增长，用水需求持续增长的趋势难以逆转。（经济增长的高速度，人口年均增加60万）
如何以水资源可持续利用保障经济社会可持续发展，成为北京水务必须解决的难题。

北京水务手上有两张可用的王牌：

一是外流域调水，正在实施的南水北调工程，从长江流域向北京调水，2014年通水，年可向北京引水10亿立方米。

可以预测，南水北调对北京水安全保障具有重大作用。但从另一角度分析，面对城市快速发展和流域内水资源减少的趋势，10亿立方米引水的成果有可能被很快吞噬。

北京水务手上有两张可用的王牌：

二是强化管理，运用更加科学的制度约束用水行为，协调好人口、资源、环境的协调关系，培育全社会节水的生产生活方式和城市的可持续发展方式。

以北京水资源管理和节水管理的现状而言，虽已取得了很大成绩，但存在的问题也不容忽视。不同程度存在着水资源配置不合理问题，水管理不严格的问题，浪费水现象严重问题，提高用水效率仍有着很广阔的管理空间。

再从一定角度说，制定更加科学的用水制度，严格规范社会用水行为，同建设南水北调工程一样具有重大意义，是保障北京水资源可持续利用的战略举措。

在水资源管理和节水管理方面，北京抓住落实中央关于加快水利改革发展的文件的战略机遇，正在进行着制度创新工作，已修订完成《北京市节约用水办法》，很快将以政府规章形式发布，还将发布落实最严格的水资源管理制度实施意见，同时还将出台一系列配套政策文件。

为此我们确立了水资源管理方针：

“工业新水零增长、农业用新水负增长、生活用水适度增长、环境用水控制增长”

确立了未来10-20年，北京水资源管理的三道红线。

- 水资源开发利用“红线”：严格实行用水总量控制。
- 明确用水效率控制“红线”：坚决遏制用水浪费。
- 水功能区限制纳污“红线”：严格控制入河排污总量。

基本原则：

一是坚持民生优先。着力解决人民群众最关心最直接最现实的饮用水、水环境等问题，保障水源安全、供水安全和生态安全。

二是坚持人水和谐。顺应自然规律和经济社会发展规律，以水定需，量水发展。

三是坚持统筹兼顾。协调好生活、生产和生态用水，合理配置地表水、地下水、外调水和再生水。

四是坚持创新驱动。完善水资源管理体制和机制，创新管理方式和方法，注重提高制度实施的可行性和有效性。

主要目标：

一是确立水资源开发利用控制红线。2015年全市用水总量控制在40亿立方米以内，2020年控制在46亿立方米左右。

二是确立用水效率控制红线。2015年万元工业增加值用水量下降到13.5立方米，2020年下降到10立方米；2015年农业灌溉水有效利用系数提高到0.72以上，2020年提高到0.71。

三是确立水功能区限制纳污红线。水功能区达标率2015年达到50%，2020年达到77%。

主要措施：

一是加强水资源开发利用控制红线管理，严格实行用水总量控制。严格规划和建设项目水资源论证制度，严格取水许可与用水指标管理。严格地下水管理和保护，强化多水源统一调度。

二是加强用水效率控制红线管理，全面推进节水型社会建设。严格产业用水效率准入，落实节水“三同时”制度。制定节水强制性标准，禁止生产和销售不符合节水强制性标准的产品。

三是加强水功能区限制纳污红线管理，严格控制入河湖排污总量。严格水功能区监管管理，加快污水处理厂升级改造和再生水厂建设，加强饮用水源地保护。

四是加强水资源管理责任考核，建立“三条红线”管理考核制度。考核指标纳入年度绩效考核体系，实行年度责任书，建立监管和奖励机制。

这些制度的实施，更加科学合理地调节着在新的观念形态下，新的水资源形势下，新的城市发展战略下的人水关系，这种关系的核心便是——人水和谐。

这种和谐表现为：

- 珍惜水、爱护水、节约水；
- 少索取、少消耗、少污染，以适度的水量赢得广阔的发展空间，建立适应区域水资源承载能力的量水发展的生产生活新模式。


在井不遥远的历史时期，山的那边是草场和游牧民族逐水草而居的生活方式。
山的这边是农田农耕民族靠天农作的生活方式。
游牧生活与农耕文化的纽带——永定河峡谷


在井不遥远的历史时期，山的那边是草场和游牧民族逐水草而居的生活方式。山的这边是农田农耕民族靠天农作的生活方式。


我们确信，北京在向中国特色世界城市前进的新征程中，人水关系会更加和谐，走出一条绿色发展之路。


感谢各位对北京水务的关心
Thank you!

水资源管理的政策和工具

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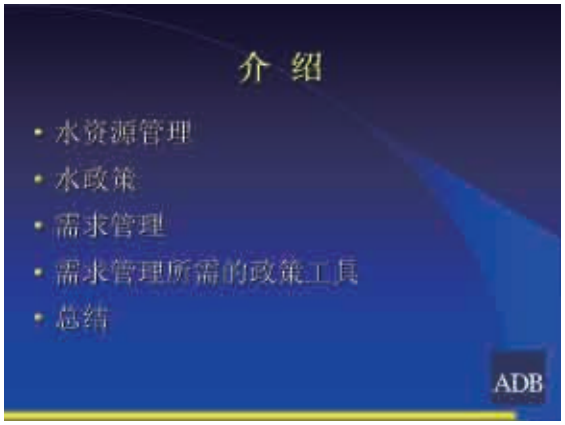
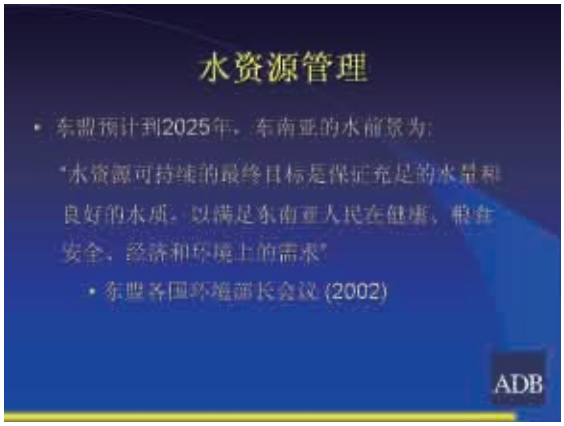
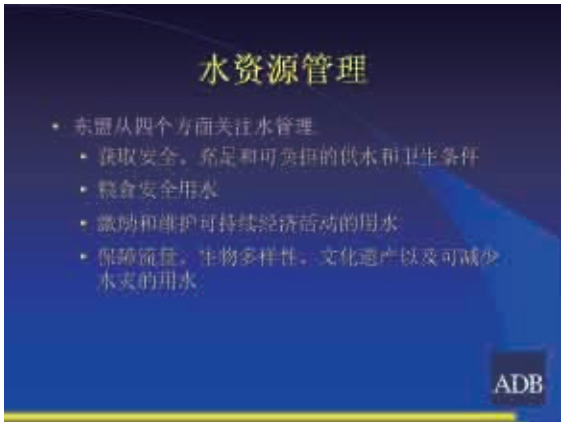
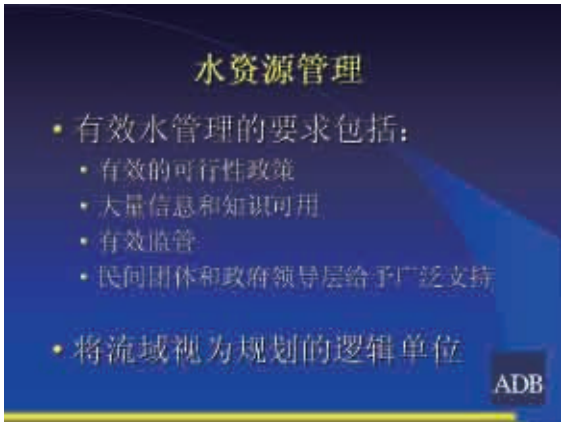
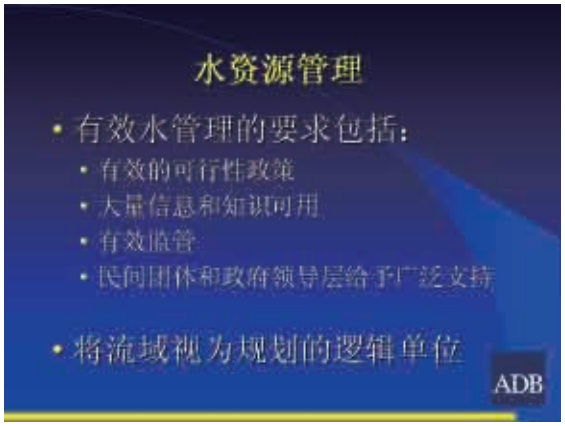










水政策

- 水资源的压力表示，水政策要多注重部门间的水资源分配特别是再分配；
- 围绕农业用水以及节水的政策措施
- 水分配与再分配需要制定和保护水权
- 资源分配需要进行测定

ADB

需求管理

- 充分理解用水账目很重要
- 避免负值技术
- 所有部门统一专有名词的使用

ADB

需求管理

- "效率"
- "改善"
- "更新"
- "节水"

ADB

需求管理

用水目的多种多样...

- 消耗型
  - 效益性用水
  - 非效益性用水
- 非消耗型
  - 可回收
  - 不可回收

ADB

需求管理

节水的重点在于:

- 消耗型
  - 效益性用水
  - 非效益性用水
- 非消耗型
  - 可回收
  - 不可回收前提量

ADB

需求管理所需的政策工具

- 亚洲的水利工作日渐成熟:
  - 将用水发展成经济商品
  - 控制供水量的增长
  - 加强用水与用水户之间的需求调整

ADB

需求管理所需的政策工具

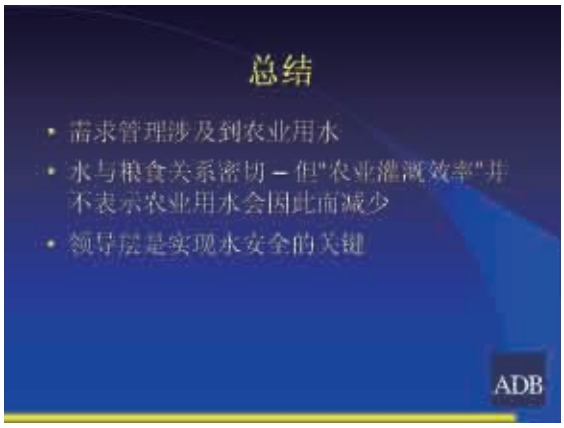
- 抉择
  - 行政手段 – 减少供水（农业）
  - 经济手段 – 利用水价体现用水成本

ADB

需求管理所需的政策工具

- 水价必须包括:
  - 输水服务费用
  - 水的使用成本
  - 社会成本(其他项目)

ADB


总结
• 需求管理涉及到农业用水
• 水与粮食关系密切 – 但"农业灌溉效率"并不表示农业用水会因此而减少
• 领导层是实现水安全的关键
ADB


谢谢
伊恩 · 马金
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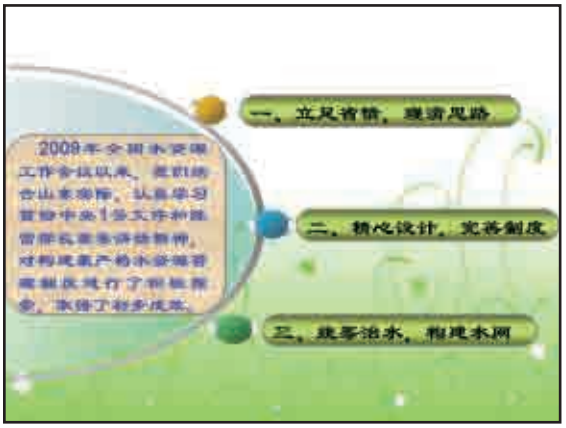
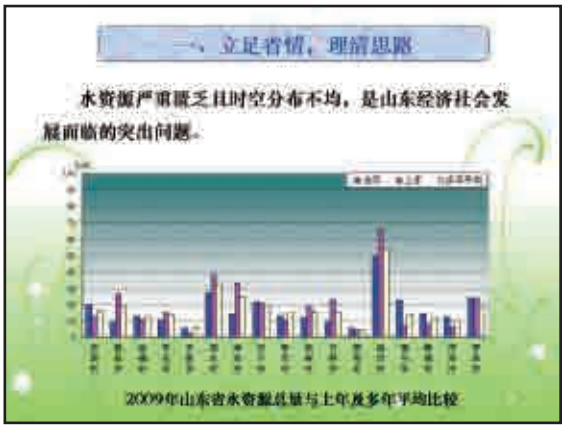
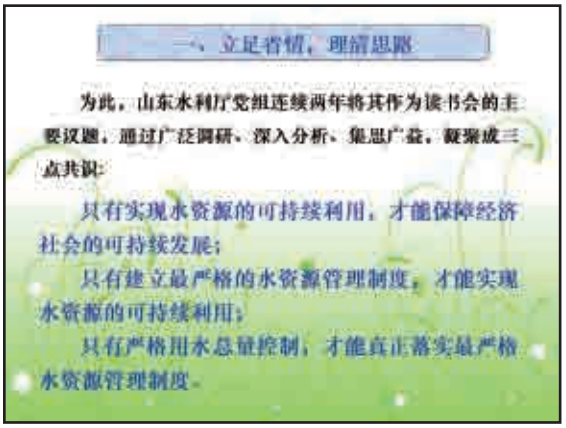
落实最严格水资源管理制度

促进水资源可持续利用

山东省水利厅处长　　高希星

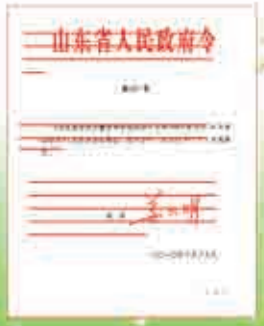






一、立足省情，理清思路

2009年9月省政府以277号令颁布了《山东省用水总量控制管理办法》，为实行最严格水资源管理制度奠定了法律基础。



一、立足省情，理清思路

二、精心设计，完善制度

制度设计构建

一、严格总量控制
二、严格定额管理
三、严格纳污限制
四、严格取水许可
五、严格用水监测
六、严格责任考核
七、严格执法监管

二、精心设计，完善制度

一、严格总量控制

以年度采补平衡为底线，依据《山东省水资源综合规划》测定省、市、县三级用水总量控制指标体系，以形成“以供定需”、“一控双促”的倒逼机制（即通过控制用水总量，促进用水方式和经济发展方式转变）。

二、精心设计，完善制度

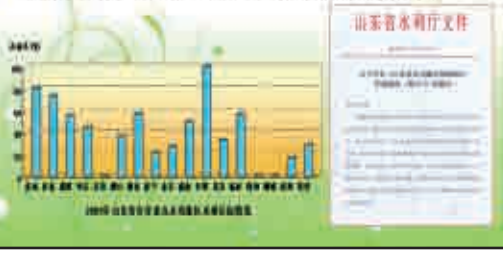
二、严格定额管理

与省技术监督局共同制定《山东省重点工业产品取水定额》和《山东省主要农作物灌溉定额》，超过定额标准的一律不予取水许可。

二、精心设计，完善制度

三、严格纳污限制

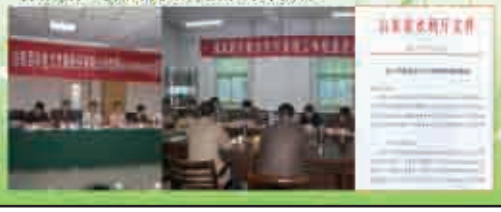
科学核定各类水功能区纳污容量，对造成水功能区水质达标率降低的，相应核减其年度用水计划指标。



二、精心设计，完善制度

四、严格取水许可

申请取水许可必须限制在总量控制指标内，必须符合产业政策和用水定额标准，必须通过水资源论证、水保方案审批和防洪影响评价，必须满足节水“三同时”要求。未获取水许可的，发展改革、经济信息化部门不得批准项目立项，环保部门不得批准环评报告。



二、精心设计，完善制度

五、严格用水监测

明确监测责任主体，区域年度用水总量监测由水文部门负责，用水户用水计量监测由批准取水的水行政主管部门负责，实行监测资料、信息共享。监测数据作为考核和制定年度指标的依据。

二、精心设计，完善制度

六、严格责任考核

把水资源开发利用、节约和保护的主要控制性指标作为“红线”管理，纳入当地经济社会发展综合评价指标体系，实行地方行政首长负责制，并把考核结果作为评价各级政府执政能力和发展实绩的重要依据。

对突破总量控制指标、用水效率指标和水质保护指标的，对政府及有关部门相关责任人严格“问责”。

二、精心设计，完善制度

七、严格执法监督

对违规许可、无证取水、超标排污及擅自减免、拒不交纳水资源费的依法严惩。我们不定期在全省组织开展水资源专项整治行动，为实行最严格水资源管理制度营造了良好的执法环境。

三、统筹治水，构建水网

在完善水资源管理制度的同时，相应构建水资源开发利用和优化配置工程体系。针对全省水资源时空分布严重不均的客观现实，为在全省范围内实现统筹调度、科学配置、提高水资源保障能力，我们依托南水北调山东段工程和胶东调水工程，着力构建“南北贯通、东西互济、河库相连、蓄引结合、城乡一体”的水资源调配工程体系。

三、统筹治水，构建水网

同时，按“上游涵养水源、中游库河调蓄、下游河口湿地”的模式，以雨洪水资源化利用和水生态保护为重点，着力构建生态水系，统筹解决水资源短缺、水灾害威胁、水生态恶化三大水问题，为全省经济社会可持续发展提供更加可靠的水利保障。

水系建设

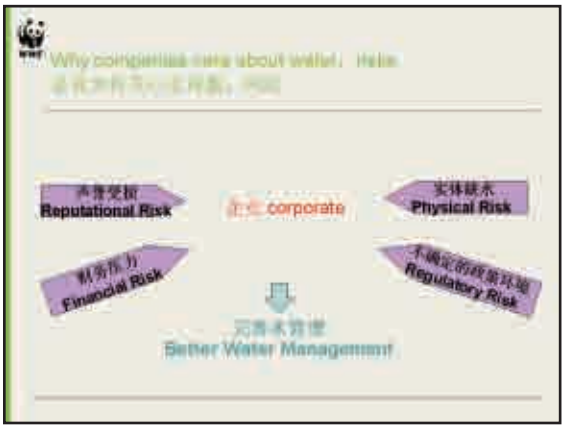
三、统筹治水，构建水网

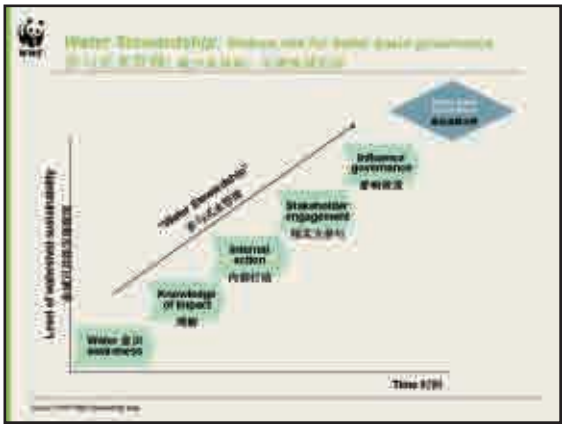
汇报完毕
谢谢大家

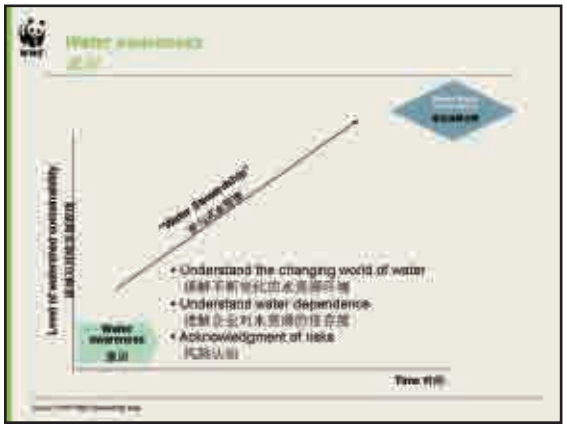
预祝大会圆满成功！

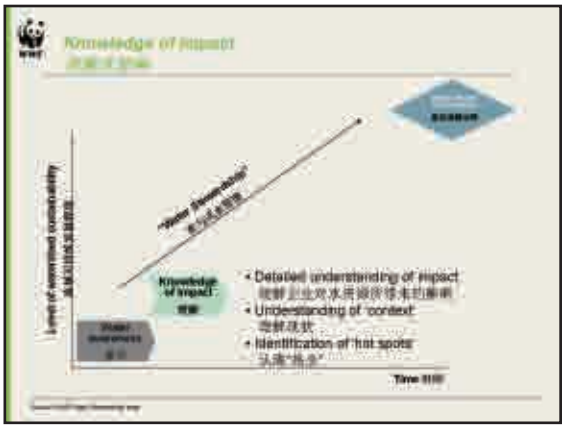
参与式水管理

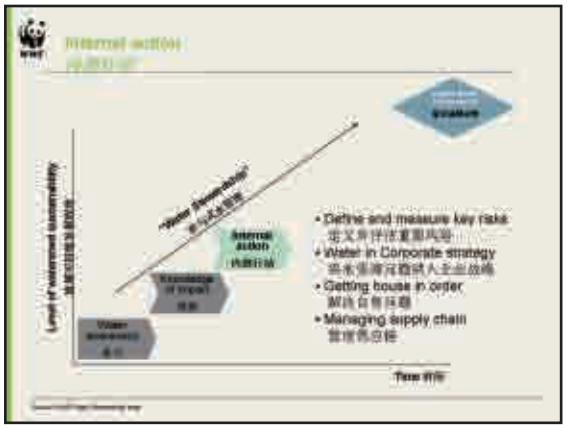
世界自然基金会中国保护项目总监　　凌林

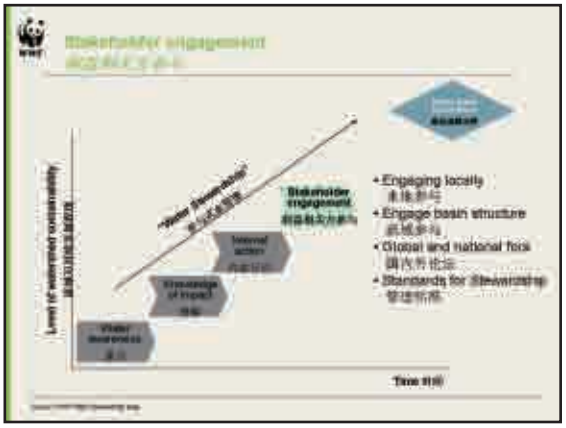


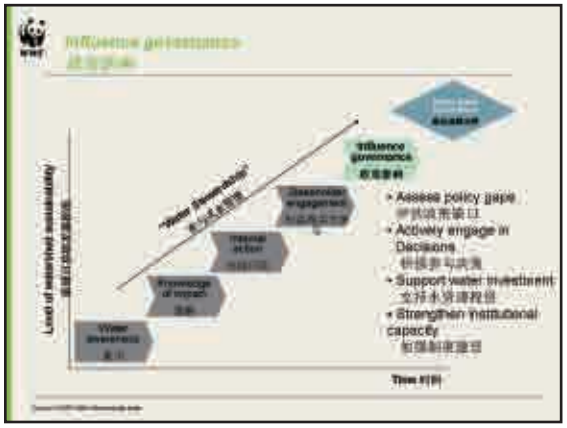



• Understand the changing world of water
• Understand water dependence
• Acknowledgment of risks


• Detailed understanding of impact
• Understanding of 'context'
• Identification of 'hot spots'


• Define and measure key risks
• Water in Corporate strategy
• Getting house in order
• Managing supply chain


• Engaging locally
• Engage basin structure
• Global and national fora
• Standards for Stewardship


• Assess policy gaps
• Actively engage in Decisions
• Support water investment
• Strengthen institutional capacity

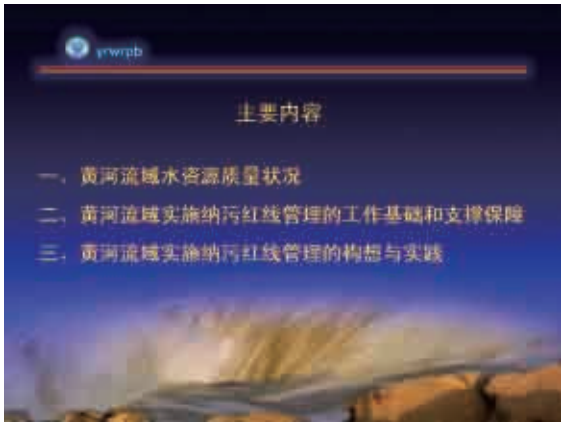

WATER FOOTPRINTING

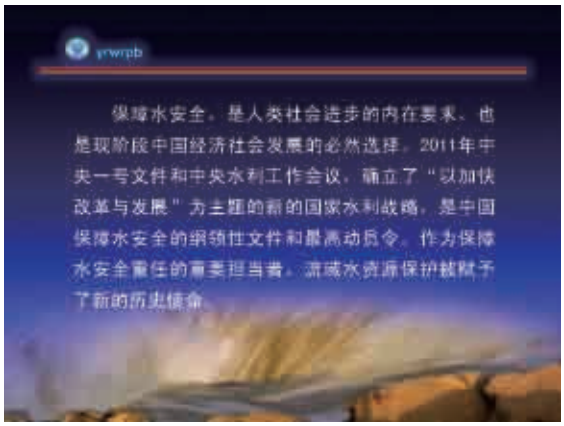

HSBC
NOKIA
SAB MILLER
LAFARGE
IKEA

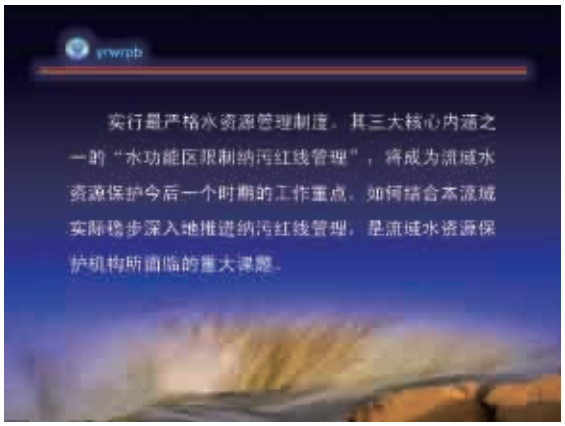

Thank you

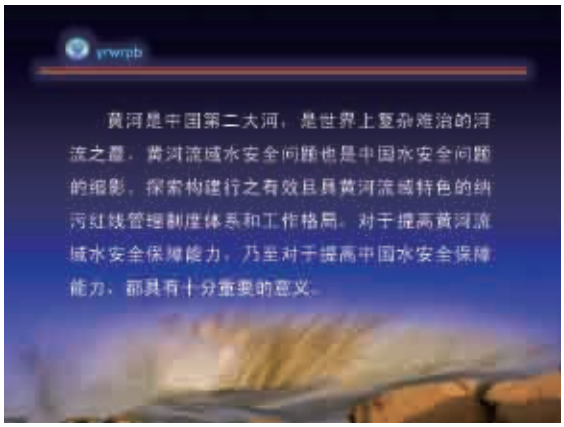
黄河流域实施水功能区限制纳污红线管理的整体构想与初步实践

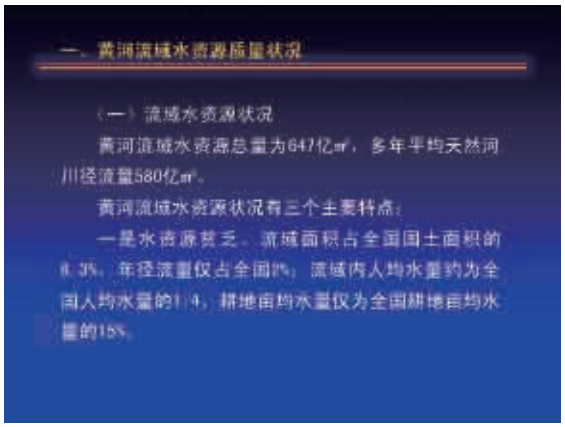
黄河流域水资源保护局局长　　司毅铭











一、黄河流域水资源质量状况

二是径流年内、年际变化大。干流及主要支流汛期7～10月径流量占全年的60%以上。黄河自有实测资料以来，相继出现了1922～1932年、1969～1974年、1990～2000年的连续枯水段。三个连续枯水段平均河川天然径流量分别相当于多年均值的74%、84%和83%。

三是地区分布不均。黄河河川径流大部分来自兰州以上，年径流量占全河的61.7%，而流域面积仅占全河的28%。

一、黄河流域水资源质量状况

（二）流域水污染特征

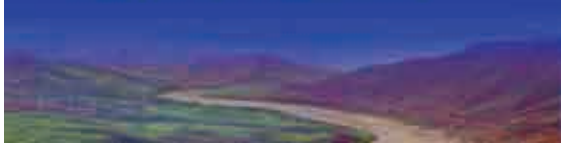
黄河流域矿产资源和能源资源丰富，依托资源优势形成的能源化工产业相对集中，使流域内工业经济发展呈现“资源消耗大、污染物排放强度高”的特点。

目前，黄河流域年入河废污水排放量约为43亿t，石油化工、煤炭、造纸等行业的COD排放量占流域工业排放量的80%以上，流域内工业废水达标排放率低，城市污水处理率低于全国平均水平。

一、黄河流域水资源质量状况

（三）流域水质变化趋势

2005年以来，黄河流域水质总体恶化趋势初步得到遏制，其中，黄河干流水质呈好转趋势，主要支流水质类别虽无较大变化，但主要污染物浓度有所下降，尤其以污染较重的渭河、洛河较为明显。



一、黄河流域水资源质量状况

黄河流域水质变化趋势总体向好的原因主要包括：

1、新《水法》、《水污染防治法》颁布实施和国家节能减排政策的强力推行；
2、“十一五”水资源保护和水污染防治规划的落实；
3、流域排污总量持平及污染物浓度降低；
4、以黄河水量统一调度为平台的水量水质保护并重；
5、来水条件改善和水量调度优化而形成的河道环境容量增大。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

以2002年修订颁布的《水法》为标志，流域水资源保护进入了一个法定地位更明确、法律依据更充分、职能配置更完备的新阶段。近年来，黄河水利委员会、黄河流域水资源保护局全面正确履行法定职能，与流域各省（区）人民政府及环境保护、水行政主管部门密切协作，勇于开拓、积极作为，有效遏止了黄河水环境质量恶化趋势，为黄河流域实施纳污红线管理提供了良好的工作基础和能力支撑。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（一）探索构建流域与区域相结合、水利与环保相联合的黄河水资源保护管理体系

流域管理与区域管理相结合，是《水法》确立的水资源保护管理制度。通过长期的探索与实践，以流域为单元、流域与区域相结合、水利与环保相联合的黄河水资源保护管理体系已初步形成，在业务合作、信息共享等方面成效显著。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

主要成果包括：与省（区）水利、环保部门建立了重大问题协商、规划衔接、水质监测数据信息共享机制；与省（区）水行政主管部门在水功能区监督、取水及排污口设置审批方面建立分级管理体系；与各省（区）水质监测部门建立流域机构指导协调、流域与区域信息共享、分工协作的工作格局。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（二）构建流域水功能区划及水资源保护规划体系

2000年，按照水利部统一部署，组织开展黄河流域水功能区划，流域各省（区）政府相继批复行政辖区内水功能区划，2011年底国务院批复《全国重要江河湖泊水功能区划》，其中黄河流域重要水功能区346个。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

“十一五”期间，相继完成黄河流域（片）水资源综合规划水资源保护与水生态保护部分、黄河流域水生态修复与水资源保障专项规划、黄河干流城市水源地安全保障规划等专项规划。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（三）依法强化以入河排污口为重点的水功能区管理

入河排污口监管是水功能区管理的重要切入点和主要抓手。2002年《水法》和2004年水利部颁布的《入河排污口监督管理办法》为入河排污口监管提供了法律法规保障。“十一五”期间，通过严格入河排污口设置审批，较大程度地改善了入河排污口设置无序混乱的状况。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

自2007年开始，先后组织4次入河排污口联合执法检查行动，整改企业违法违规行为，效果显著。2011年，黄河流域在全国率先启动流域入河排污口全面核查，并已取得成果，为入河排污口监管提供了准确可靠的基础依据。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（四）积极探索水生态系统保护与修复

近年来，通过积极探索水生态系统保护与修复，黄河流域水生态质量得到显著改善。

黄河实现连续12年河道不断流；黄河河口三角洲生态补水、引黄济淀、黄河源区水源涵养、乌梁素海综合治理等生态效益显著；山西省、西安沪南等水生态系统保护与修复试点工作取得重要进展。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（五）不断完善突发性水污染事件应急机制

2003年，黄委在全国水利系统建立第一个突发性水污染事件应急机制。自机制建立以来，黄委联手流域相关省（区）水利、环保部门，先后快速高效处置50余起各类突发性水污染事件，为保障黄河供水水质安全提供了有力支撑。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

2011年，黄委与流域8省（区）水利、环保部门共同签署“黄河流域突发性水污染事件信息通报与沟通协作框架意见”，该成果不仅是黄河突发性水污染事件应急机制在流域层面的拓展，也是建立和完善流域与区域相结合、水利与环保相联合的黄河水资源保护管理体系的一项重要实践。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（六）不断完善水质监测网络体系

目前，黄河流域已形成较为完善的水质监测网络体系，流域各级水利部门水质监测机构共建有269个水质监测站点。

黄委系统已初步建成“常规监测与自动监测相结合、定点监测与机动巡测相结合、定时监测与实时监测相结合，加强应急监督性监测，实现水质监测信息化管理”的现代化监测体系。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

（七）不断提高水资源保护现代化水平和科技支撑能力

进入21世纪以来，通过数字黄河工程建设、水质自动监测体系建设、黄河水资源保护重大问题研究等，使水资源保护现代化水平和科技支撑能力不断提高。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

2004年国内首个应用于水资源保护的数字化监控中心——黄河水资源保护监控中心的建成，确立了黄河水资源保护信息化水平在国内同行业的领先地位。近期实施的二期建设，所研发的水质监测管理、监督管理、应急管理三大应用系统，使黄河水资源保护信息化水平再上新台阶。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

2011年高标准建成并投入运行的黄河花园口、利津水质自动站，和今年正在实施建设的兰州、河津、潼关等8座自动站，将初步形成黄河干流省界断面水质自动监测体系。

二、黄河流域实施纳污红线管理的工作基础和支撑保障

黄河下游生态需水量研究、黄河水污染应急调度技术研究、黄河水质监测关键技术研究、黄河调水调沙与水量调度生态效益研究等取得重要进展和突破，多项重大科研成果应用于生产实践，效益显著。

三、黄河流域实施纳污红线管理的构想与实践

实行最严格水资源管理制度，就是中国水资源管理的一次深刻变革，也是一次具有决定意义的创新实践。2012年1月发布的《国务院关于实行最严格水资源管理制度的意见》，为实行最严格水资源管理制度确定了全国性的总体制度框架和总体目标框架；国务院新近批复的《全国重要江河湖泊水功能区划（2011—2030年）》，为实行最严格水资源管理制度提供了法规性基础依据。

三、黄河流域实施纳污红线管理的构想与实践

按照实行最严格水资源管理制度的总体目标，水利部下达黄河流域的重要水功能区水质达标率阶段控制指标为：

2015年达到60%；

2020年达到79%；

2030年达到95%。

全国重要水功能区水质监测覆盖率：

2012年要达到60%，2015年达到80%。

其中，省界监测覆盖率2012年要达到100%。

三、黄河流域实施纳污红线管理的构想与实践

要在上述总体制度框架和总体目标框架指导下，在条件复杂情况特殊的黄河流域有效推行纳污红线管理，黄河流域水资源保护不仅在思想意识、战略构思等方面要有质的转变和飞跃，同时还要在不断的创新和探索中，调整思路，积极实践，积累经验，提高管理水平。

三、黄河流域实施纳污红线管理的构想与实践

（一）整体构想

关于在黄河流域实施纳污红线管理的整体构想是：

以国务院《关于实行最严格水资源管理制度的意见》和《全国重要江河湖泊水功能区划》为依据，以建立和完善流域管理与区域管理相结合的黄河水资源保护管理制度为前提，以水资源保护与水污染防治规划相衔接，做好纳污红线管理顶层设计，科学核定水域纳污能力，从严控制入河排污总量，严格水功能区达标考核，加强水质监测站网建设，构建水资源与水生态保护工程体系，深化基础规律与关键技术研究，逐步形成有黄河流域特色的水功能区纳污红线管理模式和工作格局。

三、黄河流域实施纳污红线管理的构想与实践

在探索推进纳污红线管理的过程中，须重点突出相关体系的构建：

一是做好顶层设计，着力构建流域区域相结合、分级分类管理的水资源保护制度体系，要使这一制度更能充分发挥流域机构“综合协调、技术指导、行政执法和监督检查”四大作用，也要能充分发挥地方水行政主管部门的职能优势和支撑作用。

三、黄河流域实施纳污红线管理的构想与实践

二是夯实基础前期，着力构建科学合理、操作性强的考核指标体系。明确纳污红线管理所需考核、评估指标，以及相应的总体和阶段控制目标，使纳污红线管理的依据更充分、标准更明确。

三是重视能力建设，着力构建支撑监督管理与达标考核的水质监测与应用技术研究体系。要注重流域重要信息的收集、整理、应用等基础工作，加强行政执法、监测管理、以及人才队伍建设。

三、黄河流域实施纳污红线管理的构想与实践

四是加强基本建设，着力构建以河湖健康为中心的水资源保护与水生态修复工程体系。

在构建过程中，更要突出社会化管理。水资源保护是一项社会公益性事业，应充分体现社会化管理的理念和内涵，不仅要注重与环保等相关部门、行业的良好衔接，更要注重社会各界特别是利益相关各方的广泛参与和社会监督。

三、黄河流域实施纳污红线管理的构想与实践

（二）初步实践

1、积极开展顶层设计

完成了未来5～10年黄委实行最严格水资源保护制度顶层设计——“贯彻落实中央水利工作会议精神 全面推进黄河流域水资源保护工作实施意见”，

启动新一轮黄河流域水资源保护规划编制工作，以纳污红线管理为核心，促进河湖健康为目标，科学核定控制指标，注重水资源保护与水生态修复工程体系建设。

三、黄河流域实施纳污红线管理的构想与实践

2、强力推进纳污红线管理基础工作

完成黄河流域（片）重要水功能区的筛选复核和调整确定，重要水功能区水质达标率任务分解的基础工作，征求意见和汇总上报，提出了流域机构补充意见。

目前正在开展黄河流域重要水功能区纳污能力核定和分阶段限制排污总量控制方案编制工作。

三、黄河流域实施纳污红线管理的构想与实践

3、以入河排污口监管为切入点建立分级分类管理制度

明确流域与区域权限划分和管理范围，是构建合理高效监督管理体系的前提。已完成《黄河流域入河排污口管理权限划分意见》并上报水利部，待上级批复后付诸实施。

三、黄河流域实施纳污红线管理的构想与实践

4、快速提升流域省界和重要水功能区监测覆盖率

2011年，与流域各省（区）联手启动省界水质断面全覆盖调查性监测工作，采取“直测、共建共管、委托监测”等措施，省界断面覆盖率由45.3%上升至100%。

今年将依托“水资源管理与监控能力建设项目”实施，进一步完善省界和国务院批准的重要水功能区水质监测网络体系。

三、黄河流域实施纳污红线管理的构想与实践

5、开展河湖健康试点评估及水生态保护与修复课题研究

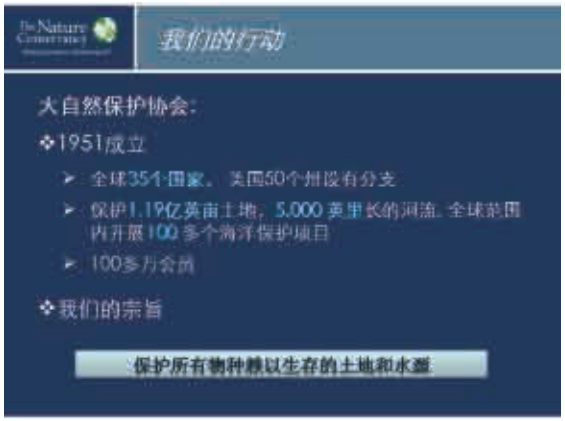
完成小浪底库区及其下游河湖健康试点评估报告，深化黄河河口地区调水生态效益评估，污染物输移扩散模型研发，水生态补偿机制研究，黄河下游水质保护调度研究与实践等。

三、黄河流域实施纳污红线管理的构想与实践

纳污红线管理是一项创新性工作，也是一项复杂的系统工程。黄河流域水资源保护局真诚希望能得到各位领导和专家的大力支持和悉心指导，并决心在上级的正确领导下，与流域各省（区）水利、环保等部门一道，扎实推进纳污红线管理，为保障黄河流域水安全和生态文明建设做出新的更大贡献。

长江可持续水电生态补偿基金

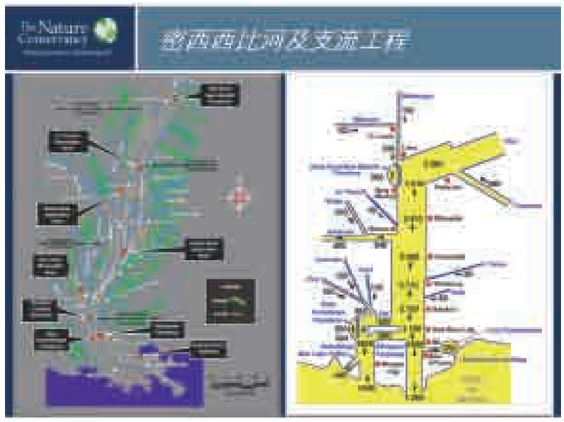
大自然保护协会　　安楷

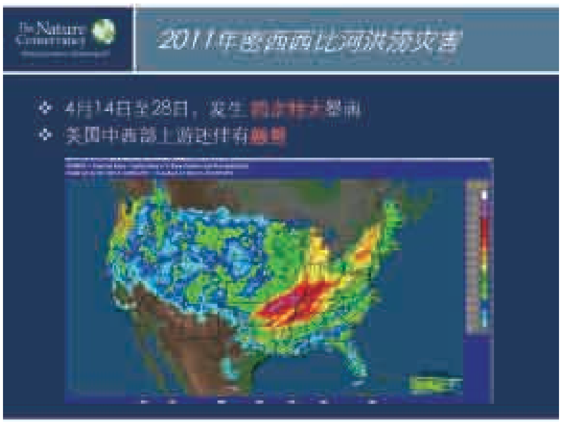



The Nature Conservancy
长江项目

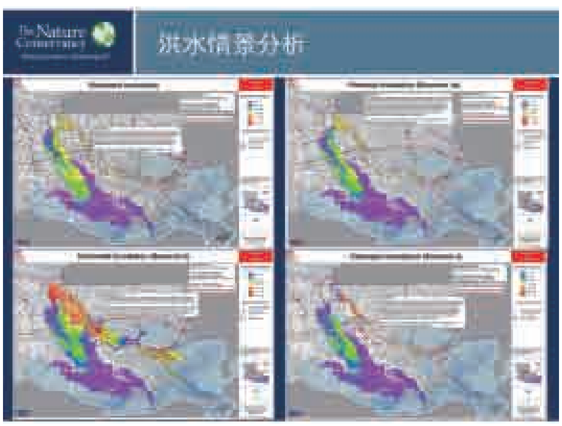

The Nature Conservancy
大河伙伴合作关系
长度 6397公里（第三位） 6262公里（第四位）
流域 180万平方公里 322万平方公里（第三位）
特大洪灾 1954、1998 1927、2011

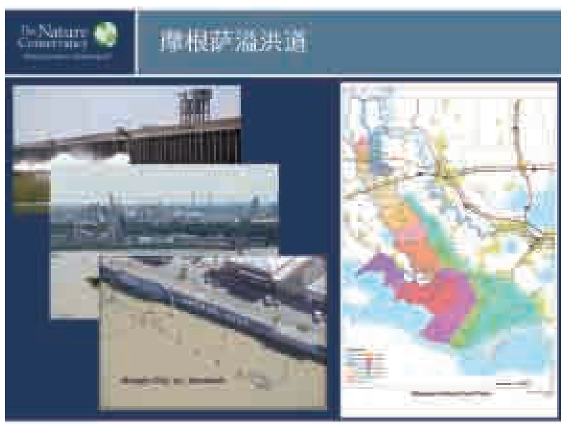

The Nature Conservancy
密西西比河及支流

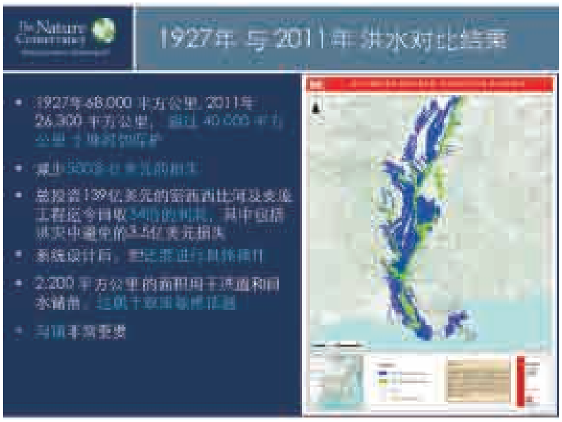

The Nature Conservancy
密西西比河及支流工程


The Nature Conservancy
2011年密西西比河洪涝灾害
4月14日至28日，发生
美国中西部上游还伴有


The Nature Conservancy
2011年密西西比河洪涝灾害
→ 密西西比河500年一遇洪灾
Historical Discharges
→ 自1937年以来首次启用撑根萨溢洪道

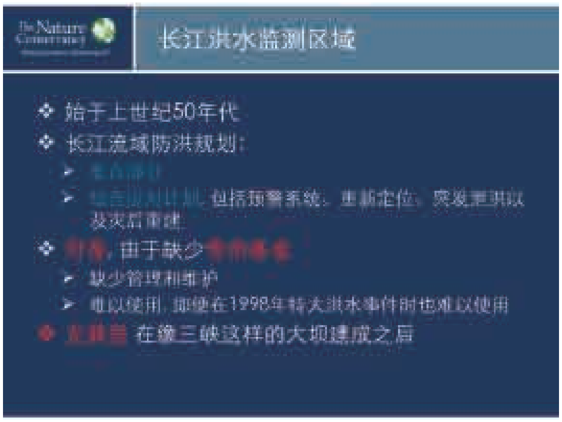

The Nature Conservancy
洪水情景分析

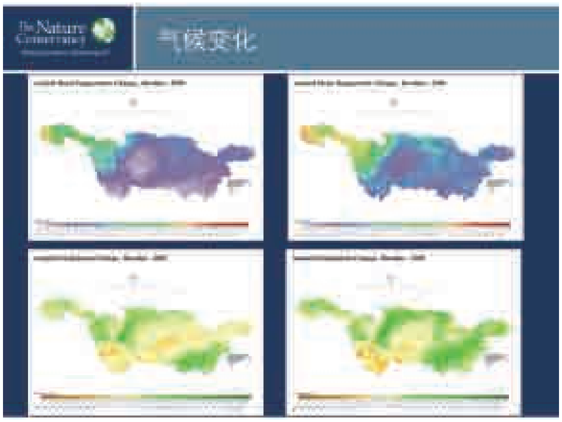

The Nature Conservancy
撑根萨溢洪道


1927年 与 2011 年 洪水对比结果
1927年68,000 平方公里, 2011年 26,300 平方公里,
总投资139亿美元的密西西比河及支流工程迄今回收
系统设计后,
2,200 平方公里的面积用于洪道和回水储备

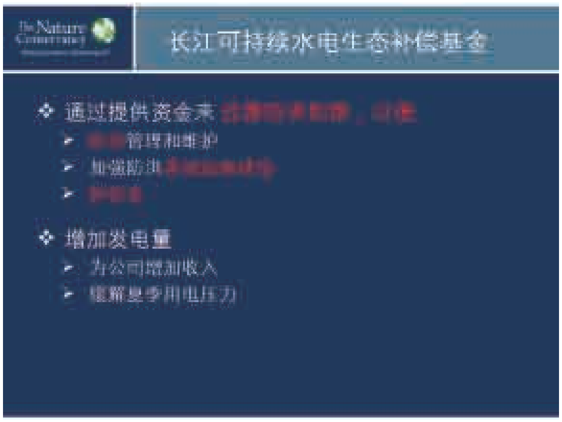

新奥尔良 - 2005年卡特里娜飓风
1200 亿美元损失

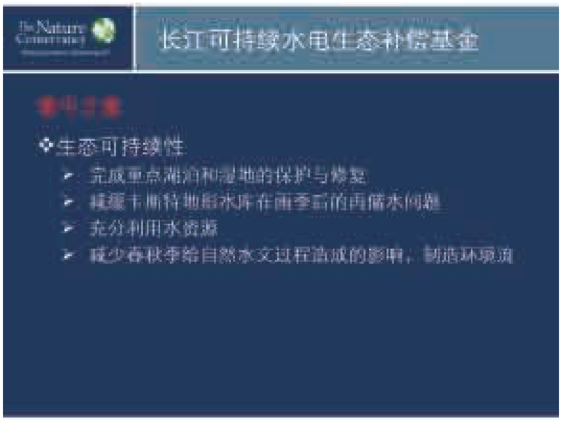

长江洪水监测区域


长江洪水监测区域
始于上世纪50年代
长江流域防洪规划:
包括预警系统、重新定位、突发泄洪以及灾后重建
由于缺少
缺少管理和维护
难以使用, 即使在1998年特大洪水事件时也难以使用
在像三峡这样的大坝建成之后


气候变化


长江可持续水电生态补偿基金
$

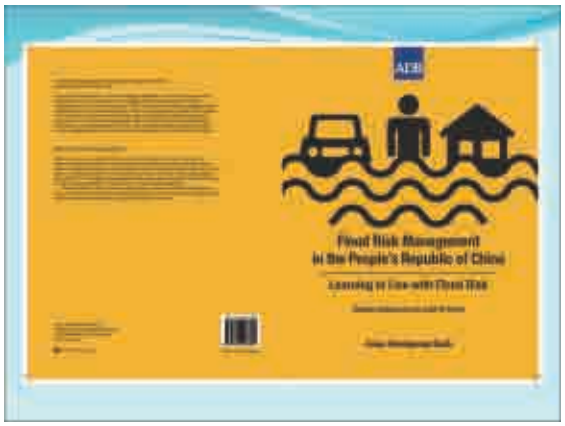

长江可持续水电生态补偿基金
通过提供资金来
管理和维护
加强防洪
增加发电量
为公司增加收入
缓解夏季用电压力

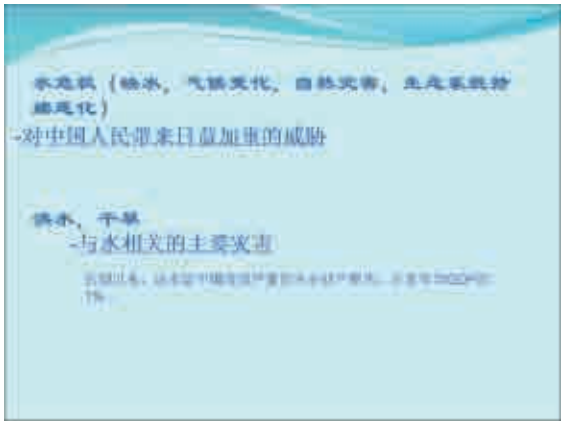

长江可持续水电生态补偿基金
生态可持续性
完成重点湖泊和湿地的保护与修复
缓解卡斯特地形水库在雨季后的再储水问题
充分利用水资源
减少春秋季给自然水文过程造成的影响, 制造环境流

中华人民共和国的洪水风险管理

——学会与洪水风险共存

亚洲开发银行水利资源高级专家　　小林嘉章





中国洪水管理新概念的核心理念

洪灾风险= 洪患x 暴在性x 脆弱性

洪患

主要通过工程性措施改善

易受洪灾的地段

通过限制土地开发加以管理

生命财产安全易于洪患的脆弱性

通过一系列非工程性措施进行改善

洪水风险管理的实践经验

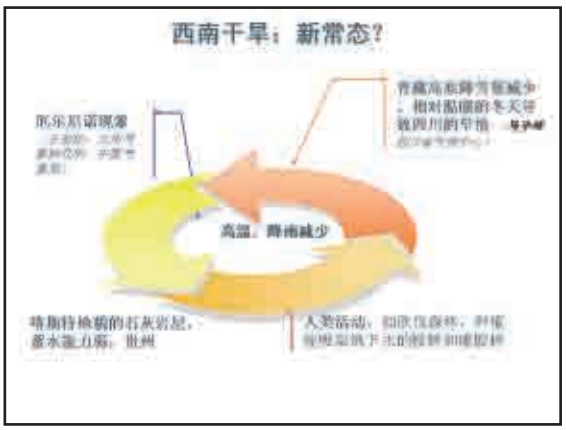
-学会与洪水风险共处

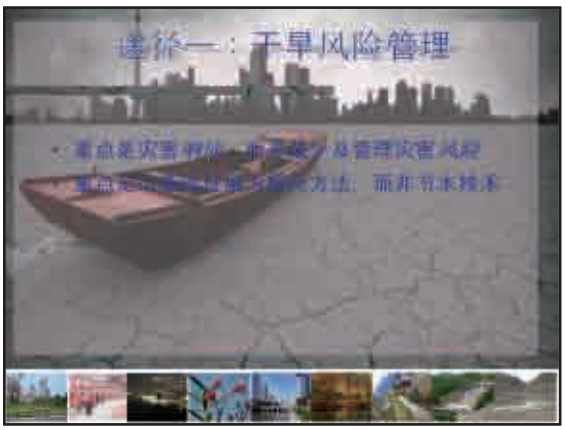
-提高对洪水风险的认识

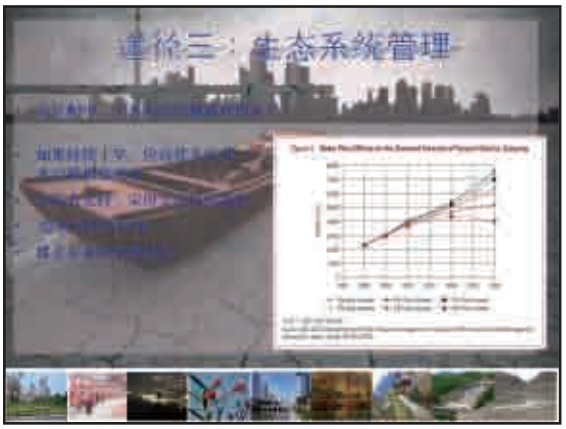
谢谢！

干涸：中华人民共和国应当如何应对干旱

亚洲开发银行首席水资源专家　　张庆丰








结论


ADB
谢谢！

欧洲生态和生物监测方法及黄河实践

.

生态与生物监控

欧盟生态与生物监控指导手册

- 30年+生态与生物监控方法
- 引入欧盟水框架指导手册后，十年的研究和发展
- 不同层次的欧盟指导手册
- 监控指导手册首次将这些内容整合在一起

生态与生物监控

手册要达到以下目的：

- 中高级管理者和科学家参与流域规划和水资源保护
- 政策制定者影响水资源保护
- 专家要了解技术信息和详细内容
- 领域内的团队制定监控项目的执行计划
- 实践领域或大学的讲师和研究者进行研究

轻松到达各层面—别担心！

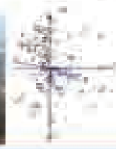
生态与生物监控

手册构成

- 便于使用
- 阅读流程找到兴趣所在
- 随书CD中包含所有原始资料
- 协调与监测相关的内容
- 手册大体遵循《欧盟水框架指导手册》结构

结合赤水河案例

- 长河无坝
- 当地珍稀鱼类保护地
- 100km野生鱼类保护区位于上游
- 中国大型底栖无脊椎动物的生物监控试点
- 大型底栖无脊椎动物：
  - 蜗牛
  - 蚌
  - 蜻蜓
  - 水蛭
  - 摇蚊幼虫
  - 其它



未来合作机遇

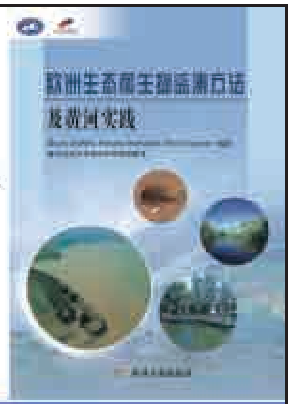
- 发展适合中国的生物和生态方法
- 开发监控项目
- 发展在中国实施的必要技术和基础设施
- 制定生物与生态数据库和评价工具
- 制定与水资源相关的目标
- 鉴别并改善基本科学
- 适用性强的水利设施进行环境试点工程的机遇

中国-欧盟水平台将提供一项机制

小结

希望对您有所帮助

感谢所有对本书有过帮助的人



中国水资源管理制度建设
高级圆桌会议的总结讲话

全球水伙伴中国委员会常务副主席　　董哲仁

女士们、先生们：

按照会议的议程，《中国水资源管理制度建设高级圆桌会议》即将结束。刚才我们全球水伙伴中国委员会的主席汪怒诚先生已经做了会议的总结，他站在全局和宏观的高度来讨论了中国的问题。我下面只用简短的一个小结。

这次会议邀请了水利部部长陈雷先生、国家发改委副主任杜鹰先生，环保部总工程师万本太先生，以及欧盟驻华大使马库斯.爱德华先生等嘉宾发表了讲话和致辞。水利部水资源司司长陈明忠先生、环保部总量控制司司长赵华林先生做了主旨报告，有七位国内外专家做了特邀报告。我们这次会议参会代表有广泛的代表性，既有国家相关部委的领导，也有联合国驻华机构，驻华使馆的代表，还有国际的非政府组织代表，地方政府机构、科研机构大学、企业界和新闻媒体的朋友共70多个部门、单位，140多位代表参与了讨论。

会议围绕着中国水资源管理制度这个主题展开了热烈的讨论，取得了以下五点共识：

第一、中国面临着水资源短缺和水污染严重的挑战。中国政府去年颁布了1号文件和相关的法规政策，是应对这些挑战的战略性的举措。“ 三条红线 ”作为当前水资源管理的重要目标来推动资源的开发、保护，节约用水和水资源水环境的保护将会发挥重要的作用。

第二、落实1号文件和相关的政策面临着巨大挑战。需要进一步进行机制和体制的改革，需要配套相关的法律和法规。要建立“ 三条红线 ”的执行细则，完善相关的技术标准，定价指标和技术体系。要完善执法监督体系建设和激励处罚的法规和机制。

第三、落实最严格的水资源管理制度，涉及到涉水的多个政府部门，特别是涉及到水利部、环保部和其他相关兄弟部委，如何能够建立起协调合作的机制，是贯彻落实1号文件的重要方面。另外还要促进社会公众、企业、非政府组织的广泛参与。

第四、开发全国的水资源、水环境、水生态的检测信息系统，建立河湖健康评价体系，是执行三条红线控制的重要技术支撑。

第五、开展国际合作，分享各国在水资源管理方面的先进理念、模式和技术，是执行落实中国最严格的水资源管理制度的重要的部分。中国与欧洲建立水平台就是一个良好的开端和良好的范例。

最后，我愿意代表会议的组织方再次感谢各位来宾的参与，也衷心地希望社会各界和各国朋友继续关注和支持中国的水资源管理，共同应对资源环境和全球气候变化的挑战。

我们这次会议已经圆满的完成了全部的议程，下面我宣布中国水资源管理制度建设高级圆桌会议圆满闭幕。谢谢各位！

谢谢大家！

会议文集

Addresses and Reports

Proceedings

Addresses:

Keynote Speeches:

Invited Reports:

Concluding Remarks:

Address at the High-level Roundtable on Water Resources Management System Development in China

H. E. Mr. Chen Lei
Minister, Ministry of Water Resources, P. R. China

Respected Chair Mr. Wang Shucheng,
Distinguished guests,
Ladies and gentlemen,

At the key moment of implementing the decision made by the Chinese government on accelerating reform and development in water sector and practicing policies of implementing the strictest water resources management system, the High-level Roundtable on Water Resources Management System Development is held by the Global Water Partnership China. First of all, on behalf of the Ministry of Water Resources of the People's Republic of China, I would like to extend my congratulations to the meeting and also heartfelt appreciation to the UN institutions, international organizations and people of all circles for your long time support to water reform and development in China.

Water is source of life and key element of production and ecology. In recent years, with fast growth of world population, constant development of economy and impact of global climate change, water resources issue has become the main constraint on the sustainable development of world economy and society and also a major challenge of great concern to all. The Chinese government has paid high attention to water issues and endeavored to address those challenges. Since reform and opening-up in 1978, China has established the largest structural system for water resources allocation and regulation, developed an institutional framework for water resources conservation and protection in the Chinese context, and successfully provided more than 300 million rural residents with safe drinking water, achieving the UN Millennium Development Goals on water and sanitation six years ahead of time. In addition, a low water consumption increase rate at an average 1% per annum has supported a high economic growth rate at an average 10% annually. Although irrigation water use has kept a zero increase for more than thirty years consecutively, the increase of grain yield has climbed to 78% and food grain harvest has lasted for eight years since 2004. With 6% of world freshwater resources and 9% of cultivated land, China has safeguarded food security and drinking water safety for 21% of world population, and facilitated stable and relatively rapid socio-economic development in China. It is an outstanding achievement and great contribution to the world's prosperity and development.

At present and in the near future, China is in the critical period of building a well-off society

in an all-round way, deepening reform and opening to the outside world, and speeding up the transformation of economic development pattern. There are heavy tasks for China to deal with problems of imbalanced, uncoordinated and unsustainable development. China has a large population but scarce water resources which is distributed unevenly in time and space. The per capita water availability is only 28% of the world average. The annual water shortage is more than 50 billion m3 on average and two-thirds of cities in China suffer from water scarcity in varied degree. Nearly 300 million rural populations are unable to access safe drinking water. Groundwater is over-exploited and ecosystem and environment become worse. With fast pace of industrialization, urbanization, and agricultural modernization, water use increase is anticipated in grain production areas, major economic zones and energy bases. Water shortage as a result of insufficient water structures, limited water sources and poor water quality and management will stay in the long run. Along with the impact of global climate change which worsens uneven distribution of water resources, the conflict between water demand and supply will be further intensified and more efforts are required to improve water environment and ecology.

In order to solve the increasingly complex water problems and realize efficient utilization and protection of water resources, the Chinese government initiated the strategy of implementing the strictest water resources management system that was issued by the 2011 No.1 Document and proposed at the Central Working Conference on Water Conservancy in 2011. The development of a water-saving society has been highlighted as the main content of building of resources-conserving and environmentally-friendly society. In January 2012, the Chinese government issued the Regulation on Implementing the Strictest Water Resources Management System that makes systematic arrangement for the implementation of the strictest water resources management system and clearly defines the control indexes of "three red lines" for the control of water resources development and utilization, water use efficiency and limitation of pollution bearing capacity of water function zones. By 2020, total water use will be no more than 670 billion m3; water consumption per ten thousand RMB of industry value added will reduce to lower than 65 m3; irrigation water use efficiency will rise to above 0.55; water quality standard compliance rate in water function zones of major rivers and lakes will rise to above 80%. By 2030, total water use should be no more than 700 billion m3; water consumption per ten thousand RMB of industry value added will reduce to lower than 40 m3; irrigation water use efficiency will rise to above 0.6; water quality standard compliance rate in water function zones of major rivers and lakes will ascend to above 95%.

Implementation of the strictest water resources management system is a complicated and systematic approach and a revolutionary reform to the traditional growth model. Joint efforts of the whole society are required.

Firstly, China will insist on the people-oriented concept and achieving harmony between man and water. The government will accelerate transformation from water supply management to demand management, from concentrating on water development and utilization to highlighting both development and protection, from extensive and inefficient water use to water-saving and efficient

utilization, from relying on administrative management only to an integrated management approach so as to achieve the balance between socio-economic development and supporting capacity of water resources and environment.

Secondly, China will define the control indexes of "three red-lines" for the control of water resources development and utilization, improving water use efficiency and controlling pollution of water function zones and formulate specified indexes in each river basin and administrative region for immediate implementation in all respects of water resources management.

Thirdly, the government will speed up projects construction for water resource allocation and a water network system that connects rivers, lakes and reservoirs. China will gradually develop a water regulation system featuring " four horizontal rivers and three vertical water diversion routes for diverting water from south to north and from east to west" so as to optimize water distribution in dry and wet periods and realize integrated and scientific regulation of water resources.

Fourthly, the government will promote the building of a water-saving society, pay more attention to water conservation and pollution control in industrial, agricultural and domestic water uses and encourage the use of recycled water, rainwater, direct use of sea water and desalinated water.

Fifthly, we will perfect planning system for optimized water allocation, efficient utilization and sound protection. The government will improve relevant rules and regulation, work out policies and detailed measures and strongly promote legislation process for water management.

Sixthly, water monitoring capacity and scientific research should be strengthened. The government will complete water resources monitoring and management platform and information system at central, river basin and local levels, and enhance the overall capacity of monitoring, early warning and emergency management.

Seventhly, we will deepen reform of water resources management system, water-affairs management system, water-pricing system, introduce and implement water right system and water market and overcome the institutional obstacles in water resources management system.

Eighthly, performance evaluation and supervision over local governments which are the main responsibly bodies for water resources management will be strengthened. The government will also promote the raising of public awareness and encourage coordination between departments, river basins and local governments so as to gain joint efforts for water resources management.

Ladies and gentlemen,

Water issues are vital to the existence, development and welfare of human beings, which needs joint efforts from governments of all countries and the international society. Global Water

Partnership (GWP) has been promoting integrated water resources management (IWRM) in all countries and has made remarkable contribution. GWP China has played an important role in water resources protection and management in China and has actively promoted international exchanges and cooperation. Today, representatives from different areas, departments, regions, sectors and organizations exchange experiences, share practical results, collect ideas and discuss future development by focusing on the subject of implementing strictest water resources management system which is significant and far-reaching. In the future, we will continue to promote and support international exchanges and cooperation between governments and non-governmental organizations and learn advanced concept, experiences and practices from other countries so as to strengthen water resources management and promote the transformation from traditional water management to modern water management and support sustainable socio-economic development with sustainable water utilization.

Finally, I wish the Roundtable a great success.

Address at the High-level Roundtable on Water Resources Management System Development in China

Du Ying
Vice Minister, National Development and Reform Commission, P. R. China

Respected Chair Wang Shucheng,
Respected Minister Chen Lei,
Distinguished guests,
Ladies and gentlemen:

It is my pleasure to be here at the "High-level Roundtable on Water Resources Management System Development in China". On behalf of the National Development and Reform Commission (NDRC), I would like to extend my congratulations to the meeting. I hereby present some views on water resources management system development in China for your reference as follows:

First, defining the policy guidelines and taking the strictest water resources management as the strategic measure of transforming economic development mode.

The key line of the 12th "Five-Year Plan" (2011-2015) is to accelerate the transformation of the economic development pattern which is also the only way to promote scientific development. For quite a long time, China has achieved economic growth but paid higher costs of resources and environment and water resources and water environment in particular. The water development in many regions has exceeded the local carrying capacity and the situations of water scarcity, pollution and aquatic ecological environment have deteriorated. Meanwhile, the extensive development approach in water resources in some areas has not been fundamentally changed since the shortage and the waste of water resources exist at the same time. The resources and environmental problems that emerged at each stage of the whole industrialization process for over 200 years in the developed countries have also appeared in our country. Along with the growth of our industrialization, urbanization, agricultural modernization and the increasing impact of global climate change, the water demand will continue to increase in a given period of time and the conflict of water demand and supply will be sharpened. The serious water situations prove that the promotion of water resources conservation and the intensive utilization and transmission of economic development mode are necessary and urgent.

The Central Government and the State Council of China have attached high importance to the water resources issue. The No.1 Document and the Central Working Conference on Water in 2011 initiated

the strategy of implementing the strictest water resources management system which defines "three red lines" for the control of water resources development and utilization, water use efficiency and limitation of pollution bearing capacity of water function zones, and thus the position of the "strictest water resources management system" is equal to the strictest farmland protection system. Currently, the State Council also issued the Regulation on Implementing the Strictest Water Resources Management System in January 2012 that makes overall arrangement for the implementation of the strictest water resources management system with clear identification of the control indexes of the "three red lines" and the goal of each implementation phase. This Regulation that presents the Central Governmental strategic decision from respect of the general economic and social development situation and the basic national conditions and water resources is an important mission of promoting water reform and development in a given period of time. The process of sticking to "three red lines" and establishing the status of water resources at our economy and the role of restriction, controlling and guide of industrial development will be beneficial to the self-conscious transformation of various regions to adjust the economic structure and improve the development arrangement and promote the coordination of economic and social development and the carrying capacity of water resources and environment for sustainable development.

Second, improving planning system and comprehensive arrangement of water resources development, protection and allocation of river basins and regions.

Planning is the basic reference to the development, utilization, conservation and protection of water resources and the better water management. Based on existing national comprehensive water resources planning, comprehensive planning of river basins and water development plan according the 12th "Five-Year Plan", it must accelerate the drafting of the important plans including national mid- and long-term water demand and supply plan, water resources protection plan and plan for building up water- saving society ,deliberate the content of each target and strengthen the enforcement and supervision to give full play of guidance and binding according to the demand of regional development strategies and strategies of the main functional regions .

As transferring planning concept and following the principle of total quantity control, efficient use and ecological protection, the emphasis should be placed on water conservation and scientific utilization, bi-directional management of demand and supply, scientific prediction of water demand, rational arrangement of water resources and priorities, collaborative plan of all missions as well as the strengthening of the scientific and democratic planning. In accordance with the main areas of various regions, water resources conditions, environmental situation and the difference of economic development , the different policies on water resources management must be implemented to adapt to the local conditions and provide guidance as well as to meet the water demand of key and optimum developed regions and ensure the rational flowing of all resources to the target areas. The national economy and social development planning as well as master plan of and key projects construction in cities must accommodate to local water conditions and flood control demand after the scientific assessment.

Third, stressing reform and innovation and strengthening management of water demand and utilization process. Since China is insufficient of water resources and inefficient in water use, the conventional demand-deciding model can neither achieve the balance between supply and demand nor meet the demand of economic rules and scientific development concept. Therefore, we must strengthen the management of water demand and utilization process whilst increasing matching structural projects of water resources allocation and improving water supply security. The focus will be on water right identification and reform of water pricing system. In addition, the relevant systems should be innovated and improved , water- saving incentives encouraged and water use limited by means of laws, technologies and economy, unreasonable water demand restrained and water use structure and water efficiency as well as benefits improved. A connotative type of development should be followed and the harmony between human and water promoted.

We must accelerate the establishment and improvement of water rights system that is embodied as formulating water allocation of rivers□clarifying initial water rights, actively promoting trade of water rights and waste-discharge rights to develop relevant markets for water rights transfer and standardize water rights- trading activities and taking full advantage of market mechanisms and economic policies to increase supply, reduce emission and promote water-saving and innovative technology. During the recent years, the water rights management in the mode of "clarified water rights, total quantity control, quota management and water- tickets management" has been implemented in Zhangye City and Wuwei City of Gansu Province in conjunction with the management of Black River and Shiyang River basins which effectively promoted water conservation and water-use efficiency and achieved win-win target of local social-economic development and ecological improvement of the down-streams. We need to improve water resources development licensing system to guide and formulate markets and enable the markets subject to obtain water development rights through open and fair competition, complete the pay-and-use water use system and set standards of water tariff for strict charging, use and management, continuously promote water- pricing reform for completing water tariff policies, water price of water projects and urban water supply in order to give full play of water price in an efficient and fair manner as well as vigorously promote water conservation and industrial structure reform, introduce main indicators of water development, utilization, conservation and protection into the local comprehensive evaluation system of social and economic development and enhance evaluation and supervision upon the premise that the local governments have privileged responsibilities and finally improve policies and regulations to enable the public to participate in and supervise water resources management.

Fourth, summarizing governance practices and accelerating the integrated management of water resources of river basins.

The integrated management of water resources based on river basins has been approved by more countries and regions. During the recent years, China has made progress in reform of the integrated river basin management system and gathered some beneficial practices and experiences. Both 11th "Five-Year Plan" and 12th "Five-Year Plan" had defined the reform of the integrated river

basin management system as priority and the concept of integrated river basin management has been incorporated into integrated river basin plans since 2007. The Integrated Management of Environment of Tai Lake Basin is the pilot project of the NDRC, I would like,taking this opportunity, to present our work to this meeting.

There was a devastating algal bloom in Tai Lake in May, 2007 which brought about serious pollution in the local water areas and a water supply crisis to nearly a million residents of Wuxi City. Upon the guidance of the State Council, the NDRC led a group of experts from the Ministry of Environmental Protection, Ministry of Water Resources and other relevant departments as well as the People's governments of Jiangsu and Zhejiang provinces and Shanghai Municipality to work out the Integrated Plan of Tai Lake Environment Management (hereinafter referred to as "Integrated Plan") . In May, 2008, The Integrated Plan was approved by the State Council which put stress on the comprehensive management as well as innovation of systems and mechanism and set forth a set of integrated management measures including pollution source control, sewage interception, drainage, dredging, restoration, industrial structure reform, industrial and rural-urban arrangement. The Integrated Plan clarified the requirement of establishing and completing an integrated river basin environment management system. As the initiator, the NDRC established a system of joint meeting of integrated management of Tai Lake environment at the provincial and ministry level to have collaboration on comprehensive governance of water environment of the river basins.

For the five years of implementing the "Integrated Plan" , under the leadership of the Central Government and the State Council, the relevant ministries, provinces and municipality have vigorously promoted drinking water security, water protection and pollution control of Tai Lake. The current indicators of water environment of Lai Lake Basin have increased in which the permanganate index and ammonia nitrogen have already achieved and total phosphorus has almost reached the short-term target of 2012 according to the "Integrated Plan". Likewise, the total discharge of pollutants reduced and algae bloom decreased.

The practice of integrated management of water environment of Tai Lake enlightens us in many ways, including: collaboratively formulate total emission amount and water environment capacity of river basins; raise standards and control pollution tracing back to pollution sources; integrate engineering governance and ecological restoration; coordinate environment capacity and local industrial structure; unremittingly take the way of integrated management; consider fully about multiple attributes and flowing features of water resources; improve the water resources management system of integrating river basin management and regional management; establish coordinated management system that defines clearly the rights and responsibilities, the division of responsibilities, the code of conduct and effective operation; set up water resources pollution protection mechanisms based on principle that the polluter is in charge of treatment and the beneficiary is in charge of compensation; give full play of markets and encourage the public participation. These experiences from our practice will be retained in our organization.

"The Regulation for Tai Lake Management" was issued by the State Council in September, 2011 which helped to have all the effective measures put into standardization and institutionalization through legislation. According to the water development requirement of 12th "Five-Year Plan" approved by the State Council, we will draw on practical experiences of the integrated river basin management of Tai Lake and others to promote the integrated river basin management reform and enhance the water management to a higher level.

Finally, I wish the Roundtable a great success.

Thank you.

Address at the High-level Roundtable on Water Resources Management System Development in China

Mr. Wan Bentai
Chief Engineer, Ministry of Environmental Protection, P. R. China

Respected Chairman,
Ladies and gentlemen:

Good Morning.

I am pleased to address this High-level Roundtable on Water Resources Management in China. On behalf of the Ministry of Environmental Protection (MEP), I would like to extend my warm congratulation to this meeting.

With the fast social and economic growth and constant improvement of living standard, the demand of people on water quality and quantity has gradually increased. The available water on the earth is limited. Therefore, the water shortage is a global concern in the 21st century. The issue of water risk and even "fight for water resources" is approaching to human beings. On the other hand, the increasing water pollution has intensified the water shortage. It's extremely urgent to carry out water pollution control. Along with the fast growth of economy and increasing industrialization, urbanization and agricultural modernization, a large amount of pollutants are discharged into water body and exceeded to the carrying capacity of water resources that lead to water environment change from quantity to quality. The water shortage problems of quality and quantity are coexisting and getting worse in general which embodied as: the water environment pollution has spread from land to coastal water, from surface water to groundwater and from single pollutant to multiple pollutants that lead to coexistence of point, non-point and internal pollution; over discharge of domestic and industrial wastewater; composition of fresh and secondary pollution; and complex river basin composition pollution as a result of mutual effects of water secondary contaminants owing to conventional pollutants, poisonous organic pollutants, heavy mental and algae toxins. These problems are bottlenecks of economic and social sustainability of our country since they have seriously jeopardized water resources security, water ecosystem health, drinking water security and people's health.

The proceeding of strengthening water pollution control is the way of improving water environment and ensuring water resources security and also the important mission to be accomplished for building up ecological civilization of China and promoting fast and healthy growth of economy

and society. There are some fundamental principles of water pollution control in China. The first is following the law of nature and setting up ecological concept. In other words, rivers and lakes must be rehabilitated and water environment needs space and time to give full play to the self- restoration and self-renewal of water ecosystem and raise the ecological service function of water environment upon the foundation of capacity and carrying capacity of water environment by means of coordinating the environment and economy as well as promoting humane concern on rivers and lakes for the final rehabilitation and development of ecosystem and harmony between human and water. The second is integrating water quality and quantity which refers to implementing the regulations for water pollution total discharge control and water resources management in a strict manner in order to integrate water quantity and quality and cross-sectors and trans-regional collaboration as the unit of river basin for promoting protection of water environment and water resources. The third is to achieve comprehensive control of point and non-point pollution with emphasis on controlling point pollution to reduce the quantity of pollution sources, govern the process and strengthen the treatment at the end point through decreasing pollution and discharges. The surface pollution control on key lakes and more management of flowing pollution sources in water areas with more navigation must be strengthened. The fourth is to jointly protect river basins and coastal areas which can be achieved through coordinating the river basin management and ecological and environmental protection of coastal areas based upon the fully consideration of environmental capacity demand of coastal areas and further control over wastewater discharge into the river basins and seas.

According to the above-mentioned principles , the Chinese government has put forward the strategic guidance on fully implementing "the rehabilitation of rivers, lakes and seas" that refers to focusing on discharge reduction and protection of drinking water sources in order to complete the water pollution control of the "12th Five-Year Plan" by means of assessment of trans-regional water quality. The countermeasures include: managing emission reduction of the main pollution sources and environment permits; identifying and governing the drinking water protection zones, developing regular analysis on water quality, conducting the environmental management, restoration and construction of water sources areas and improving the water quality; carrying out the pollution investigation, risk evaluation and restoration demonstration of groundwater; further promoting water pollution control on key river basins, identifying preferential control unit of these river basins to control in separate zones and also improve evaluation mechanisms according to the rule of "one control unit with one control measure"; strengthening the pollution control of Boyang Lake, Donting Lake and Hongze Lake and protecting the lakes with better water quality and ecological fragility; and finally integrating the control of ocean environment pollution and ecological damages, addressing the management of pollutant discharges into rivers and seas and outlets of rivers, particularly improving the coastal environment quality of the Bohai Sea, the Yangtze River, the Yellow River and the Pearl River.

Ladies and gentlemen,

The Chinese government has been making efforts for fulfilling the goals of national water

environment security. We attach the high importance to and strengthen the international cooperation of water ecological and environmental protection. Over many years, we have developed a set of cooperation programmes of the management and protection of water environment security with the UN agencies in China, international financial organizations and the other related international governments and received concerns and supports of international community. Thus, on behalf of the Ministry of Environmental Protection (MEP), I would like to express my sincere gratitude to the international organizations and representatives of relevant countries for supporting China. I finally wish this meeting a great success.

Address at the High-level Roundtable on Water Resources Management System Development in China

Markus Ederer
EU Ambassador to PR China and Mongolia

Dear Minister Chen Lpi, Vice Minister Du Ying

Distinguished guests,

Ladies and gentlemen,

1/ EU-China PRIVILEDGED PARTNERS in the water sector

This High-Level Roundtable takes place at a very special juncture in the relationship between China and Europe and my presence this morning is motivated by a very simple but powerful fact: the EU and China have made the choice to make Sustainable Management of Water Resources part of their Comprehensive Strategic Partnership.

The foundations of our privileged relation have been laid over five years of successful cooperation under the EU-China River Basin Management Programme, our largest cooperation project with China. In the course of the Programme, we have shared European experiences, as developed within the context of the EU legislation, with two Chinese Ministries [the Chinese Ministry of Water Resources and the Ministry of Environmental Protection] and two river commissions.

The determination to maintain and further develop this cooperation has already been crystallized five weeks ago, into a firm political consensus between Minister Chen Lei and the Presidency of the Council of the European Union, with the launch of the "China Europe Water Platform" at the 6th World Water Forum in Marseille.

2/ JOINT learning CURVE and the example of the 2012 BLUEPRINT on Water

As we all know, the world is fraught with setbacks. Nowadays, it is not only a financial crisis that has struck us. Should we fail to act, we could also be faced with a climate and resource crisis. Water, being a prerequisite for life, could also become a global source of friction. Before that happens, its preservation and management should become our common concern.

Indeed, our BLUE GOLD is a finite and vulnerable resource. Protecting water is a way of ensuring that agriculture, fisheries, transport, energy, tourism and many other industries develop and prosper. Unfortunately, there is no "one size fits all" solution for the EU or China, let alone the planet as a whole. Whilst our responses need to be context specific,our success stories can be inspirational to each other. This is why I'm convinced of the importance for China and Europe to develop a joint learning curve in meeting similar challenges and continue to exchange good practices in water resource management for the mutual and the global benefit.

I would like to give an example of a continuing learning process that we are currently undertaking in Europe in the water sector.

We have conducted a “Fitness Check" of our legislation and an assessment of the progress of its implementation. What we have realized is that there still exist weaknesses in the implementation due to a number of challenges.

Our "2012 Blueprint to Safeguard Europe's Water Resources" will be the EU policy response to these challenges.

The Blueprint will be the water milestone on our planned Resource Efficiency Roadmap. We will be happy to exchange more with you on it in our China Europe Water Platform activities or in our High level Environmental Dialogue.

3/ NEXT STEPS of the China Europe Water Platform Minister Chen, your Ministry will lead together with Denmark on behalf of the EU the China-Europe Water Platform, while Portugal has taken the very important role as co-lead country.

We have now the common task of starting working on the next steps and operationalize the platform. I have been informed by our Danish colleagues that they are conducting consultations among European stakeholders to align expectations and attract members to the platform. This is an important phase of our cooperation and it is vital to maintain the momentum.

I would like therefore to take this opportunity to invite EU member states and other relevant stakeholders to approach my staff, the Danish colleagues or Minister Chen's team to explore how they can contribute and be part of the platform.

To conclude, I would like to thank the Global Water Partnership-China, for having supported, appreciated and promoted our work during the past five years.

I wish this High-Level Roundtable success.

Thank you for your attention!

Address at the High-level Roundtable on Water Resources Management System Development in China

Paul Heytens
Country Director, PRCM, Asian Development Bank

Distinguished Guests, Ladies and Gentlemen, Good Morning.

I feel privileged to be here today to address this High-level Roundtable Forum on Water Resources Management in the People's Republic of China (PRC). On behalf of the Asian Development Bank (ADB), I would like to thank the Global Water Partnership China (GWP China) and Ministry of Water Resources (MWR) for organizing this forum and to extend a warm welcome to all participants from the different ministries, research institutes, universities, and other members of civil society. We are indeed pleased to be here and to co-sponsor this important event.

Introduction: Water Crisis and its Management

Today we will discuss an increasingly serious threat to the PRC and, indeed, to all of humanity: the water crisis and its management. With about 20% of the world's population, the PRC is endowed with only 7% of its water resources. The PRC's development successes, while critical for moving the country's economy forward, are stressing its freshwater resources. Demand for water, food, and energy is increasing exponentially as urbanization, industrialization, and population rise in the PRC. When combined with climate change, its precarious water future becomes even more uncertain.

Feeding a population of 1.4 billion by 2030 will require producing more food with less water and through improved water efficiency in agriculture. With higher rates of urbanization, increasing demand for drinking water will put stress on existing water sources. Energy demand will more than double in the next 20 years and hydropower will need to be a key contributor to clean energy production. Besides the needs for these human activities it is critical to ensure that the environmental water flows required to maintain ecosystems are also maintained.

In addition, climate change scenarios for the PRC show an increased likelihood of more severe storms and droughts. Rare and severe droughts gripped the Southwest region of the PRC in 2010 and its Yangtze River Basin in 2011, proving that even one of the largest basins in the world, and one known for its high rainfall, is not immune from the effects of climate change and unsustainable water consumption rates.

The mounting challenges posed by the changing demand for and supply of the resource in the PRC highlight the importance of water in any development and growth agenda. The country's ability to make more water available for domestic, agricultural, industrial and environmental uses will depend on better management of water resources and more cross-sectoral planning and integration. With water security declining in many parts of the country, strengthening the resiliency of the poorer regions in the country and their populations to climate change impacts, becomes crucial, not only to ensure future water supply but also to combat food and energy price volatility that have major global ramifications.

ADB-PRC Partnership on Water Sector

ADB's partnership with PRC is an important one that goes back 25 years. Soon after the country became a member of ADB in 1986, collaboration in water management began with technical assistance to improve irrigation management and support a study on Beijing-Tianjin water resources. These seminal works were soon followed by a loan in 1994 for the Dalian Water Supply Project. And a study of various strategic options for the water sector helped to amend the 1988 Water Law, which was subsequently amended and became effective in 2002.

Since then, ADB has supported a variety of water-related projects in PRC. These projects have improved access to clean water, reduced water pollution, strengthened urban wastewater management, promoted pilot water-saving irrigation technology, and improved nonstructural aspects of flood management in the Yellow River and Hunan province. We have also supported the restoration of key river basins and wetlands such as the Songhua River basin, Hai River basin, Sanjiang plain, Baiyangdian lake, and Chao lake. We are also providing a $150 million loan to finance a portion of Guiyang Water Resources Management Master Plan (2006-2020). It is the PRC's first largest IWRM-based project at the municipality. We have encouraged the private sector to invest in water infrastructure in Chengdu, Harbin, and other smaller cities.

Overall, the PRC-ADB partnership has contributed to a fundamental change in water resources management. Consistent with the priorities of the 12th Five-Year Plan, ADB will deepen this important partnership and continue its support in the key strategic areas of water management and security.

Today, we are launching two publications: (i) Drying-up – What to do about droughts in the PRC; and (ii) Flood Risk Management in the PRC-Learning Live with Floods. These two knowledge products consolidates the highlights from several recent ADB technical assistance (TA) studies that relate to improving disaster risk management and water resource management in the PRC. These studies also represent current thinking within the Ministry of Water Resources, with whom ADB worked closely on developing these knowledge products. It reflects the ministry's own sense of what the country' s biggest challenges are and where the country is situated along the road to developing efficient institutions, lost and damaged resources, and responsible water usage.

These publications highlighted that an integrated approach is critical to mitigating flood risks, and creating reserves and enabling ecosystem service to function during droughts and to devise long-term plans. The "flood risk management" publication proposes clear understanding of flood risks, quantifying and modifying the flood hazard, regulating exposure to the hazard, and reducing the vulnerability to danger and damage, using a balanced mix of structural and nonstructural measures. The "drying-up" publication proposes demand management as a pathway to increased resilience to droughts and ecological conservation. It examines three tracks to getting on that pathway: risk management, optimal infrastructure and ecosystem-based management.

Looking Forward

Recognizing the gravity of the situation of water crisis, the Government has identified water resources management as a top concern and has committed to invest a staggering $608 billion in the water sector over the next 10 years. It has announced dramatic plans to cut water use by industry and agriculture by 2020, with the water needed to produce each dollar of GDP to be cut by 50% from 2008 levels. To ensure sustainable growth, the Government wants to keep water consumption at current levels.

ADB will closely work with the Government to move water governance towards an approach that relies on a sound legal framework, effective institutional arrangements, innovative technology, and enhanced public participation.

Ladies and gentlemen: By taking a broad perspective on water security in an era of water scarcity, we can turn the crisis into opportunity.

ADB is committed to working with PRC to help address water crisis. The decisions we make today will decide our future living environment. Every drop counts — and becomes more precious by the day.

Today's forum offers an unprecedented opportunity for cooperation among high-level policymakers and scientific communities to act on the combined threats of water scarcity, climate change, disasters, and continuous ecosystem degradation. I am confident that through open exchanges, we will be able to find ways to strengthen the water governance and further promote integrated water resources management.

Let me again express my sincere gratitude to the Global Water Partnership China and Ministry of Water Resources for coordinating and organizing this workshop. I am looking forward to productive discussions on how to strengthen the Water Resources Management in the PRC.

Thank you very much.

Address at the High-level Roundtable on Water Resources Management System Development in China

Jim Gradoville
Chief Executive Officer of World Wide Fund for Nature (WWF) -China

Distinguished Minister Chen Lei, Chair Wang Shucheng, Vice Commissioner Du Ying,

Ladies and Gentlemen,

Good morning!

It is my great privilege to represent WWF at this conference. Many of you are old friends of WWF China so we are pleased to be here today to discuss water resource management issues in China. In addition, I'm quite sure this will lead to new friendships, as well.

There are many international organizations devote in sustainable water resources management. GWP plays important roles in this water network through promoting Integrated Water Resources Management to ensure world water security. WWF is also one of the contributors in world water area. The conservation of freshwater ecosystems has been and will continue to be one of our top priorities because water is vital to our way of life, our livelihoods, and the eco-systems. All here today already know the issue of water is a top challenges facing many countries today. During the last century, water use has been growing at more than twice the rate of population, and at least 11% of the world's population – 783 million people – are still without access to safe drinking water by 2010.Doubtless, the willingness to tackle these issues now will determine in many ways, tomorrow's future.

Indeed, the No. 1 document of the State Council last year states, "Water is the source of life, the key to production and the foundation of ecology". Furthermore, as a clear-cut statement on the necessity for meaningful action, this year the State Council released the "The Guidelines on the Implementation of the Most Strict Water Resource Management System", in response to the imminent and challenging problems surrounding water resource exploitation and utilization.

Meanwhile, other recently issued national policies, such as the "Comprehensive Planning of National Water Resources", the "Zoning of National Principal Function Regions", and the "Water Function Zoning of Major Rivers and Lakes" make clear how important water issues are for China and underscore the government's determination to deal with these challenges that many believe are now

at the crisis stage.

WWF's conservation practice is closely associated with the decision-making philosophy of Chinese government. During the past 14 years, together with departments of water resources, environmental protection, forestry, development and reform, and agriculture in China, WWF's freshwater programme has focused on freshwater ecosystem conservation and water resource management, including theoretical research, practical exploration and policy advocacy.

Let me share with you WWF's freshwater priorities in China: First, promoting the concept of Environmental Flows or e-flows, to ensure the health and stability of river ecosystems for the long-term;Second, providing technical support to the third-round revision of China's River Basin Master Plan; Third, enhancing international partnerships and promoting IRBM through the Yangtze Forum and the International Yellow River Forum; Fourth, focusing on drinking water safety issue in rural areas and exploring effective measures on potable water source protection, domestic grey water treatment and river restoration; and, Fifth, establishing Payment for Ecosystem Services as an innovative approach to address watershed problems in China and making joint efforts with the ADB to demonstrate a Public-Private Partnership in Chishui River Basin.

There is a Chinese saying that goes: "You can never dress up the beauty of the whole spring with only one flower." To deal with the increasingly serious water crisis, it is necessary to engage both private and public business sectors as well as other stakeholders such as local and regional communities. In terms of the corporate and business sector, they are not only users of water resources, but their choices and actions have and will have great impact on the future of global freshwater ecosystems.

From WWF's perspective, besides being water users – and hopefully, efficient water users, businesses and corporations can also play a leading role in water management and work with other stakeholders, to reduce their water footprint in river basins. This is the basis for the concept we call "Water Stewardship". It serves to guide companies, as water users and investors, on a journey toward Better River Basin Governance in prioritized river basins, where water can be allocated appropriately, taking into account the needs and interests of all stakeholders.

Water Stewardship is widely recognized around the world. In 2010, WWF started its water stewardship China programme and has been working with global leading companies like Coca-cola and Lafarge to bring more efficient and sustainable water management techniques into their supply chain and production processes, which we believe has the added benefit of helping them, prepare for a future of scarcer water resources. We will be launching The Water Stewardship China Network this year, which will provide companies and stakeholders with a platform of information exchange and knowledge sharing.

An important element of our Water Stewardship work includes challenging the companies we work with on the way they do business – to get out of the 'business as usual' mind-set to make meaningful

and tangible changes to their business models. To go beyond corporate responsibility programs, to be industry leaders on water and work in partnership with government and non-governmental groups and other stakeholders for meaningful and positive change on the agenda of water resource management.

As our time is limited, let me conclude my remarks by noting that effective water resource management systems requires bringing together the collective resources and perspectives of all relevant society stakeholders in a participatory, engaging process, WWF believes the businesses sector is indispensable in this process. We will continue to encourage corporates to explore new and innovative methods and to adopt positive actions and support for effective water resource management systems in China. At the same time, WWF will continue promoting science-based research and engagement with the government and the GWP with processes like e-flows and tools like payment for eco-services. We will continue promoting IRMB and supporting networks like the Yangtze and Yellow River Forums.

While we have much work to do and while the challenges are daunting, we remain positive in our outlook - our vision and mission is for a world where humans and water co-exist in harmony!

I wish this roundtable conference to successful and productive and I thank the GWP for allowing me to address you this morning!

Thank you very much!

Address at the High-level Roundtable on Water Resources Management System Development in China

John Metzger
Head of Network Operations, Global Water Partnership, Stockholm, Sweden

Your Excellency Minister Chen Lei, distinguished delegates, ladies and gentlemen.

It is my pleasure, and privilege, on behalf of the Global Water Partnership Stockholm, to be here and to welcome you to this high level round table on water resources management systems development in China. Thank you.

I am proud that GWP China has organised this event with others and convened a broad cross-section of partners and stakeholders, from various sectors, and with various interests. In fact, this demonstrates one of the very important strengths of GWP in China and worldwide… our Network of Partners which provides a "neutral platform" with an ability to bring people and organisations together to discuss important issues around water management.

The other important strength that GWP is recognised for is IWRM…. Integrated Water Resources Management. Over the past 15 years GWP has defined this approach, and advocated its implementation with a variety of tools and examples. In fact, a recent UN survey carried out worldwide indicates that 80% of all countries have reflected IWRM approaches in their water laws and policies including in the Peoples Republic of China.

IWRM tools can be grouped into 3 types:

1. those that provide the enabling environment - e.g. the policies, and the legal, the financing and the incentive frameworks,

2. the institutional arrangements, usually through national and sometimes through transboundary structures

3. and through a variety of management instruments, for example: in data and information gathering and sharing, for carrying out national and regional water resources assessments, for planning, for negotiating and enabling cooperation, for financing, and finally for regulation... which we will be focussing on today.

Application of these tools - and we have many examples and case studies from around the world on

our toolbox website, many from China (http://www.gwptoolbox.org/) can maximise the benefits to people from the management and development of water resources in a sustainable manner.

Many of the previous presentations this morning have referred to a crisis in water management with global population pressures and poor management of our environment under conditions of increasing climatic variability due to climate change. These issues and others are certainly evident in China as also highlighted by Minister Chen Lei in hi opening remarks.

In the west we talk about a crisis as a bad thing! But I have learned that the Chinese word for "crisis" is a combination of 2 characters: one meaning "danger" – "wei" and one meaning "opportunity" -"ji".

It is with this balanced approach that I hope we will all be able work together to address the challenges of water security in China looking at this crisis as a danger, yes, but also as an opportunity to improve the way we manage and develop our limited resources in order to maximise the benefits for all people – through IWRM approaches!

I look forward to interesting discussions today, and hope that we will all leave this roundtable meeting with new ideas on how we will be able to work together to better manage China's precious water resources.

Minister Chen Lei, distinguished delegates, ladies and gentlemen…. thank you again, and best wishes for a successful meeting.

Practicing the Strictest Water Resources Management System, a Strategic Measure for China's Water Resources Management

—— Keynote speech at the High-level Roundtable on Water Resources Management System Development in China

Chen Mingzhong
Director General, Dept. of Water Resources Management, Ministry of Water Resources, P. R. China

Water is source of life and key element of production and ecology. The issues of large population and scarce water as well as uneven distribution of water resources in space and timing reflect the basic national conditions and water situations. The problems of water shortage, extensive development, heavy pollution and deterioration of water ecosystem form a major bottleneck that has constrained sustainable development of society and economy. The implementation of the strictest water resources management system is the key strategic measure for water resources management in China since it can solve increasing complex water problems and also achieve the target of sustainable utilization of water and sustainable social and economic development.

I. Basic Conditions of Water Resources in China

1. Major characteristics of water resources in China

As a result of special geographic and climate conditions as well as large population, the characteristics of water resources in China are as follows: first, low level of water resources per capita, the total water resources in China is 2.8 trillion m3 and ranks sixth in the world; but the water per capita is barely 2100 m3 which is only 28% of the world average. Second, uneven distribution in timing, 60% to 80% of annual rainfall and runoff is mostly concentrated in flood season; and annual rainfall of wet year is 2-8 times as much as in drought year. The successive wet or dry years always happen. Third, uneven distribution in space, in the North, the land areas accounts for 64% of the total national land while population and farmland account for 46% and 60% respectively, but water resources only takes 19% of the country. Fourth, fragile water ecosystem, about 39% of land in China is classified as arid or semi-arid areas where there are less rainfall but more evaporation, lower vegetation coverage and fragile ecosystem.

2. Water resources management

The water resources development in China has made significant achievement since the founding of the People's Republic of China in 1949. The water management has been greatly improved and also played a key role in supporting and protecting fast growth of economy and society.

First, continuously increasing capacity of water supply, the current completed reservoirs totals 88000 with total storage capacity of 720 billion m3; the water supply in 2010 reached 602.2 billion m3 which can guarantee the demand of social and economic development; from 2001 to 2010, there were 277 million rural residents accessing to safe drinking water, 6 years ahead of MDG. Second, having significantly improved water use efficiency, for the past 30 years from the reform and opening-up in 1978, China has sustained a nearly 10% annual economic growth rate at an annual growth rate of 1% in water demand; it also has increased food grain output by nearly 50% with zero increase of irrigation water, and fed 21% of the world population with only 6% of the world's freshwater and 9% of the world's farmland so as to contribute much to the world development and prosperity; from 1997 to 2010, the water consumption per 10,000 yuan of GDP decreased by 69%, the water consumption per 10,000 yuan of industrial value-added dropped by 68% and the utilization coefficient of farmland irrigation water increased from 0.4 to 0.5. Third, having improved water resources protection and water environment management; it intensified water function zones management, supervision and management of pollutants discharge outlets, protection of the water source and pollution solution; the urban wastewater treatment rate in China has increased from 52% to 77% for five years, from 2006 to 2010. Fourth, having gradually formed Water Law-based water resources management legislation system , the important management systems on water- taking license, pay-and-use of water resources and water- function zoning have been implemented; the integrated water resources management system of combining river basin management and regional management has been formulated;the comprehensive plan of national water resources has been completed.

3. Main challenges

In spite of significant achievements, China is facing challenges along with the growth of industrialization and urbanization as well as climate change impact which are embodied as follows: First, the prominent contradiction between water supply and demand is the result of lacking more than 50 billion m3 water annually for many years. Second, over-exploitation of water resources, the exploitation of water in most regions has already exceeded the water –bearing capacity and led to ecological and environmental problems. Third, extensive mode of water resources utilization, the GDP of each cubic water use only accounts for 1/3 of the world average; the water consumption per 10,000 Yuan of industrial value-added reaches 120 m3 (based on the constant prices of the year 2000, the following figures are the same) which is 3-4 times as much as in developed countries; and the irrigation water use coefficient is barely 0.50 with larger difference from the international advanced level of 0.7-0.8. Fourth, water is seriously polluted since the water quality standardized rate of water- function zones is only 46%. With the further development of industrialization and urbanization, water demand will be increasing in a long period to worsen the challenges of water resources in China.

II. The Major Strategic Measure of Water Resources Management in China is to Practise the Strictest Water Resources Management System

The Central Government of China has attached high importance to water resources management.

In 2011, the No.1 Document of the "Decision on Reform and Development in Water Sector" pointed out that the strictest water resources management system should be developed and mobilized as the major strategy of speeding up the transformation of economic development mode. In January, 2012, the State Council of China also issued "Regulation on Implementing the Strictest Water Resources Management System" that makes entire arrangement for the implementation of the strictest water resources management system.

1. General Idea

The general idea of implementing the strictest water resources management system is to put emphasis on allocation, conservation and protection of water resources in order to strengthen management of water demand and water consumption process. By means of completing systems, fulfilling responsibilities, enhancing capacity, improving governance, strictly controlling total water consumption, increasing water-use efficiency and regulating total pollutants discharge into rivers and lakes, we can accelerate building of water- saving society, promote water resources sustainable utilization and transformation of economic development mode, ensure the collaboration of social-economic development and bearing capacity of water resources and environment and finally achieve stable and fast and long-term social-economic development.

2. Main Content

The implementation of the strictest water resources management system refers to formulating "three red lines" and "four systems" of water resources management.

(1) Three red lines

The establishment of "three red lines" is to achieve water sustainability and social-economic sustainable development by remaining the impact of social-economic system on water resources and aquatic ecosystem under the control of bearing capacity whilst ensuring rational water consumption for social-economic development.

First, red line of controlling water development and utilization, which refers to curb over rapid growth of total water consumption for preventing over utilization of water resources and keeping the utilization under the control of bearing capacity of water resources. The line aims at controlling national total water consumption at 700 billion m3 by 2030.

Second, red line of controlling water- use efficiency, which focuses on reducing water waste and increasing water- use efficiency according to the requirement of building water- saving society. This line targets at improving water use efficiency in China to or approximately to the world advanced level, decreasing the water consumption per 10,000 Yuan of industrial value-added by less than 40 m3 (based on the constant prices of the year 2000, the following figures are the same) and raising the irrigation water-use coefficient to more than 0.6 by 2030.

Third, red line of controlling water function zones pollution load, which mainly emphasizes on water

pollution control and water protection to the extent that keeps the total pollution discharge into rivers and lakes under the control of bearing capacity of water environment and enable water resources to meet the demand of functional use. This line aims at keeping the total pollution discharge into rivers and lakes under the control of pollutant- carrying capacity of water function zones by 2030 and raising the rate of water quality in water function zones to over 95%.

The "three red lines" of water resources management cover the aspects of utilization, development and protection of water resources and all aspects are related to each other and also support with each other to form an organic whole.

(2) Four Systems

Targeting at "three red lines", there are "four systems" of water resources management as follows: First, to establish control system for total amount of water to be used and promote rational utilization of water resources which can be completed firstly through total quantity control index system at levels of river basin, province, city and county by formulating water resources allocation plans for major rivers and controlling total consumption of river basins and regions; the second is to facilitate management planning, water assessment, comprehensive plans of national economic and social development as well as general horizon of major projects to adapt to local situations of water resources and flood control demand; the third is to implement water- taking license under which any region already exceeding the control index of water- taking should be suspended to further approval of additional water- taking request and any region almost reaching the control index should be restricted to the approval of new water-taking applications. The fourth is to strengthen groundwater management and protection by implementing the control excessive taking of groundwater and the water level to prevent over exploitation. The last one is to integrate water resources regulation to coordinate the domestic, the industrial and the ecological demand.

Second, to establish water- use efficiency control system and build a water-saving society which can be achieved firstly through implementing overall water- saving management in the whole process of social-economic development as well as the domestic and the industrial production. The second one is to strengthen water- use quota and planned management by regulating compulsory standards of water conservation. The third one is to develop water- conservation irrigation to improve conservation technologies. The fourth one is to promote the industrial water conservation technologies renovation and eliminate outdated techniques, instruments and products. The last one is to promote the use of recycled water, the rainwater and brackish water and the development and utilization of desalted seawater.

Third, to establish water function zones pollution discharge control system and strengthen water resources protection which can be completed firstly through the governance of water function zones to determine the pollution load of water bodies through strict assessment. The second one is to strengthen supervision and management of pollutants discharge outlets along rivers and strictly control the total amount of pollutants discharges to rivers and lakes. The next one is to promote

water environment treatment in severely-polluted rivers and lakes for improving water environment quality of the key river basins. The fourth one is to conserve drinking water sources for water supply security. And the last one is to retain the rational runoff of rivers and groundwater level to ensure fundamental ecological demand.

Fourth, to establish responsibility and assessment system of water resources management and strengthen supervision management of water resources which can be completed firstly through introducing main indicator of water development, utilization, conservation and protection to local social-economic comprehensive development assessment system in which the person in charge of the local governments at county level and above should take responsibility of water resources management and administrative regional protection. The next one is to strengthen assessment management which is one of important assessment references of comprehensive assessment of leaders of relevant governments or managers of the related businesses. The last one is to improve water supervision and management to ensure the relevant laws that must be observed and strictly enforced and lawbreakers must be prosecuted.

III. Measures for Fully Implementing the Strictest Water Resources Management System

The measures of implementing the Strictest Water Resources Management System are as follows :
1. To accelerate the formulation of index system for the strictest water resources management which can be achieved firstly through fully implementing the control index of "three red lines" and breaking down the control targets for governments at different levels and for different years to form a conditional index system of water resources management covering all river basins and administrative regions at provincial, city and county levels. The second is to accelerate the formulation of water allocation plan in order to complete trans-provincial water allocation plan of rivers and river basins in five to ten years. The third is to improve water consumption quota index to implement strict management of water consumption quota and raise of water consumption for each sector. The fourth is to define pollutant load capacity of water function zones and clarify the limitation index of pollutant discharges of water function zones of river basins or regions; and formulate plans of pollution discharge limitation of water function zones of key rivers and lakes.

2. To strengthen capacity building for water resources allocation and monitoring, the first of which is to construct projects linking different rivers and lakes to further optimize the strategic water resources allocation plan. Based on the scientific assessment and ecological protection, it is necessary to build up a batch of backbone projects of water sources and the ones of linking different rivers and lakes; to accelerate the construction of inter-river basin and inter-region water transfer projects (e.g. the South-to-North Water Division Project) and establish a network of rivers, lakes and reservoirs in the manner of easy diversion and drainage,, rational storage and discharge, applicable supplement in wet and dry seasons, interaction of multiple sources and flexible control of water resources. The second is to improve the integrated regulation of water resources which is completed through water regulation programs and plans of major rivers. The integrated river basin regulation

plan must be in the principle that all regional plans are based on the regulation plans of river basins and plans for hydropower, water supply and navigation based on water resources regulation plans of river basins.

3. To accelerate the improvement of systems, policies and legislation for water resources management, the first of which is to formulate the laws,regulations and policies for water conservation, groundwater management, water resources assessment and water function zones management. The second is to establish responsibility and evaluation systems of water resources management; to clarify liability subject and evaluation principles to form evaluation system. The third is to work out the technical standards for the development, utilization, allocation, conservation and protection of water resources.

4. To strengthen capacity building for water resources monitoring, the first of which is to establish the national management information system(MIS) for water resources. Within the next three to five years from this year, the three monitoring systems for major water abstractors, key water function zones and major transboundary river cross-sections to ensure monitoring, assessment and evaluation of the indexes of "three red lines". The second is to optimize existing hydrological station network and strengthen the capacity of hydrological monitoring, early warning and forecasting. The last one is to further execute the national groundwater monitoring projects and establish the national groundwater monitoring network.

5. To promote the institutional and mechanism innovation on water resources management, the first of which is to strengthen integrated river basin management for better integrated planning, management and regulation of water resources of river basins. The second is to promote integrated management of urban and rural water affairs to achieve the coordinated planning and implementation for urban and rural water supply, integrated utilization, water environment governance and flood control and drainage. And the third is to combine river basin management with regional management in order to set up water resources management mechanism in characteristics of clarified responsibilities and the division, standardized actions and coordinated operation.

6. To strengthen scientific and technical support to water resources management, the first of which is to focus on the research on evolution tendency of water change in China, the water factors in national macro control and protection and restoration of water ecosystem based on the overall, basic and practical issues of the strictest water resources management implementation. The second is to promote key technologies, process and equipment of real-time water regulation, water conservation and pollution reduction of all sectors, non-conventional water utilization and water- taking and consumption information. The third is to learn from the international advanced expiences on water management experiences and technologies to deepen the international exchanges, communication and cooperation.

In the light of an effective solution that China is practicing for water resources issues, we will

strengthen the exchanges and cooperation with our international colleagues, share the successful experiences and make joint efforts to address common water challenges.

The Legal System of Pollution Control in China

—Keynote speech at the High-level Roundtable on Water Resources Management System Development in China

Zhao Hualin
Director General, Dept. of Pollution Control,
Ministry of Ministry of Environment Protection, P. R. China

Distinguished guests,
Ladies and gentlemen,

Good Morning! It is my pleasure to be here to the "High-level Roundtable on Water Resources Management System Development in China".

It is well known that water safety is closely related to the sustainable development of economy, society and ecosystem. As a significant part of the national security, it is as strategically important as national defense, economic and financial security. An integral part in water safety is the security of water-related environment. The water-related environmental problems endanger the people's health, affect the social stability and the ecological environment and restrain sustained economic and social development. How to reinforce water pollution control, improve water environment and promote security of water environment are the import topics for China in building ecological civilization and achieving the safe and sound development of economy and society. The prerequisite of effective water pollution control is that there are laws and regulations to go by. Therefore, today I would like to discuss with friends present from all circles of water pollution control in China the history of legislative development thereof and several major legal systems.

I. Challenges of Water Pollution Control in China

The serious water problems, such as water scarcity, water environment deterioration and the frequent floods and droughts, become increasingly prominent in China. In recent years, environmental protection in China has achieved remarkable results, such asthe water environment in some areas has been fairly improved, but the deterioration of water environment remains the same. The protection of water environment in China is working its way. From 2011 to 2015, pollution parameters will continue to increase and complex basin-wide pollution will emerge, generating the growing pressure to the water environment.

Firstly, the environmental protection is under great pressure from Chinese industrial and energy structure and the current economic and social development: the industrial structure needs urgent

optimization, the energy structure is not reasonable; and urbanization and industrialization are at stage of fast growth. Although China has achieved the emission reduction target in the 11th Five-Year Plan, the chemical oxygen demand and sulfur dioxide emissions still rank the first in the world, far exceeding the bearing capacity of environment, bringing about serious challenges for environmental protection.

Secondly, in part of China, the environmental pollution is rather serious and the overall situation is not optimistic. Water quality in almost a quarter of the monitored cross-sections is worse than Category V and 90% of urban river sections are polluted to the different degrees. The municipal lakes are in severe contamination and eutrophication. Half of urban groundwater is polluted seriously. In 113 key environmental protection cities, the water quality of more than 20% of centralized drinking water sources does not comply with water quality standards. The marine environment is deteriorating as well.

Thirdly, the industrial pollution control leaves much to be desired. Despite the excessive costs of environmental resources, the overall level of industrial pollution control is fairly low and key industries like heavy industry, chemical industry, etc. “contribute” greatly to the total industrial pollution discharge. Discharges of many enterprises do not comply with the standards. There is a severe shortage of investment in science and technology for industrial pollution control and in certain areas the industrial structure is not reasonable. Industrial pollution tends to transfer from developed areas to under-developed ones, from urban to rural areas with frequent industrial pollutions in towns. China is now facing a more rigorous situation than any other developed countries ever did in industrialization.

Fourthly, the environmental security in China is worsening. Pollution incidents occur quite frequently now in China, resulting in increasingly serious social contradictions which severely affecting social harmony and stability. In certain river basins, owing to water shortage and frequent incidents of ecological degradation and pollution, water environment is of Category III (Early Alarm) and drinking water security is some areas is hard to be achieved. The seriously polluted industries, like chemical industry, are located around big rivers/lakes lay security risks to environment. Recently, the environmental emergencies frequently occur due to production and transportation of dangerous chemicals, thus, both people’s health and ecological environment are under severe threat.

II. The History of Legislative Development onWater Pollution Control

Legislation on water pollution control consists of The Law of the People's Republic of China on Prevention and Control of Water Pollution and appropriate content in The Water Law of the People's Republic of China, The Water and Soil Conservation Law of the People's Republic of China and The Cleaner Production Promotion Law of the People's Republic of China, etc. and a series of regulations on discharge and monitoring standards.

Water pollution control in China originated in 1950s. In September, 1979, The Environmental Protection Law of the People's Republic of China (Trial) was adopted which legally standardized environmental protection including water resources protection and laid foundation for a legal system of water environment protection.

The Law on Prevention and Control of Water Pollution of the People's Republic of China, the first comprehensive and specific law on water pollution control, enacted in 1984, stipulated the principles, institutions and systems of supervision in water pollution control and also the prevention, control and liability of surface water and groundwater pollution, etc. The Water Law of the People's Republic of China, formulated in 1988, specified the rational development and utilization of water resources and control of water environment pollution. The Rules for the Implementation of the Law of the People's Republic of China on Prevention and Control of Water Pollution was approved by the State Council in July, 1989. The Ordinance of Water Pollution Control in Huai River Basin was established in 1995 by the State Council in the form of regulation for the first time. The National People's Congress(hereinafter referred to as NPC) Standing Committee adopted the revised Law on Prevention and Control of Water Pollution of the People's Republic of China in May 1996.

During the 16 years implementation of the revised Law on Prevention and Control of Water Pollution of the People's Republic of China from 1996, the frequent outbreaks of water shortage and water crises, the higher total water pollution discharge brought about severe water pollution. In some river basins, water resources were over-developed and utilized which exacerbated water pollution and imperiled drinking water in cities and rural areas. The 1996 version was too old to face the serious situation in water environment. Therefore, it was revised in 2007. The lessons learned in the implementation of the 1996 version were summarized in the new version. Based on the situation at the time in China of water pollution control, a lot of changes were made to the eleven-years old Law on Prevention and Control of Water Pollution of the People's Republic of China by the Standing Committee of the NPC. After three deliberations, in the afternoon of February 28, 2008, at its 32nd session, the 10th Standing Committee of the NPC unanimously adopted the amendment of the Law on Prevention and Control of Water Pollution of the People's Republic of China. President HU Jintao signed President's Order No.87 and promulgated it on the same day. The amendment took effect as of June 1, 2008. In the effective Law on Prevention and Control of Water Pollution of the People's Republic of China, there are 92 articles in eight chapters. While in the previous version there were 85 articles in seven chapters. In comparison, with clear guiding theories, more content and a complete structure, the new one is more feasible and the solid legal foundation for active control of water pollution and the rehabilitation of the rivers and lakes.

III. The Major Legal Systems The first one is the drinking water source protection zone system that is under constant improvement. The safety of drinking water, directly affecting people's health, is the top priority in environmental protection. In The Law on Prevention and Control of Water Pollution of the People's Republic of China, there are chapters describing protection of drink water sources and other special water bodies, specifying pertinent provisions for drinking water sources protection

area and consultation system thereof and perfecting the classification of drinking water sources protection zones. With a strict management of and active protection measures in drinking water sources protection zones and an increased penalty for polluting drinking water, protecting drinking water is truly prioritized showing the government's considerable attention and unswerving resolution in controlling drinking water crises.

During the 11th Five Year Plan (from 2006 to 2010) period, for the implementation of the environmental requirements, surveys in drinking water sources were carried out in cities and towns above the county level and assessments were conducted in 226 centralized drinking water sources in key cities for environmental protection. The National Environmental Protection Plan in Drinking Water Sources in Cities (2008-2020) were prepared and issued. According to the plan, water quality in no less than 90% of the drinking water sources shall be in compliance with the standards by 2015, and more than 95% by 2020. To achieve this, we will develop strict measures for the protection zones and the management of drinking water sources ,regularly conduct water quality analysis and improve, restore and build the environment in water sources areas so as to improve the water quality. The second is the stringent control system on total pollutant discharge . According to the principles of focusing on prevention, reducing sources of pollutants and enhancing control of water pollutants discharge, China adopted a strict control system on total pollutants discharge. During the 11th Five Year Plan period, with a rapid economic growth and increasing energy consumption, the rigorous control of total discharge was effective. In 2010, the chemical oxygen demand and total sulfur dioxide emission decreased by 12.45% and 14.29% comparing with that in 2005. It also promoted industrial restructuring and upgrading, having closed the backward factories with production capacity of 110 million tons of iron, 68.6 million tons of steelmaking, 330 million tons of cement, 93 million tons of coke, 7.2 million tons of paper, 1.8 million tons of alcohol, 300,000 tons of MSG and 38 million weight boxes of glass. the building of environmental infrastructure was stimulated, sewage treatment capacity increased by more than 50 million tons/day and the urban sewage treatment rate rose from 52% in 2005 to more than 75%.

In the 12th Five-Year Plan(2011-2015)period, 10% deduction in ammonia compounds and nitrogen oxides emission will be added to the binding indicators in pollution reduction. Meanwhile, pollutant control parameters with local characteristics can be included and used in evaluation. Pollutants from agriculture will be brought into total water pollutant discharges.

The third is the regional limited- approval system that has being legalized gradually. The regional limited approval system or river basin limited approval system specifies that with respect to those regions that have exceeded the target of total emissions of key water pollutants, relevant environmental protection authorities of the people's government shall suspend the examination and approval of environmental impact assessment documents for new construction projects subject to the target of total emissions of key water pollutants. Legalization of regional limited approval system turned the temporary system into an official legal system so that it plays a more important role in restructuring, transforming the mode of economic growth, achieving the emission reduction target

and combating environmental violations and that it identifies the governmental responsibilities in the strictest way and forms a long-term deterrent against the pollution.

Since 2006, the Ministry of Environmental Protection arrived at decisions including not accepted, no examination or deferred examination, etc. to the documents for environmental impact assessment of 813 non-conforming projects with a total investment of over 2.9 trillion RMB setting an insurmountable firewall for energy consuming, high pollution and resources-based products and for low-level redundant development and excessive capacity. The regiona-l and industrial- limited approvals help effectively cracked down environmental crimes.

The fourth is the evaluation system on local government's responsibilities that was strengthened. The local protectionism is an important reason for the deterioration of regional water pollution. Orientation in government management determines the region's environmental development. The effective implementation of environmental protection policies and management systems must be backed by strong support of the local governments. The Ministry of Environment Protection has established an accountability and evaluation system for the targets of water environment protection, whereby the fulfillment of which is an important part in performance evaluations of the local people's governments or their responsible persons.

In 2009, the General Office of the State Council transmitted The Interim Measures About Evaluating the Implementation of the Special Plan of Water Pollution Control in Major River Basins and an evaluation system on water quality in provincial sections in major water basins was established and became the key tool of water pollution control in major water basins. Until the end of 2010, the completion rate of pollution treatments included in the plan was 87%, increased by 22.8% since 2005. With cooperation between and joint efforts by Heilongjiang and Jilin provinces and Inner Mongolia Autonomous Region, the integrated management of Songhua River Basin was evidently improved. In Hebei Province, water quality evaluation in the 201 sections of the seven drainages was conducted and an eco-compensation mechanism for the entire river basin also established. Jiangsu Province pioneered in establishing River Administrator and improved the water quality of Taihu Lake. In Shandong Province, through ways of water pollution control, reclaimed water utilization and ecological environment protection, fishes survive and grows again in all the major previously polluted rivers .

The fifth is environment emergency management system and mechanism that is being steadily perfected. Water pollution incidents and public crises often go hand in hand. Therefore, when a water pollution incident occurs, if it is poor in emergency management, the significant losses will be caused in public health, economic development and social stability and even brings about a diplomatic event . The severe water pollution incident of Songhua River in 2005 still casts a shadow over people. Therefore, the Ministry of Environment established an emergency treatment center and expert's database of environment emergency treatment. Within more than one third of the provincial environmental protection agencies, the special environmental emergency management

organizations also set up. From 2006 to 2010, 912 emergency environment incidents were properly disposed, including some major ones that attracted drastic attention. After Wenchuan and Yushu earthquakes and the major torrent and mudslide in Zhouqu, with the effect emergency supervision , the secondary disasters were prevented thanks to the scientific and fast response measures.

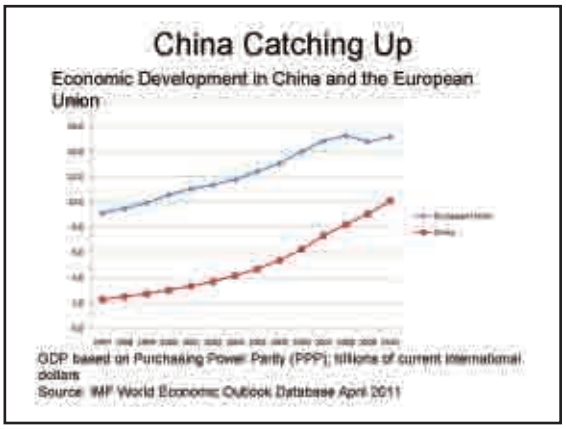
The sixth is the river-based eco-compensation system which is also moved forward steadily. This system aims at encouraging river basin environment protection with coordinated regional development so that the underdeveloped regions in the upper reaches which have contributed to protecting water environment will be eco-compensated through fiscal transfer payment and so on. Hence, it will positively affect the protection of the ecological environment in up-streams of rivers and change the imbalanced development between the upper and lower reaches. The Ministry of Environment Protection is actively exploring to establish a river basin eco-compensation system. Appropriate experiments will be carried out in the river basins of Xin'an River, Dong River and Jiulong River, etc. The pilot project in Xin'an River has officially initiated with compensation of 250 million RMB distributed by the central government until the end of 2011. The Ministry of Environment Protection will start an experiment in the river basin of water diversion project from Luanhe River to Tianjin City to establish the eco-compensation system for protecting drinking water sources in important river basins and to evaluate the results of the compensation.

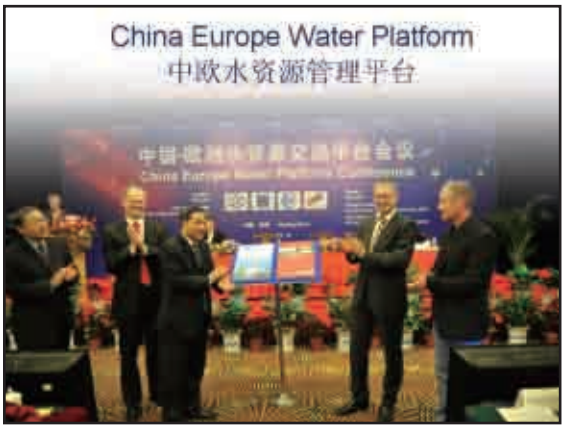
Ladies and gentlemen!

Water security is the common concern of the international community. Global Water Partnership (GWP) China and the related international organizations have done lots of effective and fruitful work to promote water resource protection in China. The Ministry of Environment Protection is convinced that with our common efforts and concerted cooperation, new progress will be made in water environment protection. China will place strengthening water environment protection and promoting conservation culture in a more important position. Through unremitting efforts, we will improve and safeguard water environment. We will spare no effort to work for the international environmental cooperation and exchanges, actively participate in and address global environmental challenges such as water shortage, etc. We will make due contributions to a better future for the people around the world and the human progress.

EU – China River Basin Management ProgrammeExperience, Achievements, and Legacy

Paul van Meel
Team Leader Technical Assistance Team





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- Exchange of innovative knowledge and technologies
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  - ➢Early warning and emergency response system
- Have Chinese and European researchers scale up through joint research and thus heighten academic standards
- Link up with other related platforms in China and Europe such as European Water Supply and Sanitation Technology Platform (WssP)
- Create a bridge for business groups to jointly develop/implement concrete solutions

Joint Research DRC and EU-China RBMP on Strategic Knowledge Exchange 战略知识交流联合研究

Phase 1 / 第一阶段

Comparative analysis of No.1 Document and EU Water Framework Directive
(October 2011 – December 2011)
对比研究一号文件和欧盟水框架指令

Informing water managers in the EU on water management in China and significance of No.1 Document
向欧盟水管理人员介绍中国的水资源管理的一号文件

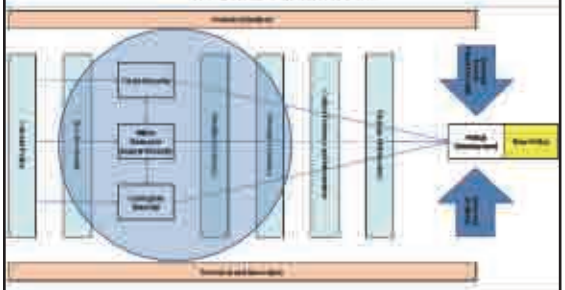
Joint Research DRC and EU-China RBMP on Strategic Knowledge Exchange 战略知识交流联合研究

Phase 2 / 第二阶段

Strategic Knowledge Exchange Project
(January – June 2012)
战略知识交流项目

Informing water managers in China on EU WFD experiences relevant to implementation of the No. 1 Document
向中方水管理人员介绍与一号文件实施相关的欧盟水框架指令经验

Knowledge exchange process 知识交流过程



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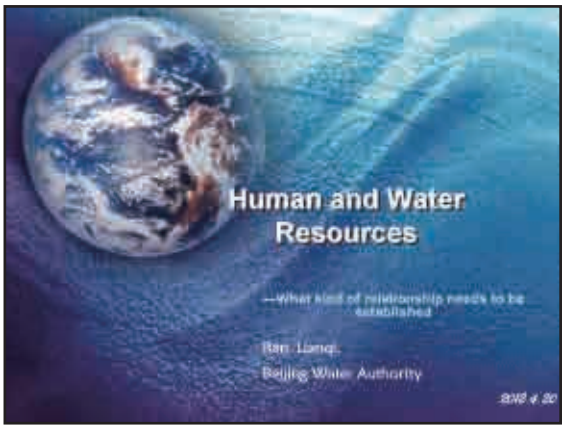
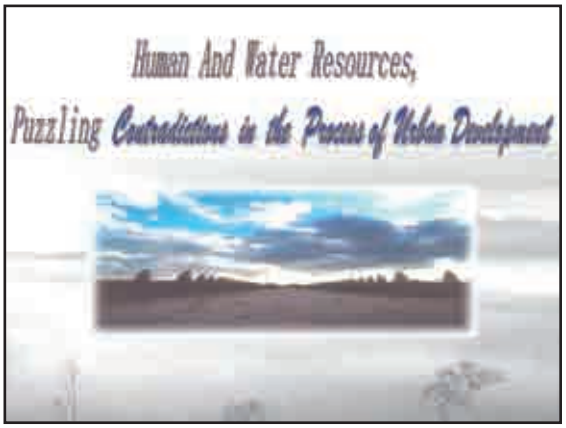
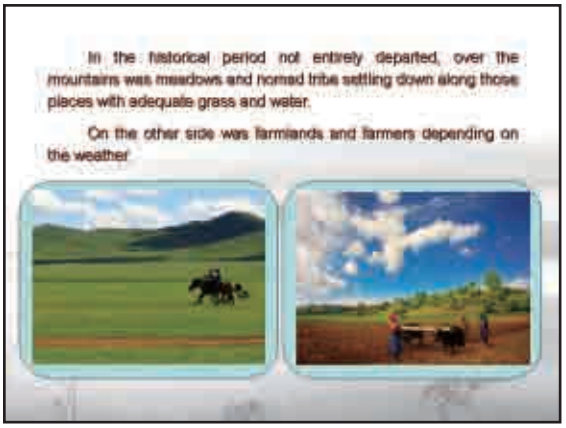
Human and Water Resources
—What kind of relationship needs to be established

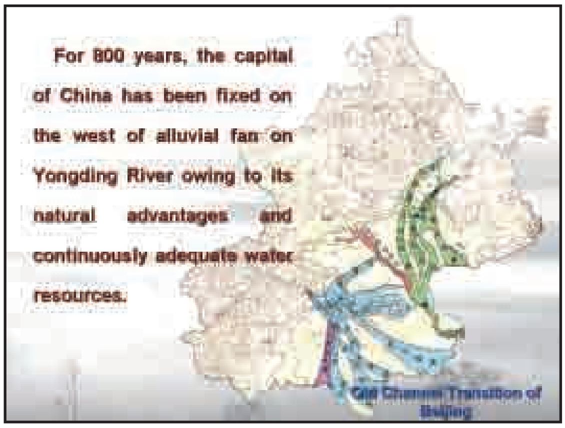
Ran Lianqi, Division Director,
Beijing Water Authority

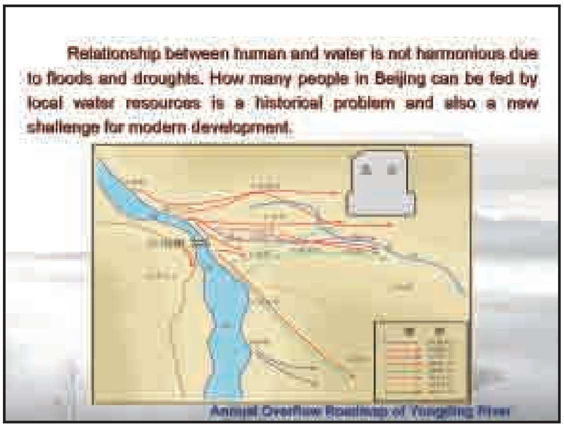


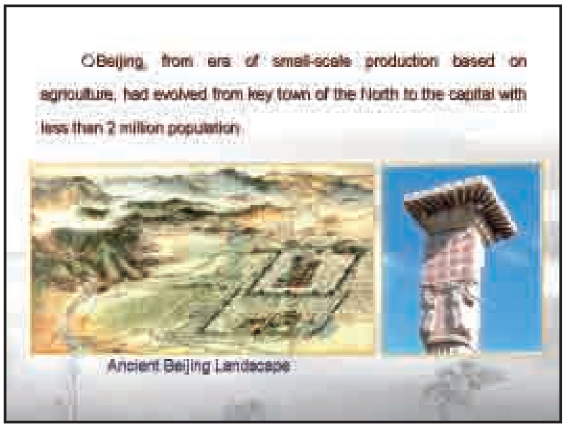


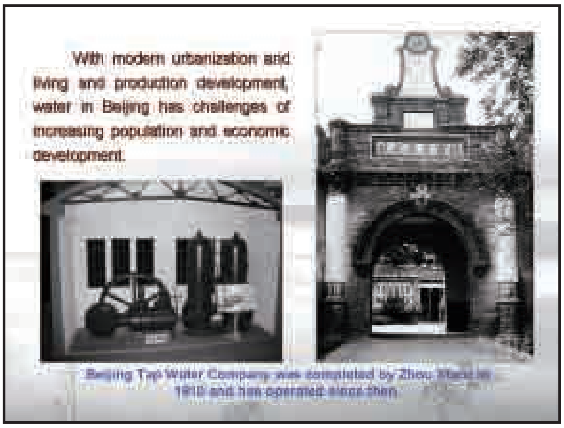


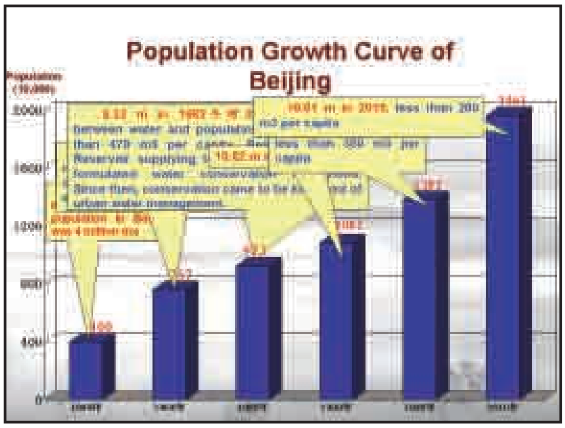

Extremely uneven temporal and spatial distribution of rainfall is due to monsoon climate, serious influence on living and production of residents on two sides of mountains.
War & peace and policy & economy distressed by water, Yongding & Chaobai rivers witness this long history

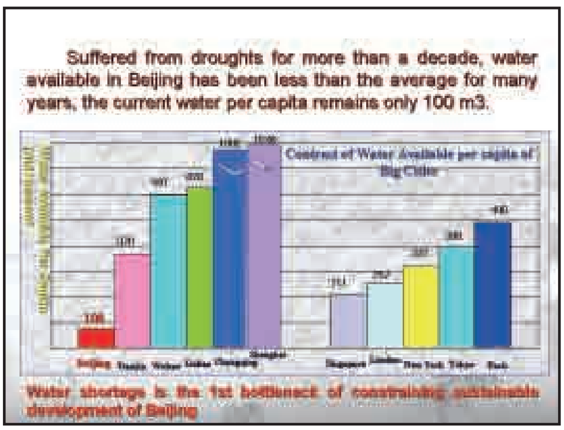

For 800 years, the capital of China has been fixed on the west of alluvial fan on Yongding River owing to its natural advantages and continuously adequate water resources.
Old Channel Transition of Beijing


Relationship between human and water is not harmonious due to floods and droughts. How many people in Beijing can be fed by local water resources is a historical problem and also a new challenge for modern development.
Annual Overflow Roadmap of Yongding River


○Beijing, from era of small-scale production based on agriculture, had evolved from key town of the North to the capital with less than 2 million population
Ancient Beijing Landscape


With modern urbanization and living and production development, water in Beijing has challenges of increasing population and economic development.
Beijing Tap Water Company was completed by Zhou Xuexi in 1910 and has operated since then


Population Growth Curve of Beijing
Population (10,000)
2000
1600
1200
800
400
0


Suffered from droughts for more than a decade, water available in Beijing has been less than the average for many years, the current water per capita remains only 100 m3.
Contrast of Water Available per capita of Big Cities
Beijing
Tianjin
Wuhan
Chongqing
Shanghai
Singapore
London
New York
Tokyo
Paris
Water shortage is the 1st bottleneck of constraining sustainable development of Beijing


Systems :
An Effective Solution To Conflict Between Human And Water

❑The conflict of large population and less water resources has increasingly intensified along with urbanization. Upon outdated structural method and administrative solution, the system-oriented solutions are fresh to establish a new relationship between human & water.

A successful and beneficial system will help solve problems while the bad ones make the problems even worse.

Since 1960s, Beijing Water Authority has changed its water management mode, from the structural construction to system-oriented water management.

(From the natural feature aspect, surface water in Beijing is controlled by structural tools while some groundwater developed in depth.)

For water problems at different times or with changes of water problems , Beijing Water Authority has worked out a number of regulations to control water consumption. These regulations are prospective and achievable since they focus on contemporary situations, real problems and targeted environment.

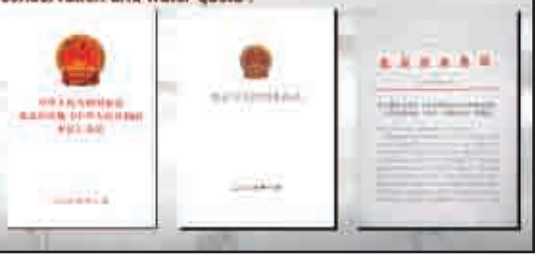
As gradually solving problems in development process, the regulations have been improved, rationalized and systemized. They are systematized. Only in Beijing, we have 46 local water related regulations, 239 governmental regulations and 363 norms.

Regulations include:

- Water Resources Protection, , "Beijing Water Pollution Control Regulation", "Beijing Water Sources Protection Regulation of Two Reservoirs and One Channel".

Regulations include:

From aspect of Water Conservation,e.g. "Implementation of 'Water Law'", "Beijing Water Conservation Rules",etc. to strengthen the management of water use plans,water conservation and water quota .



Regulations include:

Water Consumption Structure Changes, e.g. " Policies and Measures of Promoting Industrial and Agrioultural Water Conservation"

Regulations include:

"Beijing Water Sustainable Use Planning of early 21th Century" to change ideas focused only on projects construction, formulate management planning and comprehensive plans covering emergency response.

Proposals of water management system, water regulations and water pricing adjustment submitted.

Regulations include:

Implement 26 planned water resources management and water conservation measures

From water allocation schemes macro management perspective to removing paddy fields and accurate measuring of agricultural water consumption, link between management system establishment and solutions to development problem.

Removing paddy fields on upstream of Bai River

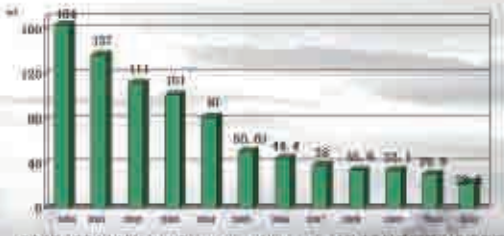
Plug-in Watermeter

These regulations are solutions to conflict between human and water and also play an important role in Beijing development and jointly work with concept development and living & production style of rational water use to make possible the effective protection, rational development and efficient use of water resources.

Under negative conditions of long term drought and decreasing water resources, Beijing has reduced total consumption from 4 billion m3 in 2000 to 3.6 billion m3 in recent years, cutting 1 billion m3 of increasing consumption..

Visible increase of water efficiency

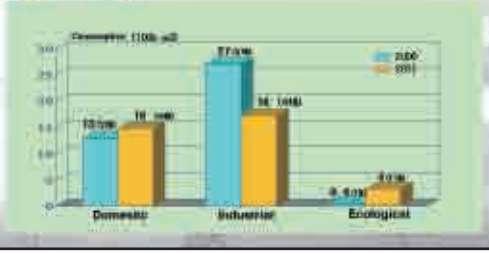
Water consumption per 10,000 RMB of GDP reduced from 164 m3 in 2000 to 22.5 m3 in 2011.



2000~2011 Water Consumption per 10,000 RMB of GDP

Water consumption for living, industry and ecology change and consumption structure is more rational.

Comparing with that in 2000, the total domestic consumption of Beijing increased from 1.3 billion m3 to 1.6 billion m3; total industrial consumption dropped from 2.7 billion m3 to 1.6 billion m3 and total ecological consumption increased from 40 million m3 to 400 million m3.



In general, Beijing has implemented the strictest water resources management system based on the modern water management concept of the Ministry of Water Resources to leave space for urban and rural development and pave an innovative path of development under intensive control of water resources.

New State of System: Harmony between Human and Water

After success of hosting Beijing 2008 Olympics, Beijing has developed into a new phase. The Beijing Municipality Government formulated the strategic target of building up international municipality with Chinese characteristics.

There are new target challenges in water management of Beijing, particularly to water resources conservation.

Challenges:

1.Hard to reverse the trend of less water flow from upstream;

2.Hard to reverse the trend of reducing groundwater;

3.Hard to reverse the trend of decreasing water available of rainfall;

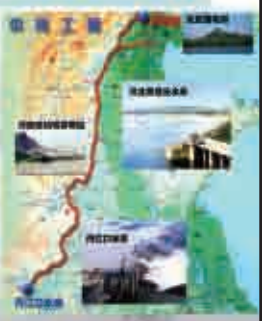
4.Hard to reverse the trend of increasing growth of eco-social development and large water demand (eco-social development rate at 8%, population growth at 0.6 million)

The top challenge for Beijing is how to enable water resources to be sustainably used for sustainable development of economy and society.

Two cards for Beijing Water Authority to play:

One is to divert water from other rivers such as Yangtze River to Beijing through South-to-North Water Division Project under construction for 1 billion m3 of water to Beijing after completion of the project by 2014.

We can predict that the South-to-North Water Division Project plays a key role. Yet, 1 billion m3 might be soon used with fast growth of urbanization and water decrease of river basins.



Two cards for Beijing Water Authority to play:

Two, strengthen management to control water consumption by rational management tools; coordinate relationship among population, resources and environment; build a society that has feature of domestic and industrial water-saving and with sustainable development of cities;

Though some achievements have been made on water management and conservation, there is a diversity of problems on water allocation, management, waste and low efficiency at different levels to be solved. Same important as the South-to-North Water Division Project, the process of developing rational water consumption system and formulating consumption behavior is a strategic measure of ensuring water sustainability in Beijing.

Taking strategic opportunity of "Reform and Development in Water Sector" issued by the Center Government, Beijing has worked for system innovation, completed revision of "Beijing Water Conservation Regulations" and will be issued as governmental regulations; the rules for implementation of "Regulation of the Strictest Water Resources Management System" will be issued too; other supporting rules and regulations will also be published.

Water Resources Management Policy:

"Zero increase of new industrial consumption, minus increase of new agricultural consumption, rational increase of new domestic consumption and controllable increase of new environmental consumption"

"Three Red Lines" of Beijing Water Resources Management in 10-20 years:

- red line of development and utilization of water resources: control total consumption
- red line of water-use efficiency: control water waste
- red line of pollution in water-function zones: control pollution discharges to rivers and lakes

Basic Principles:

First, **people-oriented**, to resolve the people's most concerned on drinking water and water environment to ensure water sources, water supply security and ecological security.

Second, harmony between human and water, to adapt to law of nature and eco-social development, demand-oriented and development based on water availability.

Third, coordination, to coordinate domestic, industrial and ecological water consumption and ensure rational allocation of surface water, groundwater, diverted and recycled water.

Fourth, innovative force, to optimize water management system and mechanism, create innovative management measures and tools to improve accessibility and validity of systems.

Main Targets:

First, "red line" of controlling the development and utilization of water resources, to control total city water consumption under 4 billion m3 by 2015 and within 4.6 billion m3 by 2020;

Second, "red line" of improving water-use efficiency, water consumption per 10,000 RMB of industrial value-added decreased to 1.35 billion m3 by 2015 and to 1 billion m3 by 2020; irrigation efficiency rate reaches more than 0.7 by 2015 and to 0.71 by 2020;

Third, "red line" of controlling pollution in water-function zones, attainment rate reaches 50% by 2015 and reaches 77% by 2020.

Main Measures:

First, strengthen the "red line "of controlling the development and utilization of water resources for the total consumption; control over planning and project water assessment system, water-taking permit and consumption, index management and management & protection of groundwater; and integrated regulation;

Second, strengthen the "red line" of improving water-use efficiency for building of water-saving society; strictly manage industrial water consumption efficiency permit; implement water conservation systems; formulate water conservation mandatory standard to forbid any products failing to the standard;

Third, strengthen the "red line" of controlling pollution in water-function zones for pollution discharges to rivers and lakes; strengthen management of water function zones, accelerate construction of water treatment plants and recycling plants and protect water sources areas;

Fourth, strengthen the evaluation of water management responsibilities systems and set up water management responsibilities assessment systems of "three red lines"; introduce assessment systems into governmental achievements evaluation systems; sign liability agreement and establish supervision and incentive mechanisms.

These systems are more adaptive to the relationship between human and water according to modern urban development strategy under new concepts and water situations. The core of this relationship is "harmony between human and water".

Harmony includes:

- Appreciate water, cherish water and conserve water;
- Less abstraction, consumption or pollution to achieve more water quantity and establish new quantity-oriented development mode for the domestic and industry to meet regional water -bearing capacity.

In the historical period not entirely departed, over the mountains was meadows and nomad tribe settling down along those places with adequate grass and water.

On the other side was farmlands and farmers depending on the weather.

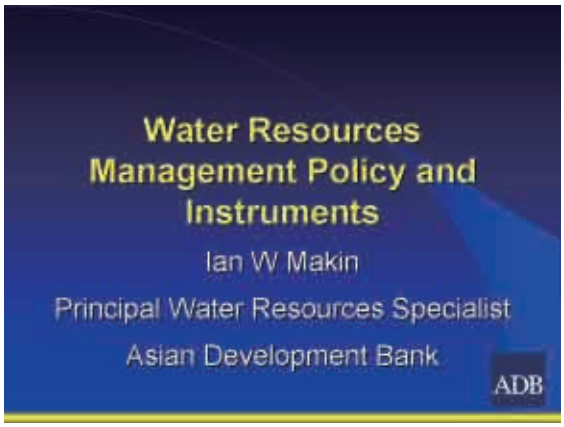
Yongding Valley: Bridge of Nomads and Farmers

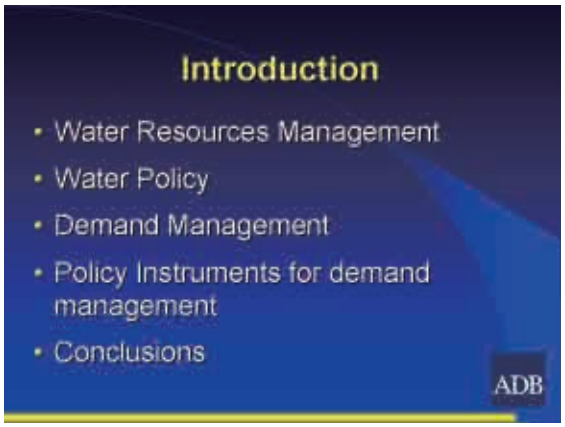
In the historical period not entirely departed, over the mountains was meadows and nomad tribe settling down along those places with adequate grass and water. On the other side was farmlands and farmers depending on the weather.

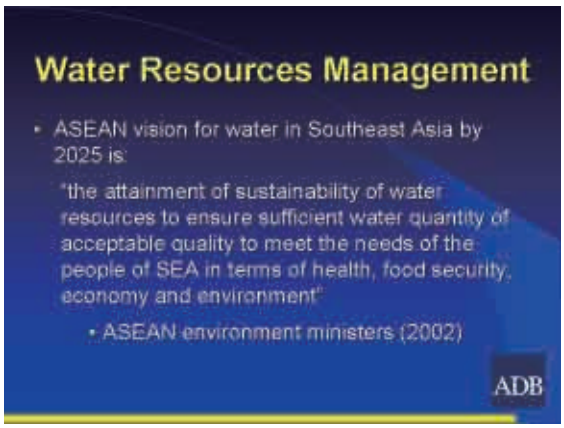
We are certain that Beijing is on a new path of urban development with Chinese characteristics as well as a green development road to harmony between human and nature.

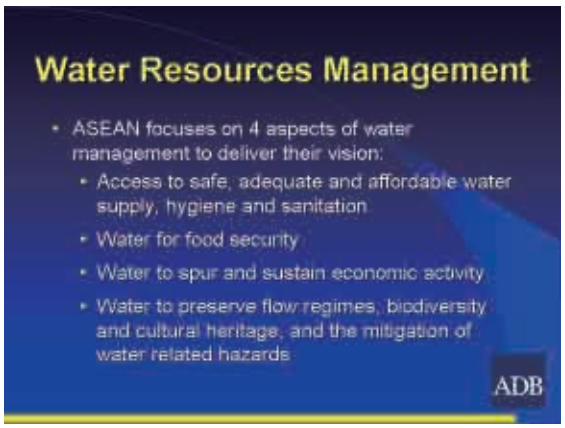
Water Resources Management Policy and Instruments

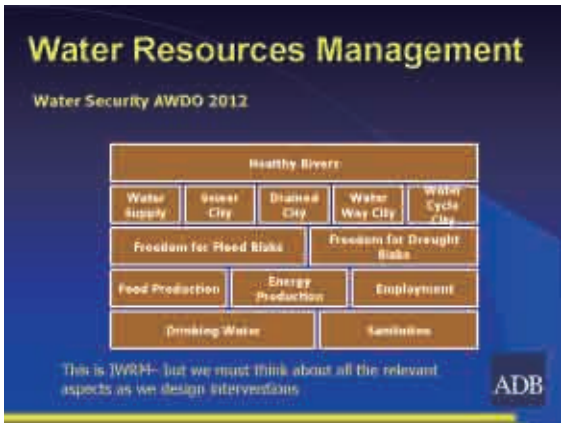
Ian W Makin
Principal Water Resources Specialist, Asian Development Bank

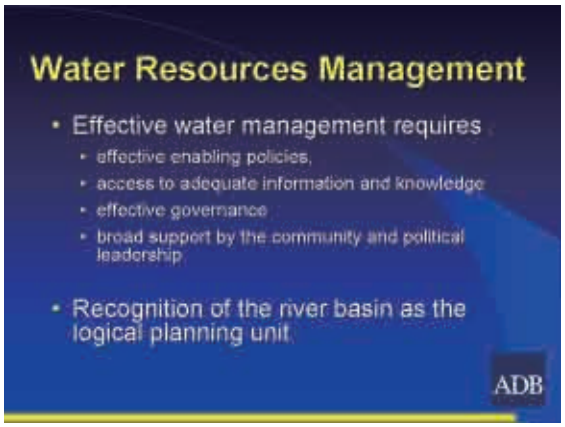












Water Policy

- Pressure on water resources mean that water policy will be more about allocation, or rather reallocation, between sectors.
- Policy initiatives tend to focus on agricultural water use – and how to reduce this use
- Water (re)allocation requires definition and protection of water rights
- Resource allocation requires measurement

ADB

Demand Management

- Essential to understand water accounts
- Avoid value laden terminology
- Use terminology that means the same in all sectors

Christopher Perry, Asian Irrigation Forum 2012

ADB

Demand Management

- "Efficiency"
- "Improvement"
- "Upgraded"
- "Water saving"

These terms mean different things in different sectors

ADB

Demand Management

Water applied for any purpose goes to...

- Consumed fraction
  - Beneficial consumption
  - Non-beneficial consumption
- Non-consumed fraction
  - Recoverable
  - Non-recoverable

These terms mean to same things in all sectors!

ADB

Demand Management

For water saving focus on:

- Consumed fraction
  - Beneficial consumption
  - Non-beneficial consumption
- Non-consumed fraction
  - Recoverable
  - Non-recoverable return flows

WORRY ABOUT THESE FIRST!

ADB

Policy Instruments for demand management

- Water sector in Asia is maturing:
  - Expansion of demand for water as economic good
  - Limited opportunity to augment supplies
  - Increasing need to reallocate between uses and users

ADB

Policy Instruments for demand management

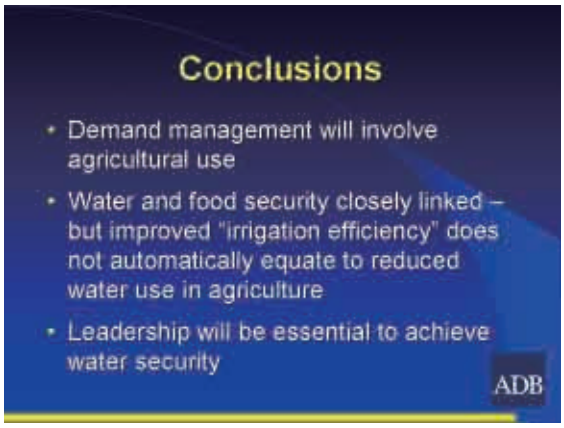
- Choice between
  - Administrative approach – reduction of water supplied to use and/or users (agriculture)
  - Economic approach – using price signals to communicate opportunity cost of water

ADB

Policy Instruments for demand management

- Water pricing must include:
  - Cost of service delivery
  - Opportunity cost of water
  - Social cost (externalities)

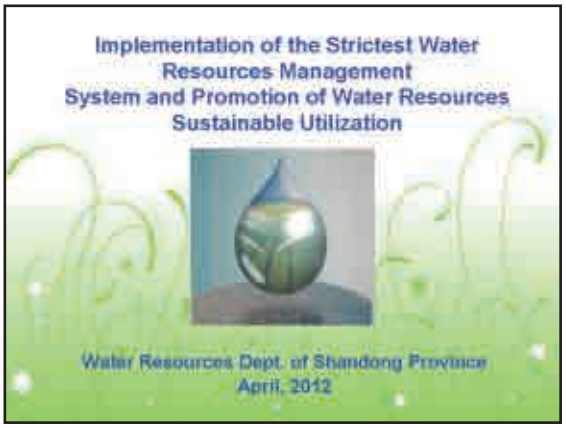
ADB

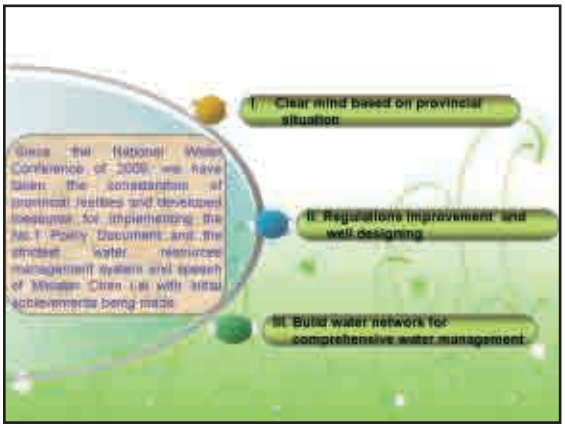

Conclusions
• Demand management will involve agricultural use
• Water and food security closely linked – but improved "irrigation efficiency" does not automatically equate to reduced water use in agriculture
• Leadership will be essential to achieve water security
ADB

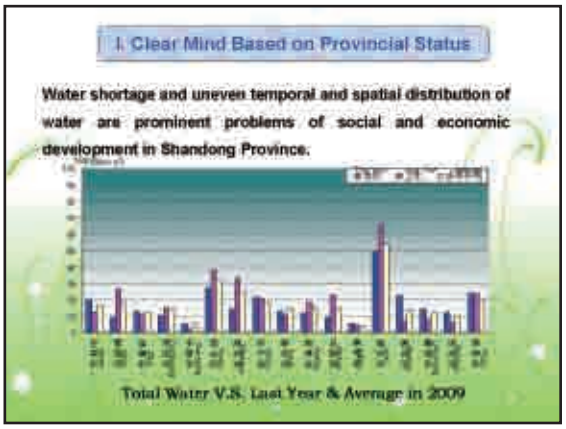

Thank You
Ian W Makin
imakin@adb.org
www.adb.org/water/
ADB

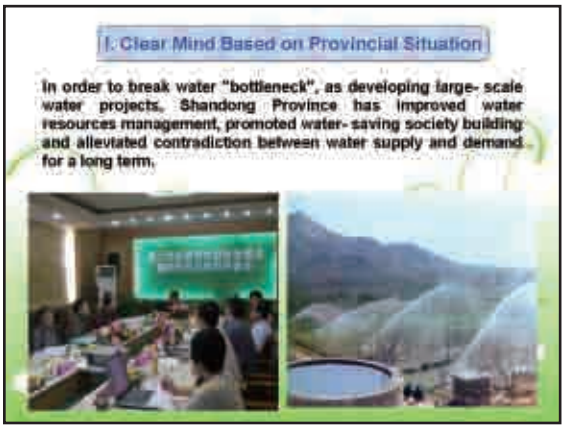
Implementation of the Strictest Water Resources Management System and Promotion of Water Resources Sustainable Utilization

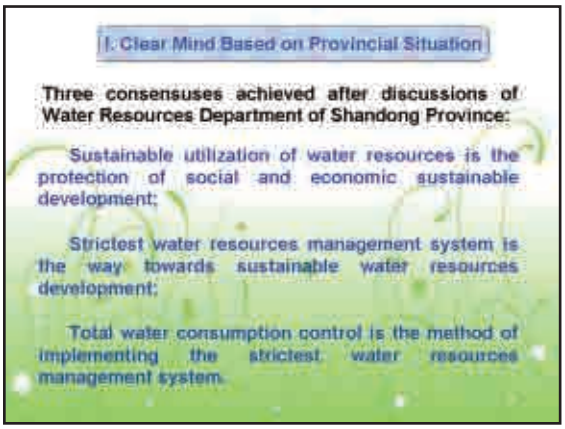
Gao Xixing, Division Director,
Water Resources Dept. of Shandong Province





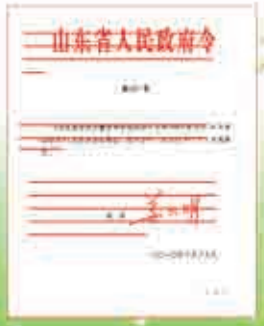






I. Clear Mind Based on Provincial Situation

In September 2009, Shandong Province Government had issued the "Regulation on Total Water Consumption Control Management of Shandong Province" (No.227 Order) is the legal basis of implementing the strictest water resources management system.



I. Clear Mind Based on Provincial Situation

II. Complete System After Well Designed

II. Complete System After Well Designed

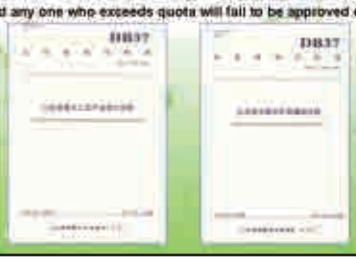
I. Total Amount Control

Based on annual balance of water development and rechargeng and "Shandong Provincial Integrated Water Resources Plan", it determines the index system of total water consumption at provincial, municipal and county levels and forms the"supply-deciding"mechanism with"one control & two promotion"(i.e.to control the total water consumption and promote the change of water use mode and the social and economic development mode).

II. Regulations Improvement and Well Designing

II. Quota Management

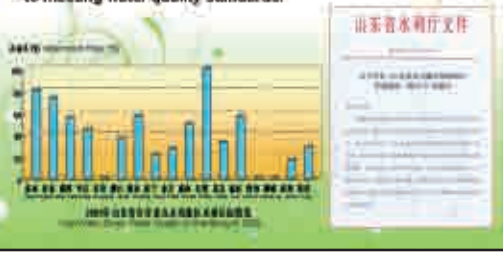
Together with Shandong Provincial Technical Supervision Bureau, we formulate "Water Quota of Key Industrial Products of Shandong Province" & "Irrigation Quota of Key Crops of Shandong Province" and any one who exceeds quota will fail to be approved of permission.



II. Regulations Improvement and Well Designing

III. Pollution Load Control

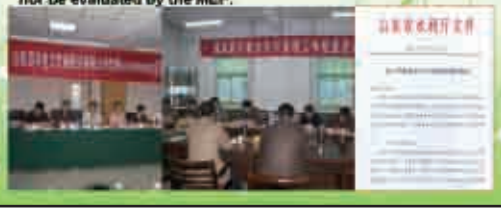
Detecting pollutant load capacity of all water function zones; reducing water consumption indicators of any zone fail to meeting water quality standards.



II. Regulations Improvement and Well Designing

IV. Water Abstraction Permit

Water permit must be under the quota of total control, comply with industrial policies and water quota, pass water resources assessment, approve impact assessment of water conservancy proposal and flood control, meet the water saving requirements. Without a water permit, any project can neither be approved by the NDRC or Economic Information Department nor be evaluated by the MEP.



II. Regulations Improvement and Well Designing

V. Water Consumption Detection

To clarify responsibilities and objectives, the hydrological sectors are in charge of annual monitoring of total water consumption of major areas; water administrative departments are responsible of water consumption metering of water users to detect data and share information. The basis of annual assessment is the detection data.

II. Regulations Improvement and Well Designing

VI. Duties Assessment

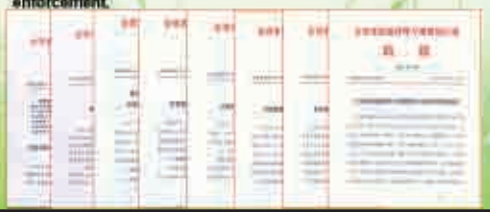
Controlling index of water resources development, utilization, conservation and protection are basis of "red line" management that will be introduced into comprehensive evaluation index system of local economic and social development; the implementation of the responsibility of the local administrative leaders includes examination results as the evaluation of management ability and development results at all governmental levels.

Any government and relevant department that violate total index, water efficiency indicators and protection index of water quality will be evaluated by "accountability" system.

II. Regulations Improvement and Well Designing

VII. Enforcement and Supervision

Violations of illegal permits, unauthorized water abstraction, excessive discharge of waste and unauthorized relief or failure of paying water fee will be punished according to laws. In the province, we will carry out irregular water resources special rectification actions to implement the strictest water management system and create a good environment for law enforcement.



III. Build Water Network For Comprehensive Water Management

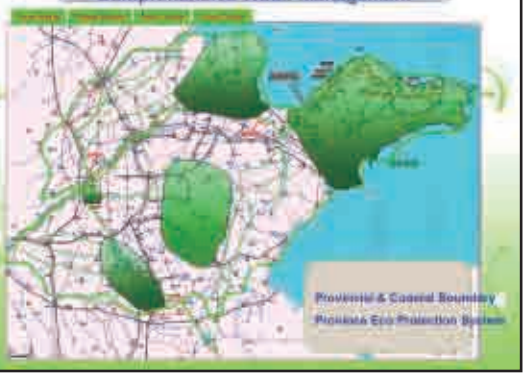
As for improving water resources management system, it must also set up the corresponding water resources development, utilization and optimal allocation project systems. Considering the uneven spatial and temporal distribution of the province's water resources and with support by the South-to-North Water Diversion Project and water diversion in Jiaodong Area,we established a water allocation project system to achieve coordinated regulation, scientific allocation and optimized water supply security .

Diagram of Water Network

III. Build Water Network For Comprehensive Water Management

Meanwhile, according to the mode of "water conservation at the upstream, regulation and storage by rivers and reservoirs at the middle reach and the estuarine & wetlands at the downstream", it focuses on use of rainwater and aquatic ecosystem protection to form ecological water system to coordinately solve the three water problems of water shortages, threat of water-related disasters and deterioration of water ecology in order to provide more reliable water resources to the economic and social sustainable development.

III. Build Water Network For Comprehensive Water Management



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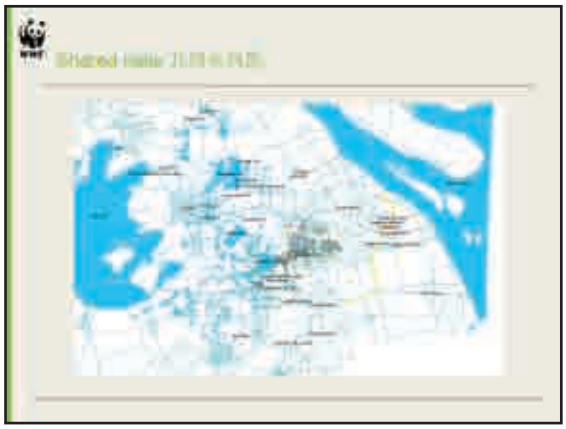
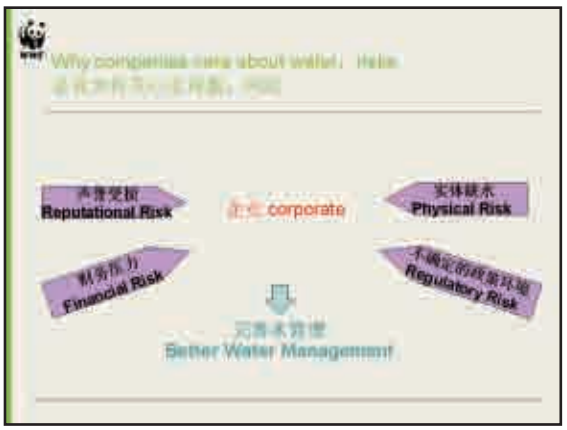
Thank You

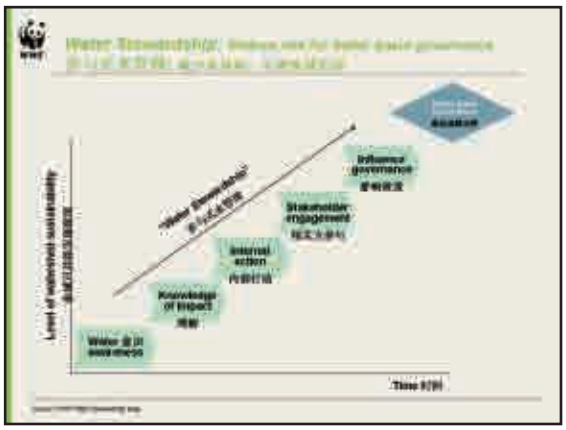
Wish the Meeting a Success

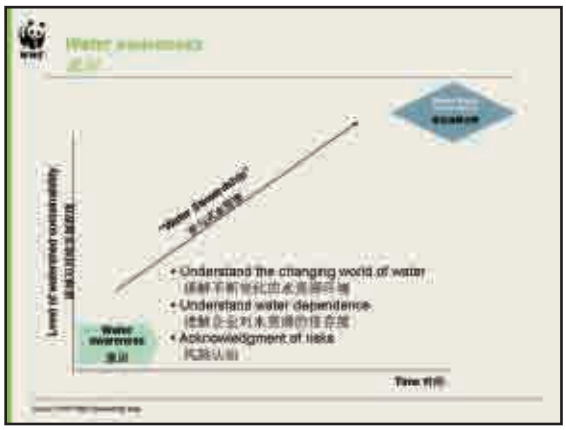
Water Stewardship towards Integrated River Basin Management

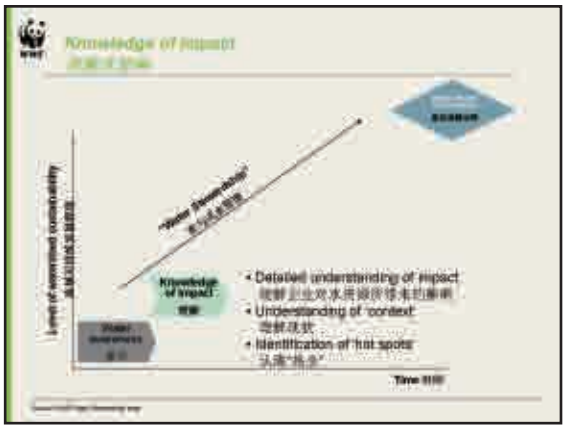
Ling Lin
Conservation Director, WWF China

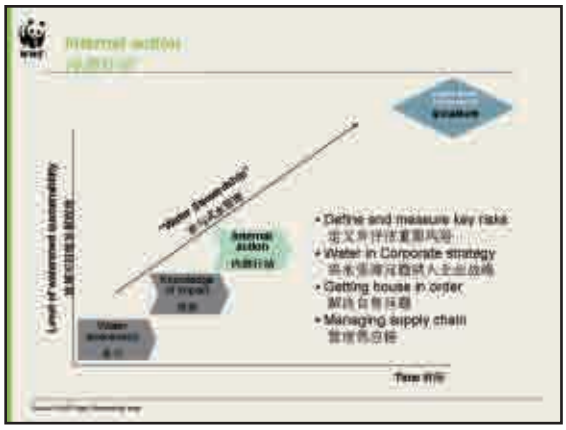


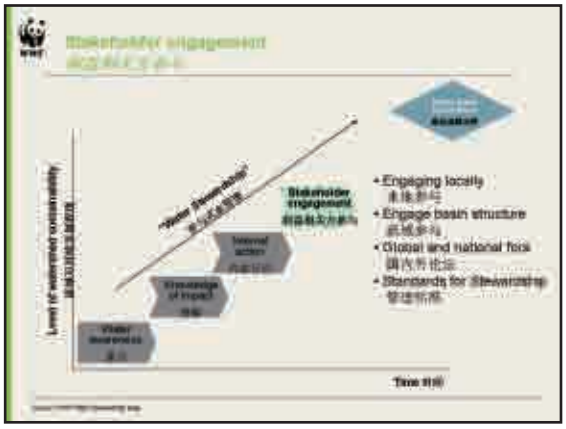


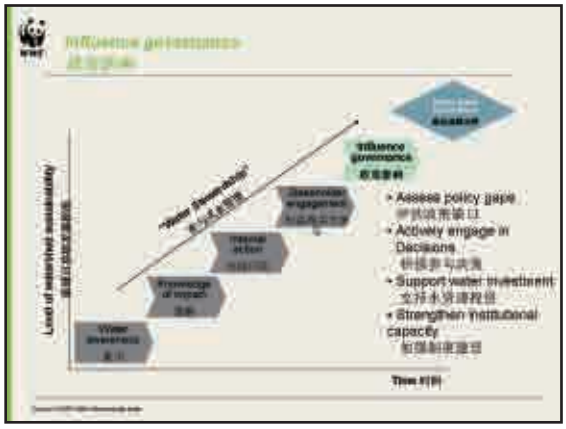

Water Stewardship: Making use for better space governance
Influence governance
Stakeholder engagement
Internal action
Knowledge of impact
Water awareness
Level of watershed sustainability
Time


Water awareness
• Understand the changing world of water
• Understand water dependence
• Acknowledgment of risks
Level of watershed sustainability
Time


Knowledge of impact
• Detailed understanding of impact
• Understanding of 'context'
• Identification of 'hot spots'
Level of watershed sustainability
Time


Internal action
• Define and measure key risks
• Water in Corporate strategy
• Getting house in order
• Managing supply chain
Level of watershed sustainability
Time


Stakeholder engagement
• Engaging locally
• Engage basin structure
• Global and national fora
• Standards for Stewardship
Level of watershed sustainability
Time


Influence governance
• Assess policy gaps
• Actively engage in Decisions
• Support water investment
• Strengthen institutional capacity
Level of watershed sustainability
Time


What have been done?

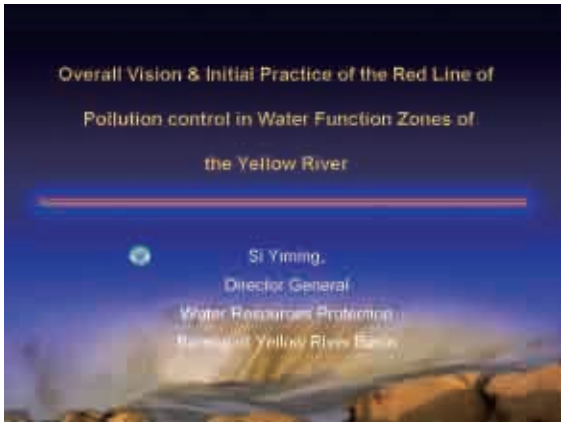

What have been done?
WATER FOOTPRINTING

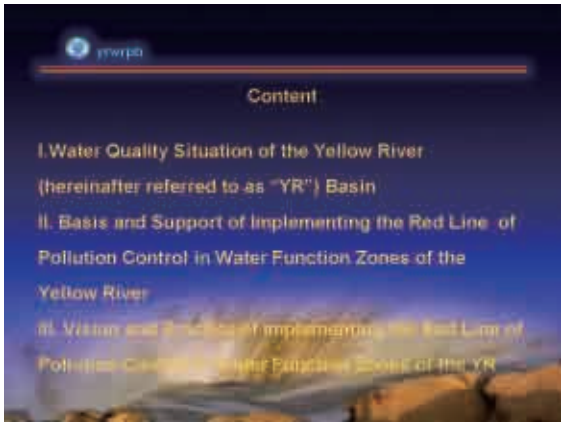

HSBC
NOKIA
SAB MILLER
LAFARGE
IKEA

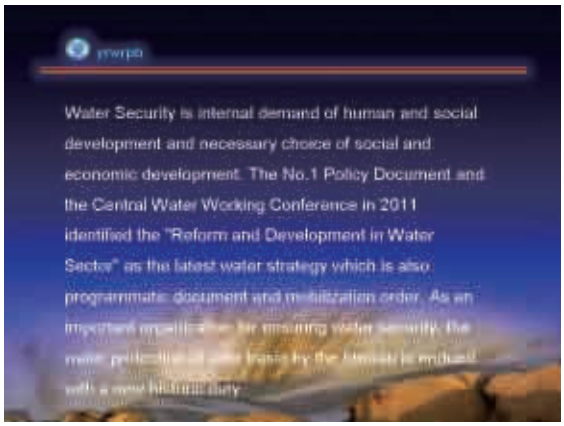

Thank you

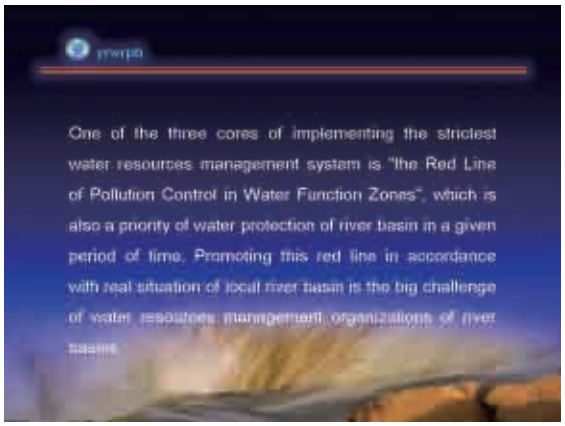
Overall Vision & Initial Practice of the Red Line of Pollution control in Water Function Zones of the Yellow River

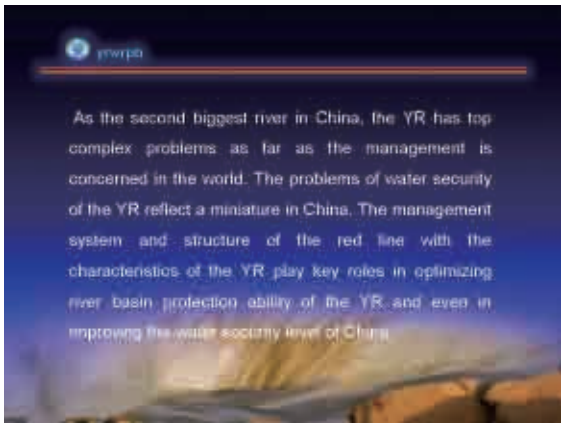
Si Yiming
Director General, Water Resources Protection Bureau of Yellow River Basin

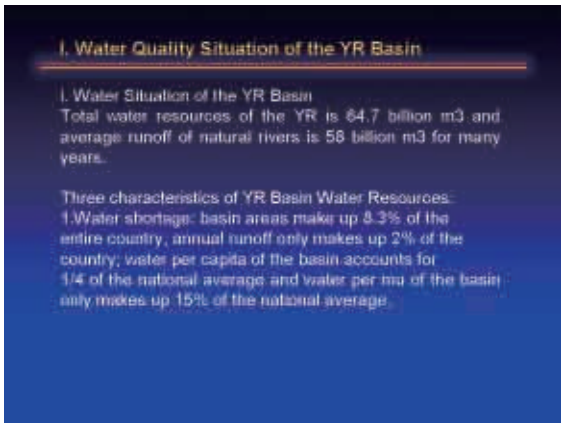












I. Water Quality Situation of the YR Basin

2.Big changes between annual runoff or different years:
The flood season of mainstream and tributaries is from July to October, accounting for 60% of total annual runoff. Since the recorded history of the YR, the dry seasons were taken place in 1922 – 1932, 1969 – 1974 and 1990 – 2000, with the runoff of 74%, 84% and 83% of the average norm for many years.

3.Uneven spatial distribution:
Most runoff of the YR is derived from Lanzhou City section and up-streams, its annual runoff makes up 61.7% of the country and its area only accounts for 28% of the overall YR area.

I. Water Quality Situation of the YR Basin

ii. Water Pollution Characteristics of the River Basin

The basin is rich in mineral and energy resources and formed with energy industries relying on resources to present the characteristics of "high consumption of energy and massive discharge of pollutants".

The current annual polluted water discharge of the YR is 4.3 billion tons. The COD discharges of petrochemical, coal and papermaking industries make up more than 80% of the total discharge. The attainment rate of basin wastewater fail to reach the standard and urban wastewater treatment rate is lower than the national average.

I. Water Quality Situation of the YR Basin

iii. Water Quality Change Trend of the River Basin

Since 2005, the water quality deterioration of the YR has been controlled. Quality of mainstreams of the YR has been improved and that of key tributaries even though has little change but less pollutants, particularly in Wei River and Luo River.

I. Water Quality Situation of the YR Basin

Reasons of Water Quality Improvement:

1.Issuing and implementation of new edition of "Water Law", "Water Pollution Control Law" and the national energy- saving and emission- reduction policies;

2.Implementation of water conservation and pollution control plans of the "11th Five-Year Plan";

3.Keeping total pollutants discharges and reducing pollutant concentration of the basin;

4.Equal attention paid to water quantity and quality based on the integrated regulation of the YR;

5.Raising channel environment capacity due to improving water requirement and water regulation.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of YR

Symbolized by the new edition of "Water Law" updated in 2002, the river basin water protection entered into a new stage with legal statue, reference and completed functions. The Yellow River Conservancy Commission & YR Basin Water Protection Bureau have implemented legal duties and cooperated with provinces in the basin and water/environmental sectors to control deterioration of water environment quality to form a basis and capacity support to implementing the red line of pollution in water function zones of the YR.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

1. YR water protection management system of coordinating river basins & regions or water & environmental protection sectors

Coordination of river basins & regions is a water protection management system formulated by the "Water Law" and formed by practice and development based on the unit of each river basin and jointly support of water and environmental protection sectors with achievements of sectors cooperation and information sharing.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Achievements: having cooperation with provincial water and environmental protection sectors to discuss important issues, develop jointly planning and share water quality monitoring information; establishment of management systems at all levels jointly with provincial water sectors to govern abstraction and outlets of the water function zones; working with water quality supervision sector of each province to set up framework of jointly guidance, sharing information and coordination.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

ii. Set up Water Function Zones and Water Protection Planning Systems of the River Basin

Based on the planning of Ministry of Water Resources in 2000, the water function zones were identified and each province approved administrative function zone. The "National Water Function Zones of Key Rivers and Lakes" issued by the State Council in 2011 presents 346 zones in the YR Basin.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

During "11th Five-Year Plan" period, the comprehensive planning regarding water and aquatic ecological protection, basin ecological restoration and water conservancy planning, water sources securities of the cities on the tributaries were completed.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

iii. Intensify Legal Management of Discharge Outlets in Water Function Zones

Outlets governance is the key of water function zones management. "Water Law"(2002) and "Discharge Outlets Supervision Regulations" (2004, MWR) provide legal guidelines. The establishment of strict approval of discharges outlets during the "11th Five Year Plan" period changed disordered management of outlets.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

The valuations of outlets were organized four times from 2007 to rectify violation behaviors. The YR was the first one to initiate overall examination of outlets with some achievements of laying foundation of supervising discharge outlets of rivers.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

iv. Water ecosystem protection and restoration

Some progress and improvement have been made on the protection and restoration of water ecosystem of the YR. Continuous flow regimes of the YR keep for 12 years, the ecosystem has been optimized owing to ecological flow of estuary delta of the YR, water transfer from the YR to Dian River, water source conservation and integrated management of Weihe River. There is also progress of water ecosystem protection and restoration of the pilots of Xi'an of Shaanxi Province.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

v. Improve water pollution emergency response mechanism

In 2003, YR Conservancy Commission was the first organization of setting up water pollution emergency response mechanism in water sector. Since then, the Commission, together with water and environmental protection sectors of the provinces in the basin, have effectively dealt with over 50 water pollution emergencies to establish support for water supply security.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

In 2011, "Framework on Information, Communication and Coordination for Water Pollution Emergency of Yellow River Basin" was signed by the YR Conservancy Commission and water and environmental protection sectors of eight provinces in the basin, which was a breakthrough and also important practice.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

vi. Further improvement of the water quality monitoring network system

At present, water quality monitoring network system has been completed in the YR Basin and there are 269 water quality monitoring stations built up by water quality monitoring agencies in the river basin.

The modern monitoring system of "combining regular monitoring and automatic monitoring, site and inspection monitoring, real-time and timing monitoring to strengthen supervisory monitoring of emergency response and water quality information management monitoring" was initially set up.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

vii. Upgrade modernization level and technologic supporting capacity of water resources protection

From the 21st century, modernization level and technologic supporting capacity of water resources protection have been optimized through construction of the Digital YR Project, automatic water quality monitoring system and study on major issues of the YR water resources protection.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

First digital monitoring center - the YR Water Conservation Monitoring Center was built up and applied to water conservation in 2004. It takes a leading position within the industry. Three application systems of water quality monitoring, supervision and management and emergency management and the 2nd Phase Program under development will upgrade the YR water protection information to a new level.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Two of the eight automatic stations are fixed on Huayuankou of the YR and Lijin completed in 2011 with high standard and the others in Lanzhou, Hejing and Tongguan built up this year will form an automatic water quality monitoring system of provincial boundary sections of the YR.

II. Basis and Support of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Researches on ecological demand of lower reaches of the YR, the YR Water Pollution Emergency Response Technology, the YR water quality monitoring and ecology-beneficial sediment and water regulation have made important progress and breakthroughs and many of them have been applied to the practice with remarkable benefits.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Implementation of the strictest water resources management system presents a profound reform of China's water resources management and an innovative practice.

"Regulations on Implementation of the Strictest Water Resources Management System" issued by the State Council in January 2012 formulates overall national institutional framework and overall target framework, "National Water Function Zoning of Major Rivers and Lakes (2011 to 2030)" approved by the State Council lays a legal basis of implementing the strictest water resources management system.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Upon the overall target of the strictest water resources management system, the control standards of key water function zones of the YR at different phases are:

60% by 2015

79% by 2020

95% by 2030

Water quality supervision coverage rate of key water function zones will be:

80% by 2012 and 80% by 2015

of which in trans-provincial areas: 100% by 2012

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Under overall institutional and target framework as well as complex conditions of the YR Basin, the aim of implementing the Red Line of Pollution Load requests not only to change ideology or strategic concept of the YR Basin water resources security, but also to update innovation and exploration of thinking, practice and experience of raising management level.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

i General Vision

Upon the "Regulations on Implementation of the Strictest Water Resources Management System" issued by the State Council and "National Water Function Zoning of Major Rivers and Lakes", the premise is improving combination of river basin and regional management of the YR water resources protection and actual content is to link water resource protection and pollution control planning; make top-level plans of red line management; evaluate pollutant load capacity of river basin; control total discharges and evaluation of water function zones; intensify setting up of water quality monitoring stations network and program system of water and aquatic ecological protection; strengthen research on basic rules and key technologies so as to form management model and work pattern of the Red Line of Pollution Load of water function zones of the YR Basin.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Process of promoting the red line management of pollution Load should be focused on development of relevant systems.

First, top-level designing which must focus on the water resources protection management system of combining river basins and regions at different levels or of different categories. It enables the river basin organizations to play four roles of "overall coordination, technical guidance, administrative enforcement and supervision and inspection" as well as to give full play of functional advantages and support to the local water authorities.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Second, solid foundation for an assessment indicators system in scientific, rational and workable manners that can clarify assessment and evaluation indicators and related overall target & aims at all stages of the red line management of pollution load to form a clearer and more sufficient basis.

Third, capacity building which establishes supervision and management and assessment of water quality monitoring and application technology research system and focuses on collection, classification and application of important information of the river basin for strengthening administrative enforcement, monitoring management and capacity building.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Fourth, more infrastructures focus on building up water conservation and aquatic ecosystem restoration project system regarding health of rivers and lakes.

In the process of promotion, it should highlight social management. Water resources protection is a public welfare action that presents concept and significance of social management. It must pay attention to the link with environmental sectors and other industries, but also to the participation of stakeholders and public supervision.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

ii. Initial Practice

1.Top-level Planning
Completing the top-level design of next 5 to 10 years of implementing the strictest water resources protection system of YR Conservancy Commission-implementation of the spirit of Central Water Working Conference and promoting water resources protection regulations of the YR.

Initiation of the new term planning of the YR Basin Water Conservation must emphasize on the red line management of pollution load to promote river and lake health, rational control index and water conservation and aquatic ecosystem restoration system.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

2.Building Basis of Promoting Red Line Management of Pollution Load
It is managed to complete the review, adjustment and determination of the water function zones of the YR Basin with the focus on decomposing basic work to meet water quality standards, collecting comments and reporting to superior departments and delivering additional regulations on river basin organizations.

The current undertaking is to implement assessment of pollutants- carrying capacity of water function zones of the YR Basin and total emissions control plans of different phases.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

3. Classification System Based on Supervision of Discharge Outlets

Identification of authorities and management scope of river basins and regions is the premise of establishing efficient monitoring management system.

It has completed the "Regulations on Administrative Authorities Division of Outlets Management of the YR Basin" and then submitted to the Ministry of Water Resources for the approval of implementation.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

4. Increase of Monitoring Coverage of Trans-river Basin Sections & Key Water Function Zones
In 2011, the coverage of provincial boundary section rose from 45.3% to 100% through the measures of "direct testing, joint construction and management and entrusted monitoring" after initiation of investigative monitoring of water quality of provincial boundary sections with provinces in the basin.
The plan of this year will rely on the implementation of "The Program of Water Resources Management and Monitoring Capacity Building" in order to complete water function zones and water quality monitoring network system of trans-provincial boundaries and approved by the State Council.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

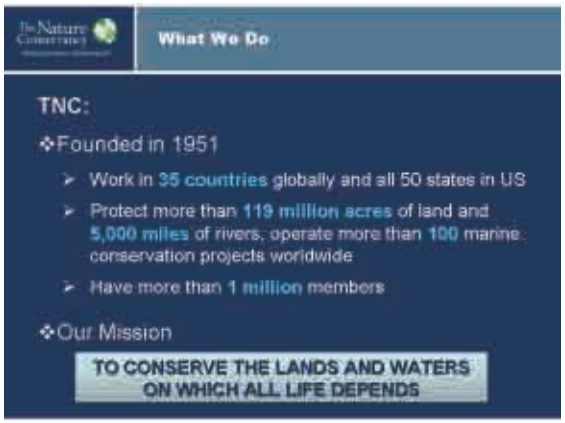
5. Evaluation of River and Lake Health and Research on Water Ecological Protection and Restoration
It will complete evaluation report of rivers and lakes health of Xiaolangdi Reservoir and the downstreams. The undertaking about water ecosystem evaluation of estuaries of the YR, development of the pollutant transport and dispersion model, study on ecological compensation mechanism and research and practice of water quality protection regulation of the lower stream of the YR will be deepened.

III. Vision and Practice of Implementing the Red Line of Pollution Load in Water Function Zones of Yellow River

Red line management of pollution load is an innovation but also complex systematic program.
Yellow River Basin Water Resources Protection Bureau is sincerely expecting the support and guidance of all leaders and experts. Under the leadership of superior departments, we will promote red line management of pollution load and make greater contributions to water security of the YR Basin and ecological civilization, together with water and environmental protection sectors of provinces in the basin.

Yangtze River Sustainability Fund

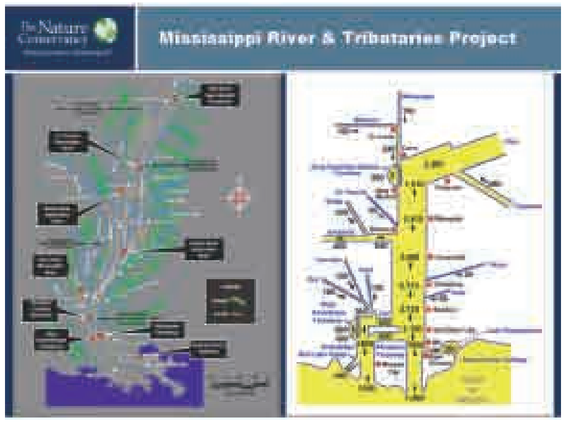
An Kai
The Nature Conservancy

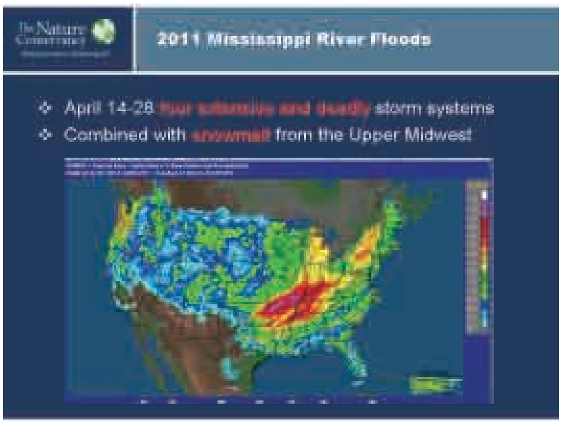


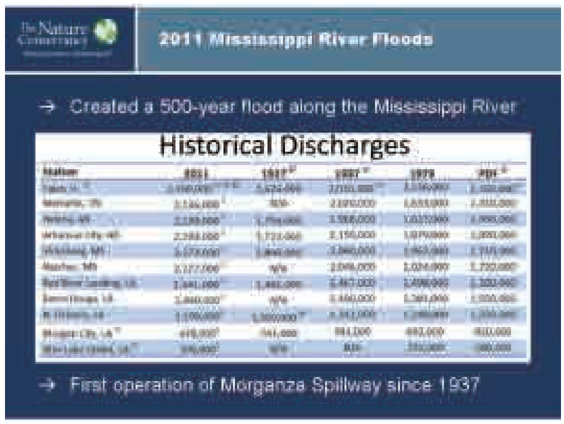

Yangtze River Project
-Demonstrating how dams can be built and operated more sustainably
-Designing a "hydropower sustainability fund" that will finance conservation and flood risk management work
-Restoring and reconnecting floodplains

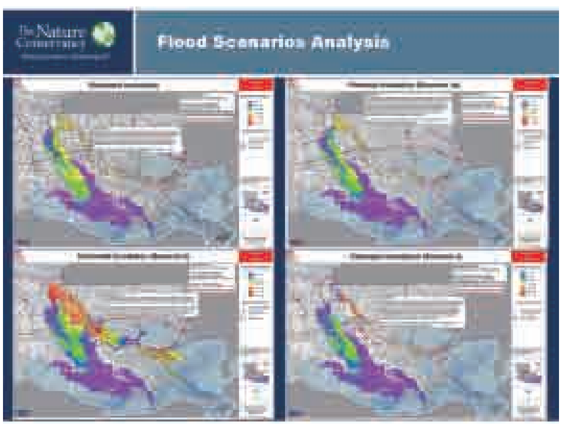

Great Rivers Partnership (GRP)
Length
River Basin
Outflow
Severe Floods
1954, 1998
1927, 2011

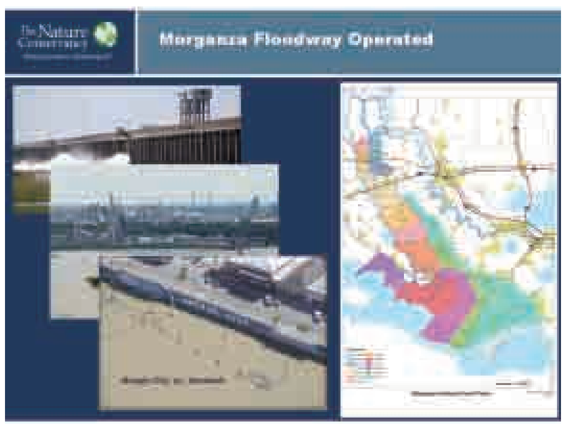

Mississippi River & Tributaries


Mississippi River & Tributaries Project


2011 Mississippi River Floods
April 14-28 four extensive and deadly storm systems
Combined with snowmelt from the Upper Midwest

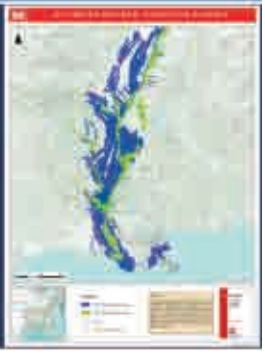

2011 Mississippi River Floods
Created a 500-year flood along the Mississippi River
Historical Discharges
First operation of Morganza Spillway since 1937


Flood Scenarios Analysis

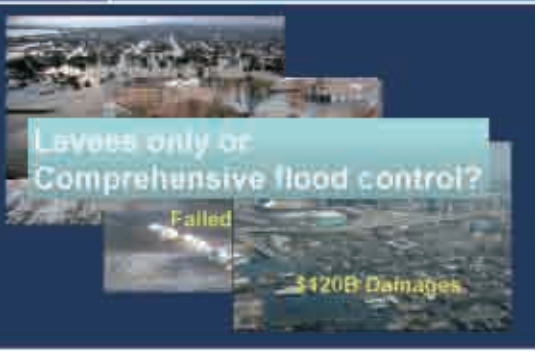

Morganza Floodway Operated

1927 Vs. 2011 Floods Lessons Learned

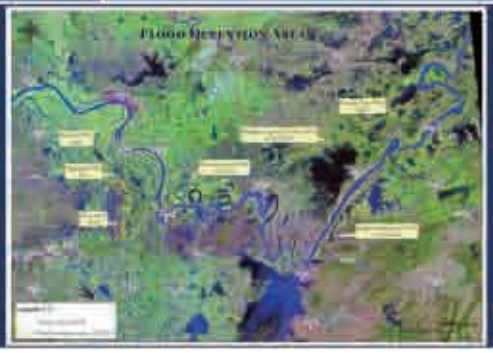
- 1927=68,000 km², 2011=26,300 km² over 40,000 km² protected
- More than $50 billion damages avoided
- The $13.8 billion investment to MR&T Project received 34 to 1 return to date, including $350 billion in flood damages prevent
- The System performed as designed but work is needed
- 2,200 km² used for floodways and backwater storage which is politically sensitive
- Communications are critical



New Orleans - 2005 Katrina



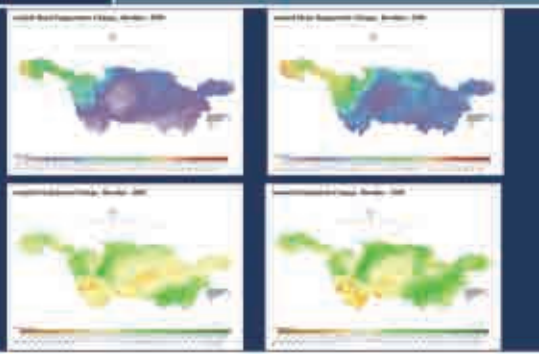
Flood Detection Areas in Yangtze River



Flood Detection Areas in Yangtze River

- Start to built in 1950's
- In Yangtze River Basin Flood Control Plan
  - Important component
  - Comprehensive response plan, including pre-warning system, relocation, emergency evacuation and post-disaster reconstruction
- However, due to the limit of [illegible]
  - Lack of management and maintenance
  - Hard to use, not even in 1998 Floods
- Especially after the build of dams like 3 Gorges

Climate Change



Yangtze River Sustainability Fund

Yangtze River Sustainability Fund

- Enhance Flood Control System by providing funding for
  - [illegible] management and maintenance
  - Flood control [illegible] strengthen
  - Compensation fund
- Generate more power
  - Additional revenue for company
  - Remission of summer electricity requirement

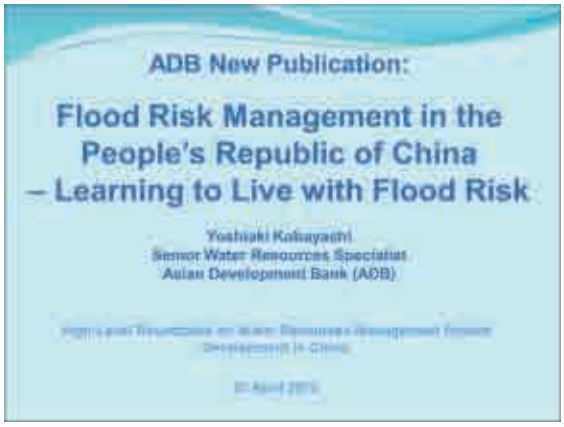
Yangtze River Sustainability Fund

Most important

- Ecological sustainability
  - Facilitate the protection and restoration of important lakes and wetlands
  - Relieve the problem of water re-storage of Cascade Reservoirs after flood season
  - Make full use of water resources
  - Ease the impact of spring and autumn on the natural hydrological processes, and make possible of the e-Flow

ADB New Publication:
Flood Risk Management in the People's Republic of China
-- Learning to Live with Flood Risk

Yoshiaki Kobayashi
Senior Water Resources Specialist, Asian Development Bank



Core of the new concept of flood management in the PRC

Flood Risk = Hazard x Exposure x Vulnerability

Flood Hazard

Modified mainly by structural measures

Exposure to Flood Hazard

Managed by land use controls

Vulnerability of People and Assets to Exposure

Modified by a range of nonstructural measures

A Key Lesson of Flood Risk Management

- Learning to live with flood risks

Flood risks cannot be eliminated entirely;
Should learn to accept some degree of the risks and, in return, derive benefits from floods (provision of opportunities for food and materials, sustenance of aquatic and riparian ecosystems, and richness of the whole river environment)

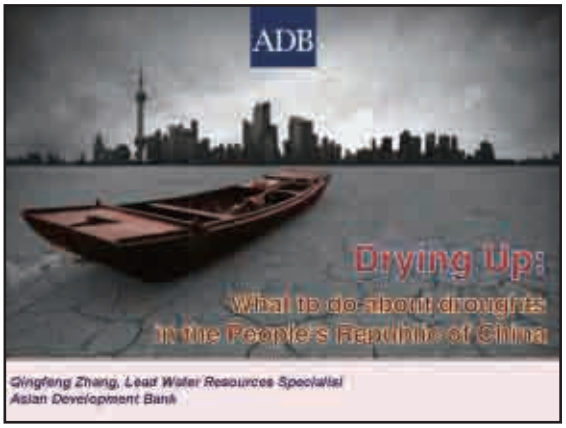
- Gain and promote a clear understanding of flood risks

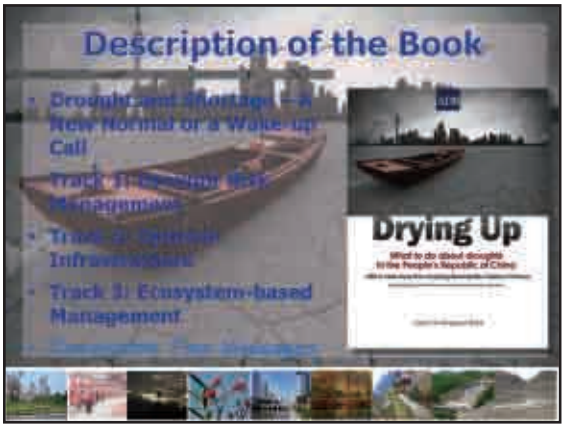
Quantifying and modifying the flood hazard, regulating exposure to the hazard, and reducing the vulnerability to damage and damage

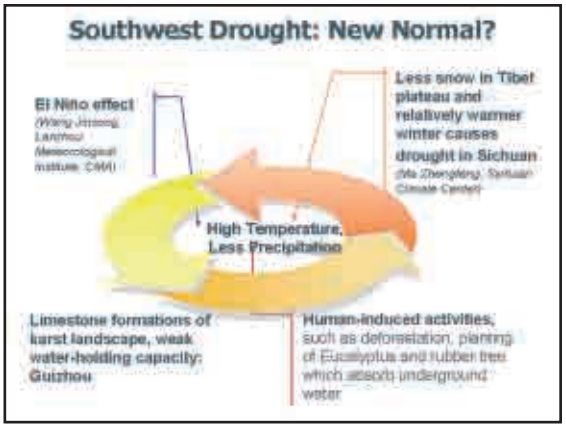
Thank You!
謝々

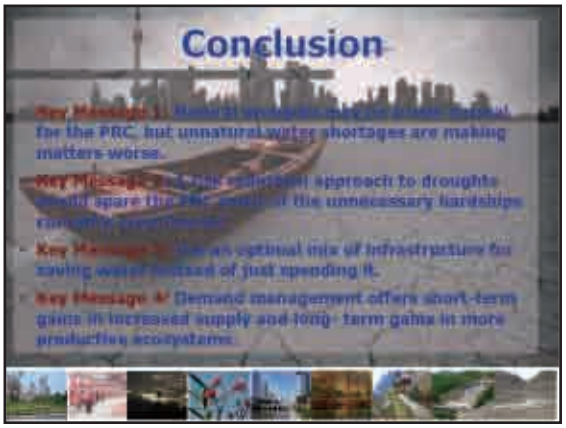
Drying Up:
What to do about droughts in the People's Republic of China

Qingfeng Zhang
Lead Water Resources Specialist, Asian Development Bank





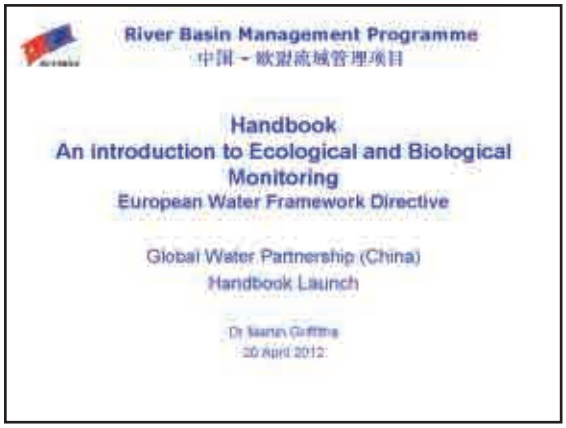


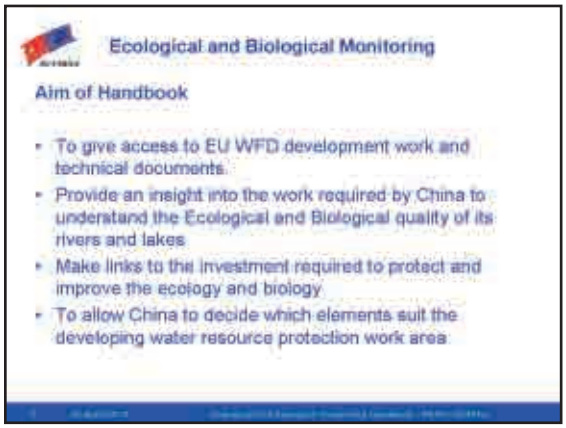

Conclusion
for the PRC, but unnatural water shortages are making matters worse.
matters worse.
Key Message 4: Demand management offers short-term gains in increased supply and long- term gains in more productive ecosystems.


ADB
Thank You !
Qingfeng Zhang, Lead Water Resources Specialist
Asian Development Bank

Handbook
An introduction to Ecological and Biological Monitoring
European Water Framework Directive

Martin Griffiths





Ecological and Biological Monitoring

EU Ecological and Biological Monitoring Guidance

- Thirty years + development of ecological and biological monitoring methods
- Ten years research and development since the introduction of the WFD
- EU Guidance at a number of levels
- The Handbook is the first time this information has been brought together

Ecological and Biological Monitoring

Handbook Aimed at

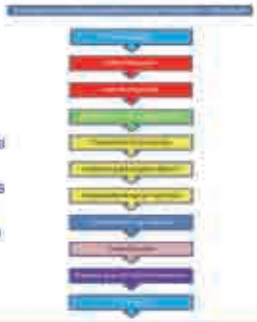
- Senior and middle managers and scientists engaged in river basin planning and water resource protection
- Policy makers influencing water resource protection
- Specialists needing to access technical information and detail
- Groups planning to undertake monitoring programmes in the field
- Lecturers and researchers studying at work or in Universities

Easy access at any level – don't be scared!

Ecological and Biological Monitoring

Handbook Structure

- Easy Access
- Read the bits you are interested in
- Full original documents will be available in the CD Annexe
- Adapt and adopt the elements relevant to you
- Handbook broadly follows the WFD structure



Linked to Chishui River Study

- Tributary to the Yangtze River
- Rare and Endemic Fish Reserve
- 100 km protection zone upstream of Maotai distilleries
- Piloting use of benthic macro-invertebrates for bio-monitoring in China
- Benthic Macro-invertebrates:
  - Snails
  - Mussels
  - Worms
  - Leeches
  - Larvae of many insects
  - etc.

Opportunities for Future Co-operation

- Develop biological and ecological methodologies suitable for China
- Develop monitoring programmes
- Develop the skills and infrastructure necessary to implement this in China
- Develop biological and ecological databases and assessment tools
- Develop links to water resource targets
- Undertake and improve the underlying science
- Possible assistance to with MWR Healthcheck Pilot

The China Europe Water Platform will provide one mechanism

Conclusions

We hope this will be useful to you

Thank you to all who have helped produce this

Concluding Remarks at the High-level Roundtable on Water Resources Management System Development in China

Dong Zheren
Standing Vice Chair of GWP China

Ladies and gentlemen,

The High-level Roundtable on Water Resources Management System Development in China is now going to be over. Mr. Wang Shucheng, Chair of GWP China, summarized the meeting to stress the issues in China from an overall and macro perspective. Please allow me to make brief concluding remarks.

The invited and addressed at the meeting are Mr. Chen Lei, the Minister of Water Resources; Mr. Du Ying, Vice Minister of the National Development and Reform Commission; Mr. Wan Bentai, Chief Engineer of the Ministry of Environmental Protection and Dr. Markus Ederer, Ambassador of EU Delegation to China and other VIPs. The keynote speeches were respectively presented by Mr. Chen Mingzhong, Director General of the Department of Water Resources Management, Ministry of Water Resources and Mr. Zhao Hualin, Director General of the Department of Total Pollutants Control, Ministry of Environment Protection. There were seven national and international invited specialists who delivered their presentations.The participants of this event represented the diversity of China, including the leaders from the related ministries under the State Council, representatives of the UN agencies to China, the embassies in China, the international NGOs, the local governments, universities, research institutes, enterprises and news media.More than 140 participants from over 70 organizations joined the discussions.

This meeting was resulted with warm discussions on water resources management system in China and the following common understanding and consensus were reached :

First, water scarcity and water pollution are serious challenges to China. The No.1 Policy Document issued by the Chinese Central Government last year and the relevant regulations and policies are the strategic measures to these challenges.The “three red lines” are the targets of modern water resources management to promote the development, protection and conservation of water resources and play a significant role in the protection of water resources and water environment;

Second, the implementation of No.1 Policy Document and the related policies is facing big

challenges.Thus, we should promote further reform of mechanisms and systems as well as formulate the supporting laws and regulations. The “three red lines” can be completed by formulating the executive rules, enhancing the technical standards, fixing pricing indicators and technical systems. The supervision systems of enforcement and the rules and mechanisms of reward and penalties must be completed and improved.

Third, the implementation of the strictest water resources management system involves diverse water-related governmental agenciesparticularly the ministries of water, environmental protection and others. The important element of implementing the No.1 Policy Document is how to establish coordination mechanisms. Further more,, the widespread participation of the public, enterprises and NGOs should be promoted.

Fourth, the key technical supports to the “three redlines” are national information monitoring system of water resources, water environment and water ecology and the evaluation system of lake and river health.

Fifth, the important element of implementing the strictest water resources management system is to expand international cooperation and share advanced concepts, models and technologies of water management among all countries. The EU-China Water Platform stands for as an good beginning and example.

At last, on behalf of the organizers of the meeting, I would like once again to extend my thanks to your participation. I also sincerely expect that all friends from different social sectors and various countries will retain your attention and supports to water resources management in China and also work together to address challenges of resources, environment and the global climate change.

We have already made successful completion of the meeting agenda. Now, I am announcing that the High-level Roundtable on Water Resources Management System Development in China is wrapped up successfully today.

Thank you very much!

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