



中国农村水利发展战略与展望

Development Strategy and Prospect of Rural Water Conservancy in China

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1、中国农村水利发展现状

Status of Rural Water Conservancy in China

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1、中国农村水利发展现状

Status of Rural Water Conservancy in China

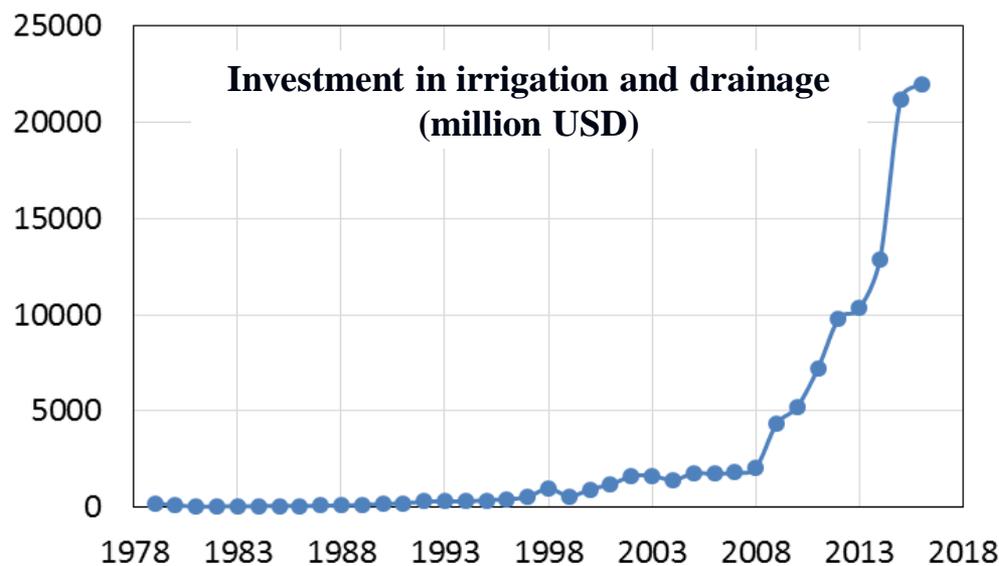
(1) 灌溉排水投资

Investment in Irrigation and Drainage

2016年完成灌溉除涝投资219.76亿美元，是2010年的4.2倍，是2000年的23倍。

The investment in irrigation and drainage was \$ 21,976 million in 2016, which was 4.2 times that of 2010, 23 times that of 2000.

历年灌溉排水投资完成额（百万美元）



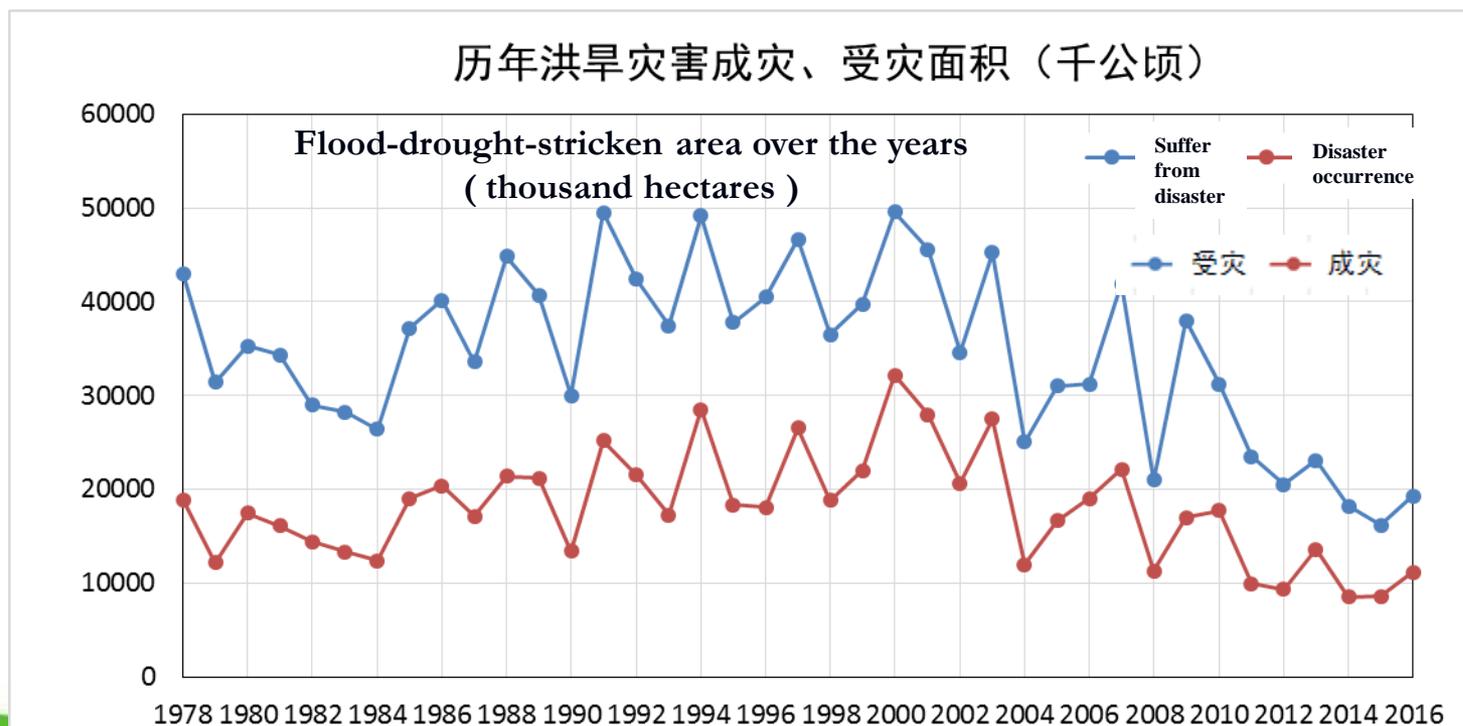
1、中国农村水利发展现状

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(2) 洪涝旱灾害 Flood and drought disasters

2000-2010年, 年均因洪涝旱受灾面积3447万公顷, 年均粮食减产4000万t, 占同期粮食年均总产量的8.4%。2011年后年均受灾面积2013万公顷, 损失有降低的趋势。

In 2000-2010 years, the average annual flood-drought-stricken area was 34,470 thousand hectares. The average annual losses of grain production was 40,000 thousand ton, which accounted for 8.4% of the total annual grain output in the same period. After 2011, the average annual disaster area is 20,130 thousand hectares, and there is a downward trend in losses.



1、中国农村水利发展现状

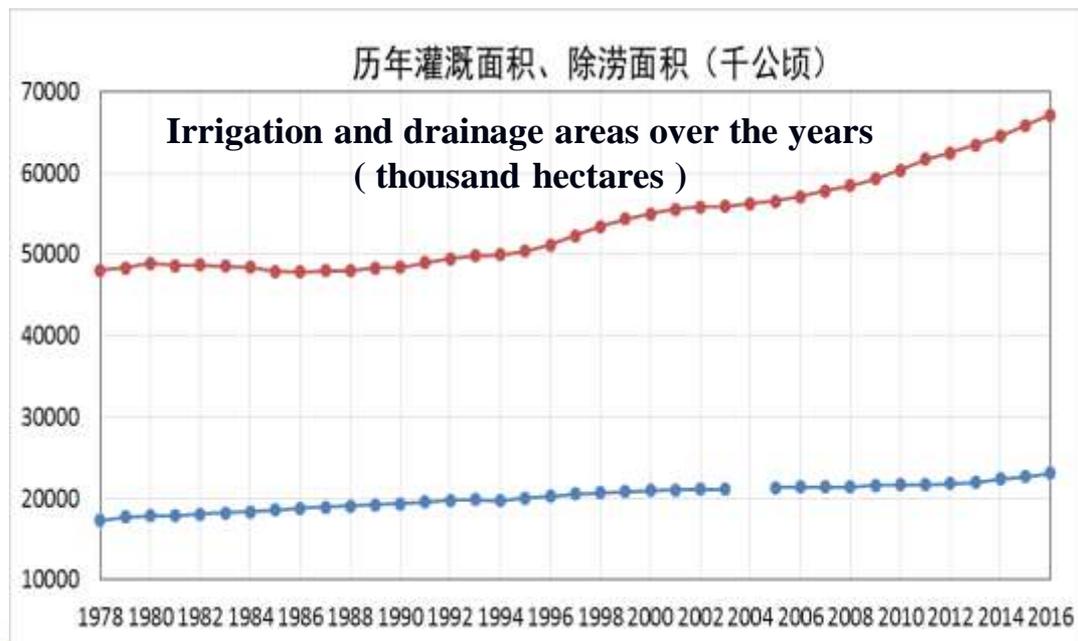
Status of Rural Water Conservancy in China

(3) 灌溉排水发展 Irrigation and drainage development

2016年耕地灌溉面积达到6714万公顷，较2010年增679.3万公顷，年均净增113.2万公顷；较2000年增加1212.7万公顷，年均净增75.7万公顷。2016年除涝面积达到2306万公顷，较2010年增加134.4万公顷，年均净增8.4万公顷；较2000年增加207.7万公顷，年均净增13.0万公顷。

Irrigation area of farmland reached 67,140 thousand hectares in 2016, which increased by 6,793 thousand hectares compared with 2010, and with an average annual increase of 1,132 thousand hectares. In the same way, it increased 12,127 thousand hectares compared with 2000, and the average annual increase is 757 thousand

hectares. Drainage area reached 23,060 thousand hectares in 2016, which increased by 1,344 thousand hectares compared with 2010, and with an average annual increase of 84 thousand hectares. In the same way, compared with 2000, it increased 2,077 thousand hectares, and the average annual increase is 130 thousand hectares.



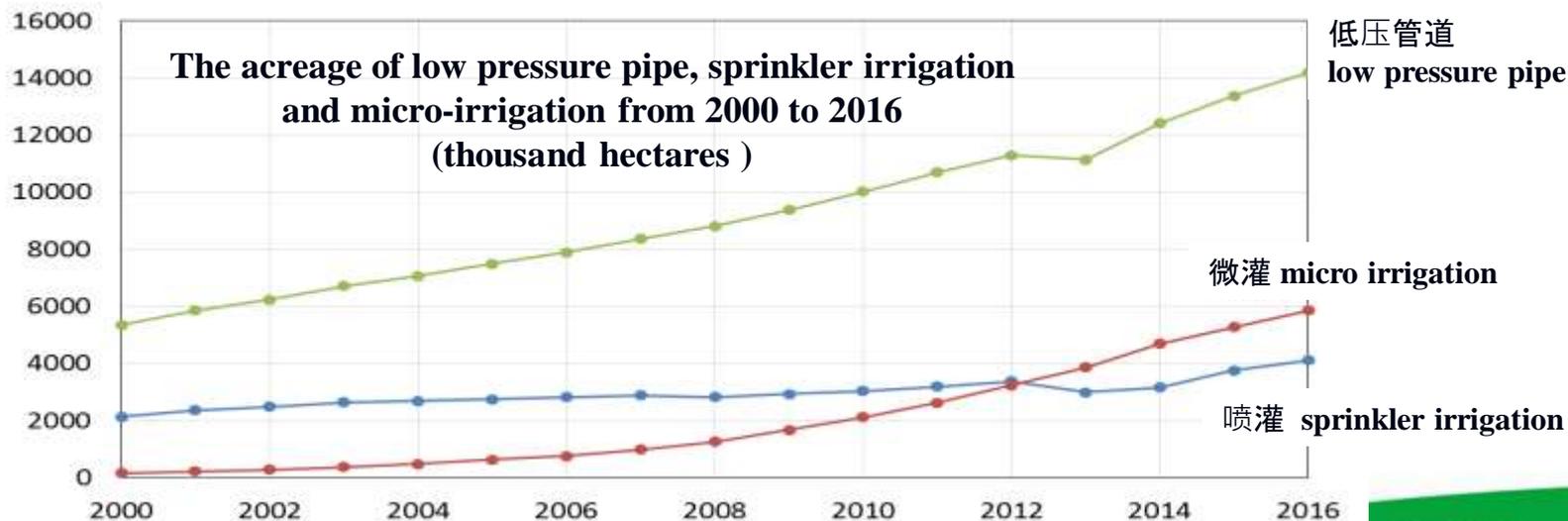
1、中国农村水利发展现状

Status of Rural Water Conservancy in China

2016年节水灌溉面积达到3284.7万公顷，较2000年增加了1645.8万公顷，翻了一番，年均增长4.4%。微灌面积增长最快，年均增长26.6%，喷灌相对较慢，年均增长仅为4.2%，低压管道灌溉面积年均增长6.3%。灌溉用水效率54.2%。

In 2016, the area of water-saving irrigation has doubled and reached 32,847 thousand hectares, with an increase of 16,458 thousand hectares compared with 2000, average annual growth rate was 4.4%. The area of micro-irrigation increased with the fastest speed, the average annual growth rate was 26.6%. Sprinkler irrigation was relatively slow, with an average annual growth of only 4.2%. Low pressure pipe irrigation area increased by 6.3% annually. The Irrigation water efficiency was 54.2%.

2000-2016年低压管道、喷灌、微灌面积（千公顷）



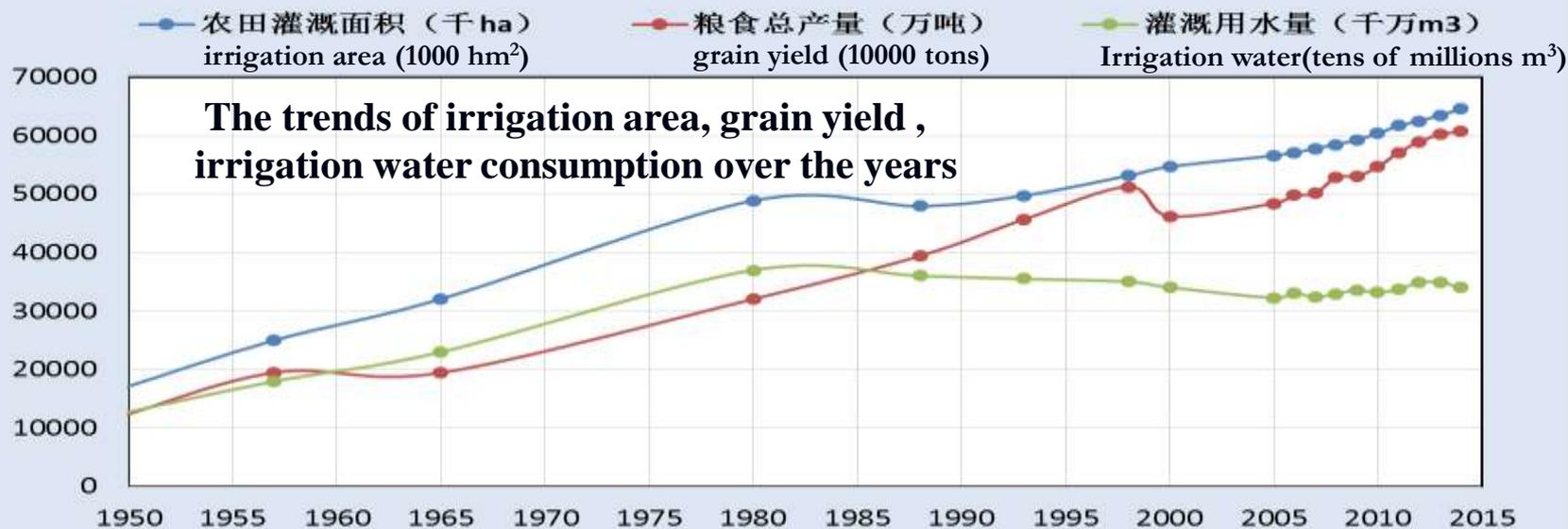
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1985年以来，全国耕地灌溉面积由4793万公顷增加到2016年的6714万公顷。由于发展节水灌溉，灌溉用水量基本没有增加，基本维持在3400-3600亿m³。

Since 1985, the irrigation area of farmland has increased from 47,930 thousand hectares to 67,140 thousand hectares in 2016. Due to the development of water-saving irrigation, irrigation water consumption has basically not increased. The annual water consumption is basically stable with 3400-3600 billion cubic meters.

历年农田灌溉面积、粮食产量、灌溉用水量变化



(4) 农村供水排水 Rural water supply and drainage

2016年底全国集中式供水人口受益比例由2005年底的40%提高84.1%，农村自来水普及率达到79%。规模化供水工程达标率达95.4%，小型工程达标率84.7%，城镇自来水管网覆盖行政村比例达30.5%。

By the end of 2016, the proportion of population benefited from centralized water supply increased to 84.1%, compared with 40% at the end of 2005; the rate of tap water use in rural areas reached to 79%. The percentage of large-scale water supply works with standard level was 95.4%; and the percentage of small-scale water supply works with standard level was 84.7%. The coverage of tap water pipe network reached to 30.5% of administrative villages.

农村生活污水排放量按照生活用水总量的40%-90%计算，2016年全国农村生活污水排放量达到56-125亿m³，52.62万个行政村，生活污水处理的村庄仅占20%，且不同区域处理水平相差较大（中国科学报，2018）。

Assuming that rural domestic sewage discharge accounts for 40-90% of the total domestic water consumption, the national domestic sewage discharge in rural area reached to 5.6-12.5 billion m³ in 2016. Among 526,200 administrative villages, only 20% of the villages were treated with domestic sewage, and the treatment level varied greatly in different regions. (CHINA SCIENCE DAILY, 2018)

5、存在问题 Problems

- ◆ 抗御水旱灾害能力不足
Insufficient ability to control floods and droughts
- ◆ 农村水利设施薄弱
Weak facilities of rural water conservancy
- ◆ 用水效率不高
Low water use efficiency
- ◆ 管理与服务能力不强
Inefficient management and service

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

(1) 乡村振兴战略对农村水利新要求

Rural Revitalization Strategy makes new requirements to rural water conservancy

乡村振兴战略目标 **Objective of Rural Revitalization Strategy :**

产业兴旺、生态宜居、乡风文明、治理有效、生活富裕

Industry flourishing, Ecological and livable, local custom civilization,

Governance efficiency, Life prosperous

2020年，乡村振兴的制度框架和政策体系基本形成，全面建成小康社会的目标如期实现。

By 2020, Institutional framework and policy system for Rural Revitalization will be basically formed, and overall completion of a well-off society will achieve on schedule.

2022年，乡村振兴的制度框架和政策体系初步健全，乡村振兴取得阶段性成果。

By 2022, Institutional framework and policy system of Rural Revitalization will be preliminarily perfected, and periodic progress will be made.

2035年，农业农村现代化基本实现，生态宜居的美丽乡村基本实现。

By 2035, Modernization of agriculture and rural areas will be basically realized, and the ecological, livable and beautiful countryside will be basically realized.

2050年，乡村全面振兴，农业强、农村美、农民富全面实现。

By 2050, Rural revitalization, strong agriculture, beautiful countryside, and prosperous farmers will be realized.

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

(2)农村水利现代化-新时代的战略选择

Modernization of rural water conservancy -- a strategic develop route in the future

农村水利现代化：以为农村生活、农业生产、农村生态“三生”服务为目的，用人与自然和谐的现代理念指导农村水利建设，用现代科技与技术引领农村水利发展，用先进技术和先进设备打造农村水利设施，用现代管理制度与先进管理手段提高管理与服务能力，实现“安全可靠、设施完备、管理先进、用水高效、生态良好”的农村水利现代化目标。

Modernization of rural water conservancy : In the purpose of serving rural life, agricultural production and rural ecological, **guide the rural water conservancy construction with the modern idea of harmonious coexistence between man and nature, lead rural water conservancy development with modern technology, build rural water conservancy facilities with advanced technology and equipment, use modern management system and advanced management means to improve management and service.**

The goal of rural water conservancy modernization: **reliable security, complete engineering facilities, modern and advanced management, water saving and high-efficient water use, and good ecological environment in rural area.**

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

(3) 农村水利发展战略 Development strategy of Rural water conservancy

A、升级改造农田灌溉排水工程 To upgrade farmland irrigation and drainage projects

◆ 开展大中型灌区续建配套节水改造与现代化建设，新建一批“设施完善、管理先进、节水高效、生态良好”的节水型、生态型现代灌区。

To carry out rehabilitation and modernization of large and medium-sized irrigation districts, and build a number of water-saving and ecological modern irrigation districts with "complete engineering facilities, modern and advanced management, water saving and high-efficient water use, and good ecological environment".

◆ 实施大中型灌排泵站更新改造。

To carry out renovation and rehabilitation of large and medium-sized irrigation and drainage pumping stations.

◆ 实施小型农田水利设施达标提质改造。

To carry out standard upgrading of small-sized irrigation and water conservancy facilities.

◆ 推进灌区管理现代化，提高灌区管理智能化、信息化水平。

To promote modernization of irrigation district management and improve the intelligence and informatization level of irrigation district management .

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

B、实施国家农业节水行动，建设节水型乡村

To implement national agriculture water-saving actions, build water-saving countryside

◆ **加快实施农业节水工程，大力发展区域规模化管道输水地面灌、喷微灌。强化节水灌溉工程与农艺、农机、生物、管理措施相融合。**

To speed up implementation of agriculture water-saving projects, large-scale pipeline irrigation and micro-irrigation. To integrate water-saving irrigation projects with agriculture, agriculture machinery, biology and management measures.

◆ **将农业用水总量指标分解到各灌区，实施农业灌溉用水总量控制和定额管理，建立农业节水长效机制和政策体系。**

To decompose total agriculture water use index to irrigation districts, implement total water use control and quota management, establish long-term effective mechanism and policy system of water-saving in agriculture .

◆ **加大农业节水技术、产品研发和推广。**

To increase research and scale up of agriculture water-saving technology and products.

◆ **明晰农业水权，实施农业水价综合改革，建立精准补贴和节水奖励机制。**

To clarify rights of agriculture water, implement comprehensive reform of agriculture water management, and establish a precision subsidy and water-saving reward mechanism.

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

C、提升农村农业洪涝旱灾害防御能力

To improve ability of flood and drought control

- ◆ 构建大中小微工程结合、骨干和田间工程衔接的农村水利基础设施网络。

To construct network connecting large, medium, small and micro, also connecting main and field rural water conservancy infrastructure.

- ◆ 加强中小型水源工程建设和抗旱应急能力建设。

To strength construction of medium and small water source projects and drought-resisting emergency response capability .

- ◆ 完善农村防洪排涝抗旱减灾体系。

To improve flood control, Waterlogging and drought resistance and disaster reduction system in rural areas .

- ◆ 加快农村基层防汛预报预警体系建设。

To speed up construction of flood control forecast and warning system at the grass-roots level.

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

D、系统治理农村山水林田湖草，维护生态健康。

To systematically treat mountains, waters, forests, croplands, lakes and grasses in rural areas so as to maintain ecological health

- ◆ **保护和恢复乡村河湖、湿地生态系统，推进退田还湖还湿、退圩退垸还湖。**

To protect and restore the rural rivers and lakes, wetland ecosystem, and to promote the returning of the fields to the lakes and wetlands.

- ◆ **加强农村河塘清淤整治，构建循环通畅的河湖水网体系。**

To strengthen the dredging and remediation of rural rivers and ponds, and to build a healthy river and lake water network system.

- ◆ **实施农村水土流失综合治理、生态清洁小流域建设。**

To implement integrated rural water and soil erosion management and small ecological health watershed construction.

- ◆ **加强农村河湖管理保护，落实乡级、村级河长湖长责任制，推动村民共治，加强对水源涵养区、蓄洪滞涝区、滨河滨湖带的治理与保护。**

To strengthen the management and protection of rural rivers and lakes, and to implement the rivers and lakes chief system at the township and village levels, to promote the villagers' joint governance, and to strengthen the governance and protection of water conservation areas, flood storage areas and riverside and lakeside areas.

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

E、保障农村饮水安全，开展农村生活污水治理

To safeguard rural drinking water safety and to carry out rural domestic sewage treatment

- ◆ 实施农村饮水工程升级改造，全面提升农村饮水安全保障水平。

To implement the rehabilitation and upgrading of rural drinking water projects, to comprehensively improve the safety level of rural drinking water supply.

- ◆ 加强农村饮用水水源地保护。

To strengthen the protection of rural drinking water sources.

- ◆ 梯次推进农村生活污水治理，有条件的地区推动城镇污水管网向周边村庄延伸覆盖。人口密集村庄建设集中污水处理厂，人口少的村庄建设户用污水处理设施。逐步消除农村严重污染水体。

To promote rural domestic sewage treatment of step by step, and it will be promoted that the urban sewage pipe network in the qualified areas is extended to the surrounding villages. Centralized sewage treatment plant will be build in densely populated village, and household sewage treatment facility in small village. It will eliminate serious pollution of water bodies in rural areas gradually.

2、新时代农村水利发展战略

Development Strategy of Rural Water Conservancy in the future

F、提升管理能力与现代化水平

To improve management ability and modernization level

◆ 深化农村水利工程产权制度与管理体制改革，鼓励农民、农村集体经济组织、用水合作组织和新型农业经营主体参与农村水利建设与管理。

To promote reform of the property rights system and management system of rural water conservancy projects, it will encourage farmers, rural collective economic organizations, water cooperation associations and new style agricultural management entities to participate in the management of rural water conservancy construction.

◆ 落实水利工程管护经费，健全基层水利服务体系和用水户协会等群管组织，促进工程长期良性运行。

To implement management and maintenance funds for water conservancy project , to improve water conservancy service system at grassroots level and WUA's, and to promote long-term benign operation of the project.

◆ 积极鼓励和规范社会资本参与水利建设与运营。

To encourage and standardize social capital to actively participate in water conservancy construction and operation.

◆ 推进智慧灌区、智慧水厂建设，大幅提升农村水利信息化水平。

To promote the construction of smart irrigation districts and smart water plants, and to greatly upgrade information management of rural water conservancy.

3、农村水利发展展望 Development Prospect

根据近年来发展速度，结合乡村振兴战略实施，预测农村水利发展分阶段发展目标如下：
The predicted development goals of rural water conservancy are as follows:

内容/content	2016	2022	2035	2050
总体展望 General Prospect		<p>◆ 农村水利基础设施网络基本形成 Infrastructure network of rural water conservancy will have been basically formed</p> <p>◆ 乡村水治理体系和治理能力现代化取得进展 Modernization of rural water management system will have been made great progress</p> <p>◆ 全面解决贫困人口饮水安全问题，供水保障水平进一步提高。 Drinking water safety system will be comprehensively constructed in the poor areas, and water supply security will have been further improved.</p>	<p>◆ 农村水利现代化基础设施网络基本建成 Modern Rural water infrastructure network will have been basically constructed.</p> <p>◆ 现代化智能水管理体系基本建成 The modern intelligent water management system will have been basically completed</p> <p>◆ 城乡供水一体化基本实现，乡村饮水安全得到全面保障。 The integration of urban and rural water supply will have been realized basically and the rural drinking water safety will have been fully guaranteed.</p>	<p>◆ 全面实现农村水利现代化 Rural water conservancy modernization will have been fully realized</p> <p>◆ 农业水资源利用效率和效益总体达到世界领先水平 Agricultural water use efficiency and general efficiency will have reached the world's leading level</p> <p>◆ 农村水生态环境质量达到优良 The rural water ecological environment will have been healthy.</p>

3、农村水利发展展望 Development Prospect

农村水利发展关键指标

内容/content	2016	2022	2035	2050
农村自来水普及率 Rural tap water penetration rate (%)	79	85	90	92
全国耕地灌溉灌溉面积 (千公顷) The cultivated land irrigation area (Thousand hectares)	67140	69333	70000	73333
低压管道、喷微灌灌溉面积 (千公顷) Low-pressure pipeline and micro-sprinkler irrigation areas(Thousand hectares)	19400	26667	33333	40000
灌溉水利用率 Irrigation water efficiency (%)	54	56	>61	>65

谢 谢

Thank You

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