

# IRRIGATION & DRAINAGE for FOOD SECURITY

CHINA COUNTRY PAPER

MWR / CNCID  
September 2024, Sydney





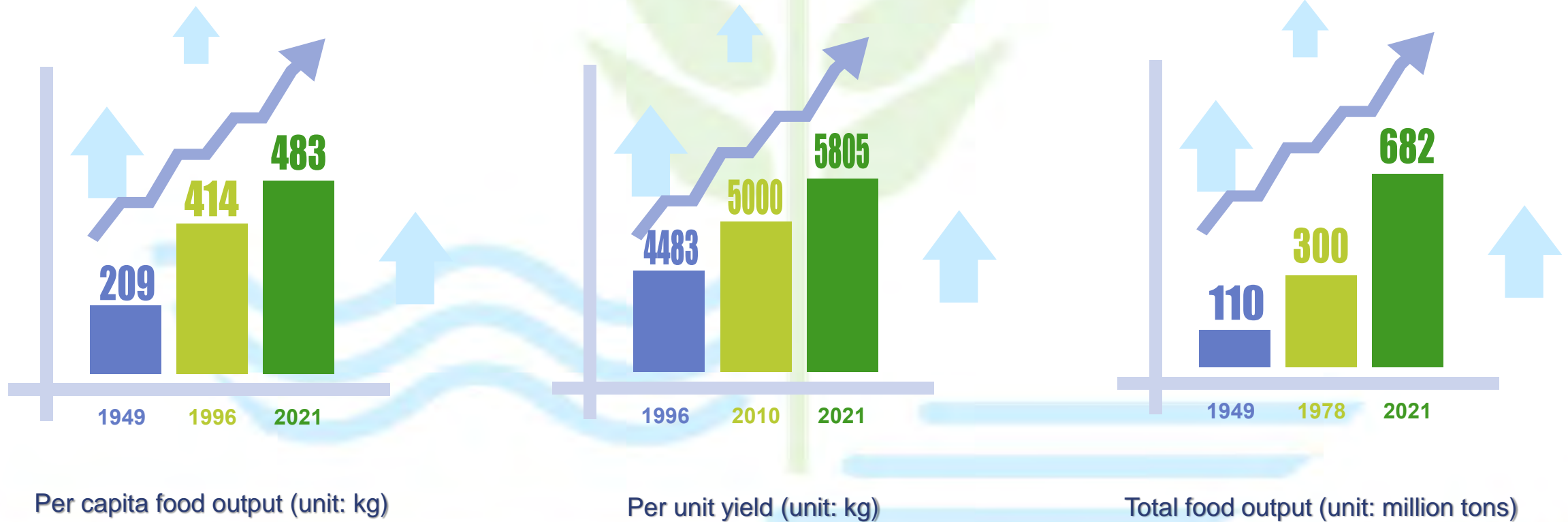
# **/01** China's Achievements in Ensuring Food Security

**75<sup>th</sup> IEC Meeting & 9<sup>th</sup> Asian Regional Conference**  
1-7 September 2024, Sydney, Australia

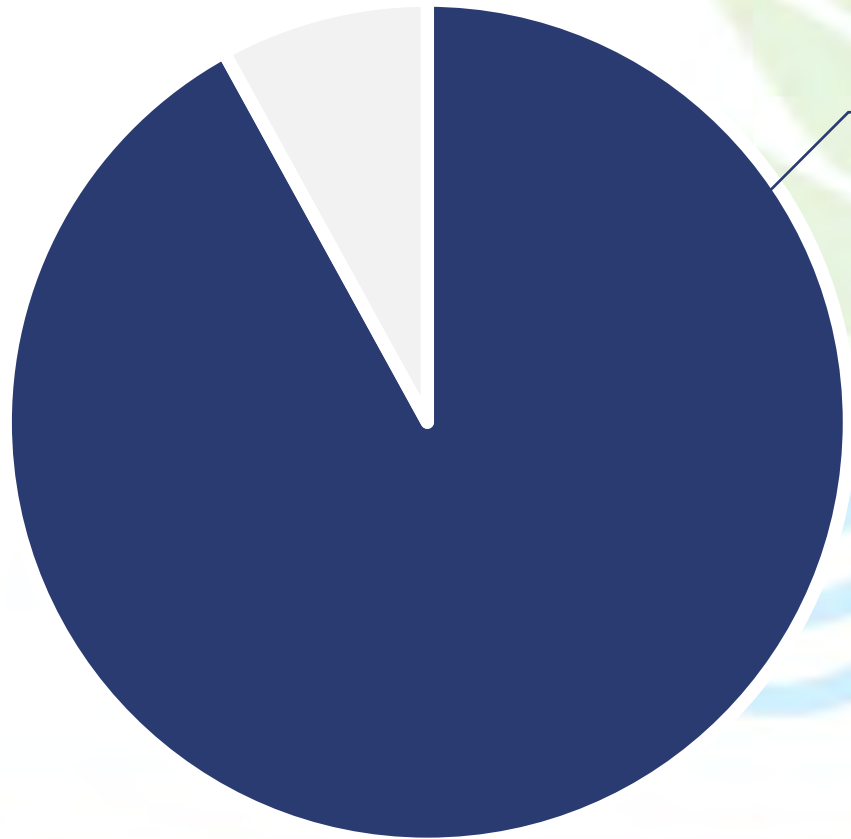


ICID-CHD

# Steady Increase in Food Production



# Self-Sufficiency in Grain Supply



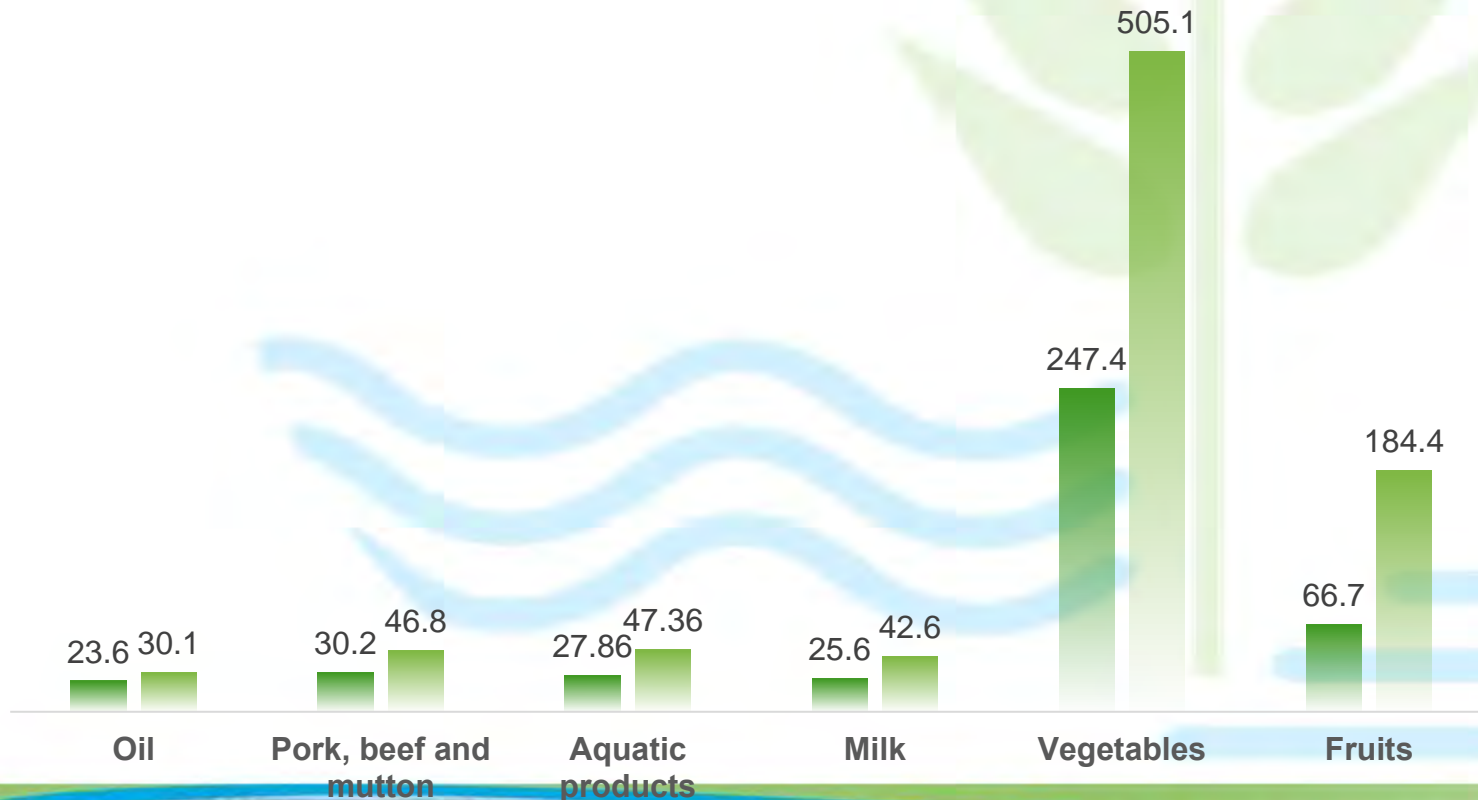
Grain output in 2021 reaching **632** million tons, **92%** of total food output

## China ensures absolute security of staple grains

In recent years, with rice and wheat output meeting domestic needs, China is fully self-sufficient in food supply, and the main driver of food imports and exports is to satisfy the need for variety.

# Improved Nutrition for Residents

Comparisons of per capita shares of various foods, 1996 v.s. 2021 (unit: kg)



**Improved Nutrition**

Average daily <b>ENERGY</b> intake of a standard person	2,172 kcal
Average daily <b>PROTEIN</b> intake of a standard person	65g
Average daily <b>FAT</b> intake of a standard person	80g
Average daily <b>CARBOHYDRATE</b> intake of a standard person	301g

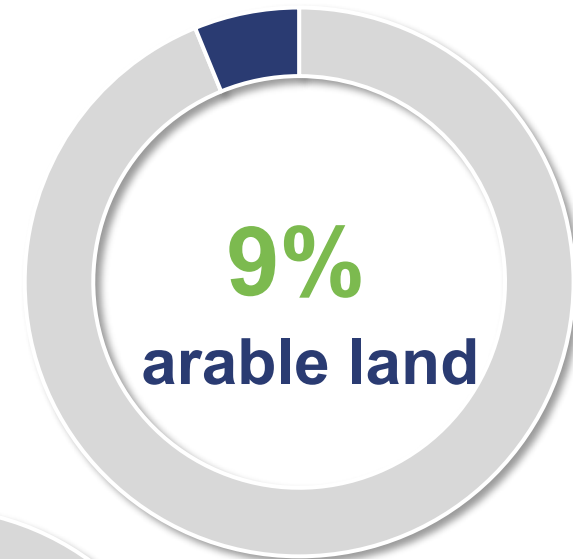


# **/02** How Irrigation and Drainage **Bolster China's Food Security**

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**With the contribution  
made by the irrigation  
and drainage sector...**



# Where we are now...

Since the 1950s, the Chinese government has launched construction of large-scale water conservancy projects.

7330

LARGE AND MEDIUM SCALE IRRIGATION SCHEMES (≥667ha)

4.6 MILLION

WEIRS AND DAMS.

6.9 MILLION

WATER CELLARS AND PONDS

4.9 MILLION

PUMPING WELLS (total installed capacity=49.59 million kW)

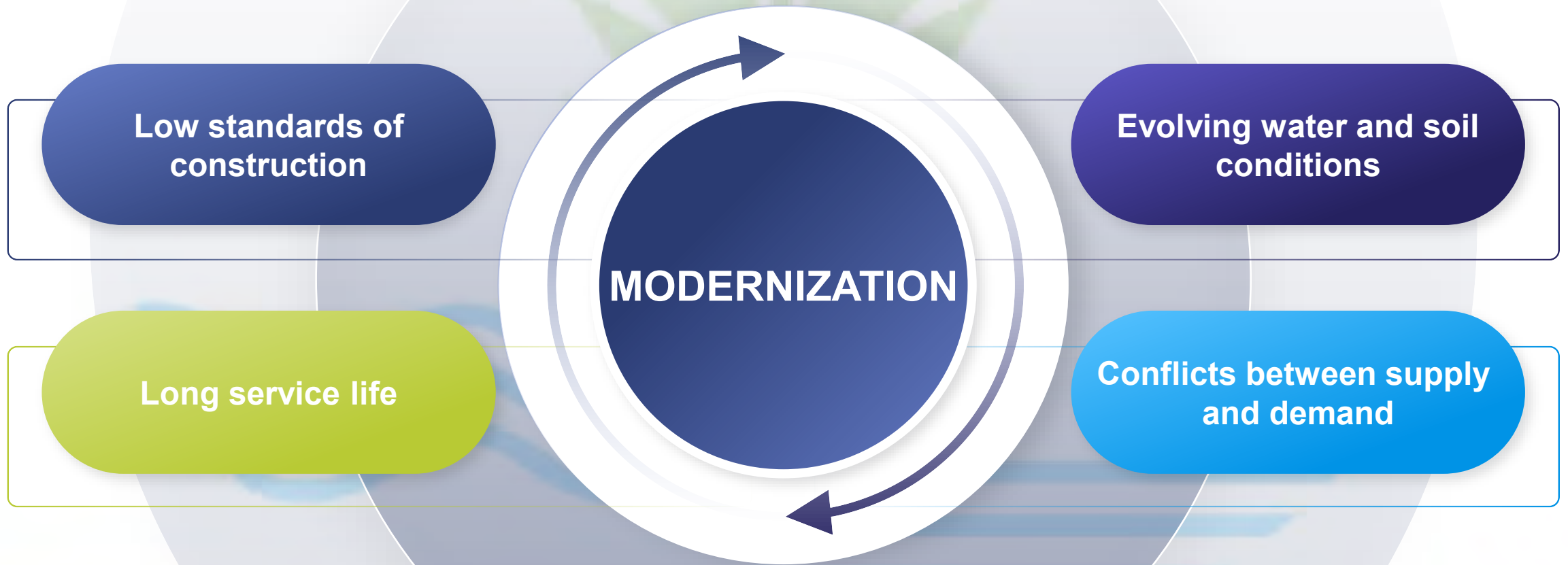
434,000

PERMANENT PUMPING STATIONS (total installed capacity=27.16 million kW)

The 70 million ha of irrigated area, making up 55% of all arable land, producing 77% of the grains and over 90% of cash crops.



# But...



# Measures of modernization

## Foster the development of water-saving irrigation.

- ❑ Spend over 250 billion yuan in the water-saving rehabilitation of more than 3400 large-and-medium-sized irrigation schemes, benefiting 20 million ha of irrigated area.
- ❑ Promote efficient water-saving irrigation in different regions with different goals tailored to local conditions.
- ❑ Apply pipeline irrigation, sprinkler irrigation and micro irrigation on 23.19 million ha of farmland.



## Enhance agricultural water management.

- ❑ Irrigation development is carried out according to local water conditions, and total water consumption is controlled through licensing water withdrawal.
- ❑ Quota management is applied to irrigation water use on national and provincial levels, and water use quota has been designed for 14 major crops.
- ❑ Water withdrawal measuring facilities have been installed in all large-and-medium-sized irrigation schemes, and for irrigation schemes larger than 5000 ha, the measuring and monitoring are carried out online.



大中型灌区全部申领取水许可证  
Water withdrawal licenses issued to all large-and-medium-sized irrigation schemes



水利部组织编制了灌溉用水定额编制导则  
Guide to Draw Up Irrigation Water Quota compiled and issued by MWR



灌区渠首安装的流量计量设备  
Flow-measuring equipment installed at the headwork of an irrigation scheme

# Measures of modernization

## Introduce water rights and water pricing reforms.

- ❑ Agricultural water rights have been identified and granted according to the quota for irrigation water use, so as to control the total water consumption.
- ❑ A water rights trading platform has been set up at the national level, so as to encourage water rights trading between water users, regions, and sectors.
- ❑ Another move is the comprehensive agricultural water pricing reform, through which agricultural water price has been raised to cover the basic cost of operation and maintenance. Water users are charged according to the amount of withdrawal and offered incentives for saving water.



农业水权确权

Identifying and granting agricultural water rights



2022年全国在水权交易平台交易农业用水量5600多万立方米  
In 2022, over 56 million m<sup>3</sup> of agricultural water were traded on the national trading platform



国家水权交易APP

The national water rights trading APP

# Measures of modernization

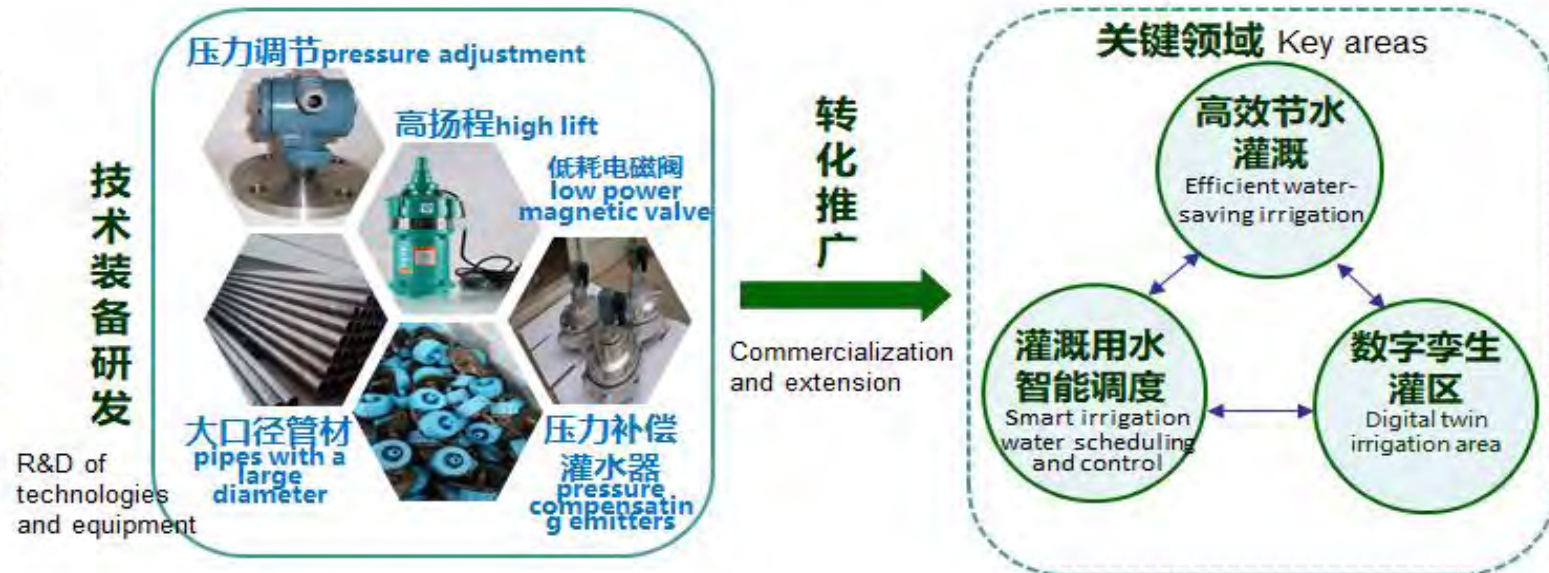
## Encourage the R&D, commercialization and extension of agricultural water-saving technologies and equipment.

- ❑ The research and application of irrigation experiments, standards, and scheduling have been enhanced. And farmers are offered training opportunities and consulting services.
- ❑ The R&D and innovation of key technologies and equipment have been accelerated in the field of efficient water-saving irrigation, smart scheduling and control of irrigation water, and digital twinning of irrigation schemes.
- ❑ Policies and mechanisms have been geared to fostering commercialization and extension.



加强灌溉试验

Improve the quality and quantity of irrigation experiments



# Measures of modernization

## Promote digital twinning of irrigation schemes, a demand-driven process that is application-oriented and depends on digital empowerment for capacity improvement

- ❑ Building information infrastructure such as three-dimensional sensing system, automatic control system, and support system.
- ❑ Setting up a digital twinning platform based on the repositories of data, model, and knowledge.
- ❑ Establishing an application platform that caters for the needs of sensing and forecasting water supply and demand, allocating water resources, regulating water supply, providing public services, and the overall mapping of the irrigation scheme.





# /03 Look Ahead

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# By 2030...

01

Irrigated area will reach **76.30 million ha**

02

Effective irrigated area will reach **71.30 million ha**

03

Water-saving irrigation area will reach **56.70 million ha**

04

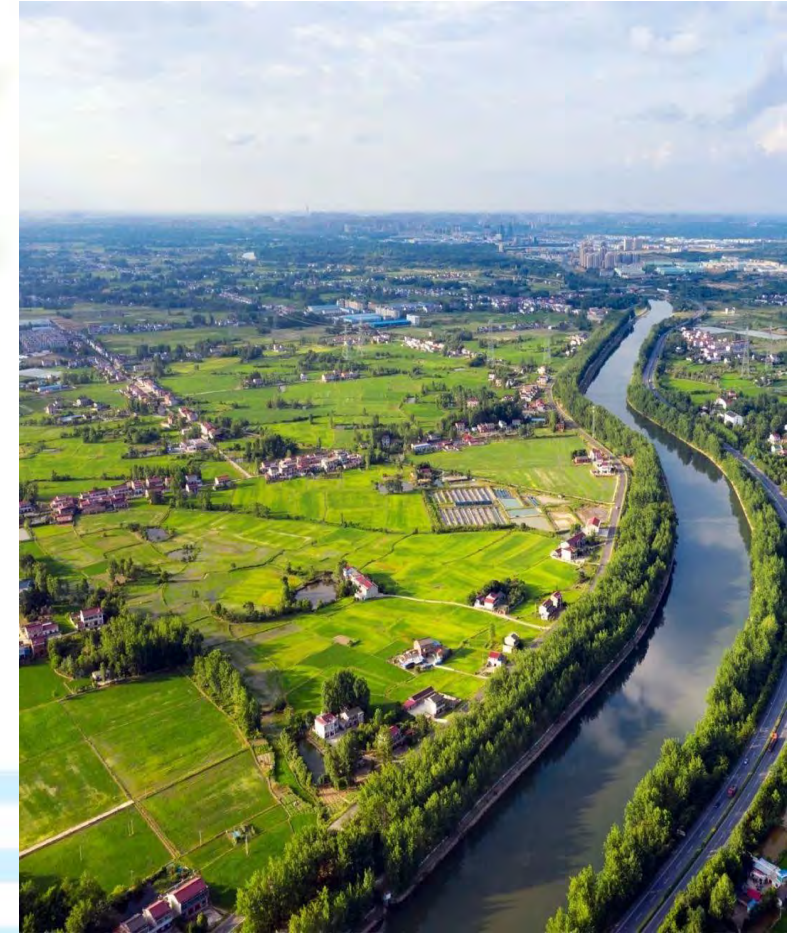
**34.00 million ha** will be equipped with sprinkler irrigation, micro irrigation and water delivery pipelines

05

The effective utilization coefficient of irrigation water will exceed **0.6**

06

The total irrigation water consumption will stay under **373 billion m<sup>3</sup>**







# Thanks for your attention

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