Water-saving Irrigation and Tackling Climate Change

节水灌溉与应对气候变化

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(Ⅰ) Connotation of Modern Agriculture
一、现代农业内涵

- The morden agriculture is the socialized and commercial agriculture that equipped with morden industrial technology , armed with morden science and technology, managed by morden organizational management methods.
- 现代农业是用现代工业装备的，用现代科学技术武装的，用现代组织管理方法来经营的社会化、商品化农业。

(Ⅰ) Connotation of Modern Agriculture
一、现代农业内涵

- **1、Before the production: including agricultural machinery, fertilizer, hydraulic engineering, pesticide, mulch film and so on;**
- 1、产前领域，包括农业机械、化肥、水利、农药、地膜等；
- **2、During the production: including crop farming(contains seed industry), forestry, animal husbandry(contains feed production) and aquatic industry;**
- 2、产中领域，包括种植业（含种子产业）、林业、畜牧业（含饲料生产）和水产业；

(Ⅰ) Connotation of Modern Agriculture
一、现代农业内涵

- **3、 After the production: including processing, storage, transportation, marketing , import and export trade technology of agricultural products.**
- 3、产后领域，包括农产品产后加工、贮藏、运输、营销及进出口贸易技术等。

（Ⅱ）Climate Change and Food Security
二、气候变化与粮食安全

- **The current climate change is largely due to the increasing concentration of greenhouse gases in the atmosphere, extreme climate phenomenon such as drought, floods, heat waves and colds are expected to increase, which will lead to reduced and unstable agricultural production.**
- 当前的气候变化很大程度上是由大气中温室气体浓度不断增加所致，极端气候现象(如干旱、洪水、热浪和酷寒)预计会增加，这将会导致农业产量降低且不稳定。
- **Agriculture can only adapt to climate changes by changing production management and production sites, in recent years, yield of grain has grown steadily, but the proportion of people who meet the basic nutritional needs has been expanding.**
- 农业只有通过改变生产管理和生产地点来适应气候变化，近年来，粮食的产量稳步增长，但满足基本营养需求的人口比例在不断的扩大。

（Ⅱ）Climate Change and Food Security
二、气候变化与粮食安全

- **According to statistics, there are still 850 million people in the global population who are currently unable to obtain reliable food supply, price of grain will be doubled over the next 20 years, of which half comes from climate change, which could lead to significant food security problems.**
- 据统计，全球居民中仍有8.5亿人目前无法获得可靠的粮食供应，粮食的价格在未来的20年中将翻一番，其中，半数源于气候变化，这将可能导致重大的粮食安全问题。
- **While China only uses 6% of the Earth's freshwater resources and 9% of the cultivated land to guarantee food security for the world's 22% of the population, makes outstanding contributions to the world's food security.**
- 而在中国仅利用地球6%的淡水资源和9%的耕地，保障了全球22%人口的粮食供给，为世界粮食安全作出突出的贡献。

(Ⅲ) Agricultural low-carbon Development
三、农业低碳发展

- **Low carbon economy is a new economic form for human beings to deal with the energy crisis and climate warming.**
- 低碳经济是人类为了应对能源危机和气候变暖而产生的一种新的经济形态。
- **Climate change is the direct cause of the low carbon economy, while the reduction of non renewable energy, unsustainable production and consumption pattens are the fundamental causes of the low carbon economy.**
- 气候变化是低碳经济产生的直接原因，而不可再生能源的减少和人类不可持续的生产、消费方式，则是低碳经济产生的根本原因。

(Ⅲ) Agricultural low-carbon Development
三、农业低碳发展

- **The development of low carbon economy directly relates the energy security, ecological security and economic upgrading of human society.**
- 发展低碳经济是关系到人类社会的能源安全、生态安全、经济升级的大事。
- **In the theory and practice of long-term low carbon economy, agriculture and rural areas have been neglected.**
- 长期低碳经济的理论和实践中，忽视了农业和农村领域。
- **Rural areas are rich in low carbon resources and have the vast space for developing low-carbon economy. Low-carbon agriculture is an important component of low-carbon economy.**
- 农村有丰富的低碳资源和发展低碳经济的广阔空间，低碳农业是低碳经济的重要组成部分。

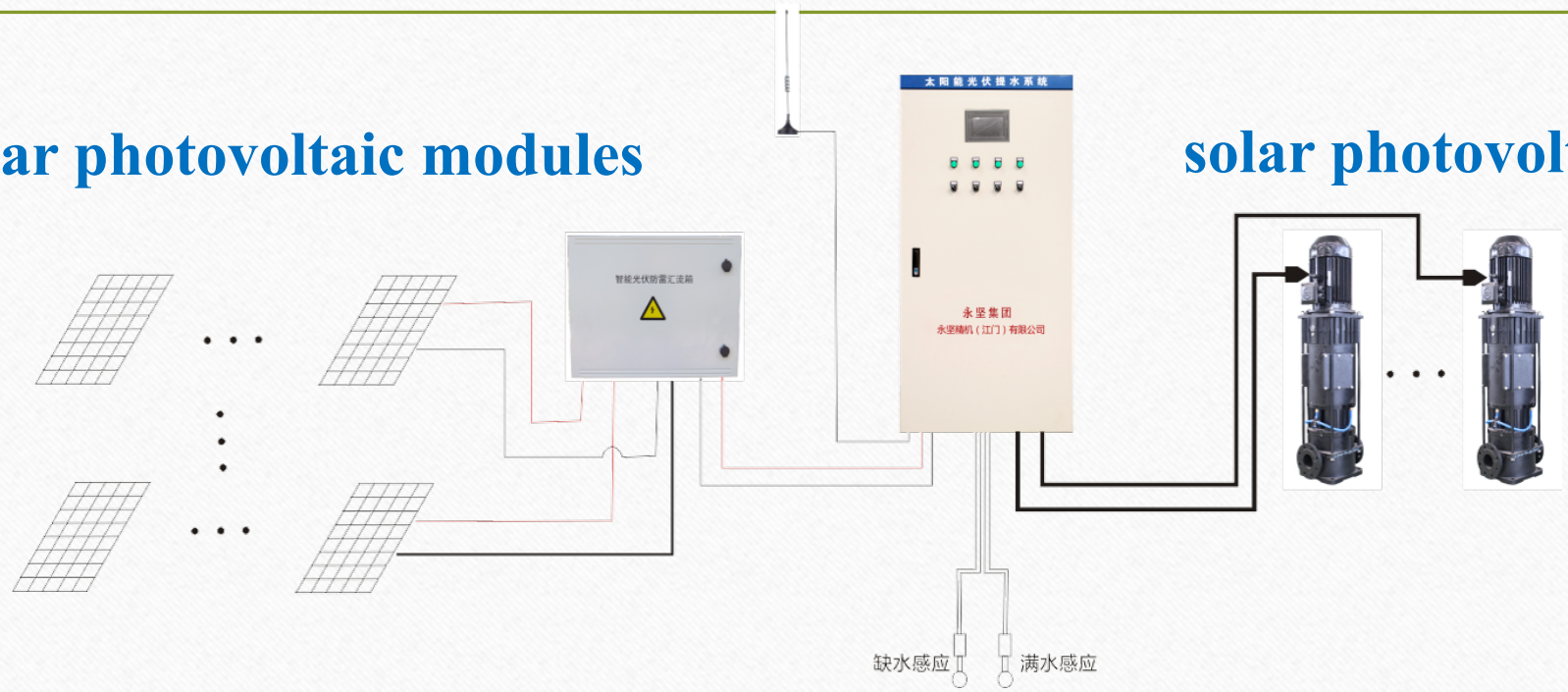
(Ⅳ) Efficient Agricultural Water Saving and Emission Reduction
四、农业高效节水减排

- **There is a severe shortage of water resources in China, the annual water consumption is about 8000 billion m³, of which the agricultural water accounts for about 67%.**
- 中国是一个水资源严重短缺的国家，全国每年用水量约8000亿m³，农业用水的比重约占67%，
- **If water-saving irrigation technology is adopted, the irrigation water utilization efficiency will be increased by more than 25%, then the annual savings of water will be equivalent to the water in the Yellow River of one year.**
- 采用节水灌溉技术，把灌溉水利用效率提高25%以上，全年“节约”水资源相当于黄河一年的水量，

(Ⅳ) Efficient Agricultural Water Saving and Emission Reduction
四、农业高效节水减排

- **Developing efficient agricultural water saving and emission reduction is an irreplaceable significant strategic measure in the global construction of farmland irrigation and water conservancy in the future .**
- 发展农业高效节水减排成为今后全球农田水利建设的一项不可替代的重要战略措施。
- **So the efficient use of solar energy is a key technology in the development of low-carbon agriculture and rural areas, such as solar photovoltaic water pumping technology, solar photovoltaic irrigation technology and so on .**
- 则太阳能的高效利用是农村与农业低碳发展的一项关键技术，如太阳能光伏扬水技术、太阳能光伏灌溉技术等。

(Ⅴ) Solar Photovoltaic Water Pumping System
五、太阳能光伏扬水系统



Overview of Solar Photovoltaic Water Pumping System
太阳能光伏扬水系统概述

- **Solar photovoltaic water pumping system is composed of solar photovoltaic modules, solar photovoltaic water pumping controller, solar photovoltaic pump.**
- 太阳能光伏扬水系统是由太阳能光伏组件、太阳能光伏扬水控制器、太阳能光伏水泵组成。
- **Using solar radiant energy as power to make the pumps lift water from its source. It can solve the water problem of agricultural production and rural life for the remote mountain areas and areas lack of electricity, water or electricity grid,**
- 是利用太阳辐射能作为动力，带动水泵从水源处提水，可为边远山区或缺电、缺水、无电网覆盖地区解决农业生产用水和农村生活用水，

Overview of Solar Photovoltaic Water Pumping System
太阳能光伏扬水系统概述

- **no need for erection of the power supply network or equipped with power generation equipment; Running without electricity expenses, it is a key technology in the development of low carbon agriculture.**
- 无需架设供电网络和配备发电设备；运行中无电费支出，是农业低碳发展的一项关键技术。
- **Application areas: agricultural irrigation, drinking water for human and animal, ecological and environmental management and so on.**
- 应用领域：农业灌溉、人畜饮水、生态环境治理等。

(Ⅵ) overview of solar irrigation system
六、太阳能灌溉系统

Overview of Solar Photovoltaic Water Pumping System
太阳能灌溉系统概述

- **The solar irrigation system is an integrated irrigation technique of "Water and Fertilizer Integration" which has a very high efficiency in water saving and emission reduction. It is based on solar power, furthermore, the crops in the field are irrigated by solar water pump. The irrigation methods are sprinkler irrigation, micro-sprinkler irrigation, drip irrigation and so on.**
- 太阳能灌溉系统是利用太阳能作为动力，通过太阳能水泵加压对田间作物进行灌溉（喷灌、微喷灌、滴灌等），是“水肥一体化”高效节水减排的集成灌溉技术。

Overview of Solar Photovoltaic Water Pumping System
太阳能灌溉系统概述

- **It can effectively save water in farmland irrigation and improve the yield and quality of the crops through this automated integration technology. According to the information from the irrigation tests, it can not only improve the yield by 20%, but also save 30%-40% of the irrigation water and 70% of human costs.**
- 通过该自动化集成技术可有效地节约农田灌溉用水，提高作物的产量和品质，经灌溉实验观测资料表明，水肥一体化集成技术在产量提高20%以上的同时，年均可节约30%~40%的灌溉用水量和70%左右的人力成本。’

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- **Research of Rural Green New Energy Technology**
- **农村绿色新能源工程技术研究**

Thank you!

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