

# Water, Water everywhere, but.....

According to the World Water Council, while the world's population tripled in the 20th century, the use of renewable water resources has grown six-fold. Within the next fifty years, the world population is expected to increase by another 40 to 50 %. This population growth - coupled with industrialization and urbanization - will result in an increasing demand for water and will have serious consequences on the environment. Water development underpins food security, people's livelihoods, industrial growth, and environmental sustainability throughout the world.

## Water situation by 2025

Projected Water Scarcity in 2025



*If the present consumption patterns continue, two out of every three persons will be living under 'water stressed' conditions by the year 2025.*

Source: World Bank – Global Water supply and Sanitation Assessment Report



## Indian scenario

In India, water scarcity is a reality in many states, including, Andhra Pradesh, Tamil Nadu, Madhya Pradesh, Gujarat, Rajasthan & Karnataka. The Indian economy is still reliant to a large extent on agriculture. Large Lift irrigation Schemes are being implemented to help farmers in many states.

It is a grim reality that millions of Indians queue up every day at public taps for one of life's most precious commodities- water. Water Pumping Stations are being set-up or modernised to improve drinking water distribution in major cities. Due to scarcity of water, desalination plants are

*In India, for instance, the per capita average annual availability of freshwater - 5,177 cubic metres in 1951 - 1,869 cubic metres in 2001 - 1,341 cubic metres in 2025.*

considered alternate source especially for Sea Port based industries.

As water resources become increasingly scarce, technology will play an important role in getting more from less. ABB's technologies play an important role in enhancing the efficiency of the entire water usage cycle from the source to its transportation and use for agricultural, industrial and residential requirements.

# One stop solution fo

ABB has more than half a century of experience in equipping thousands of water treatment facilities across the world. ABB supplies products and systems for a wide range of applications in the water cycle, including complete electrics and automation solutions. To reduce energy consumption and costs in general, ABB offers a range of technologies, including high efficiency motors and Variable Speed Drives (VSDs). In addition, ABB's automation solutions include process instrumentation controls and analytics. The right Power Supply systems and installations can be built based on ABB's comprehensive range of offering from medium voltage systems to the full range of products and components for low

## Automation products for the complete water cycle

### Industrial Use

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC
- Installation equipment

### Residential

- Motors
- Instrumentation
- Installation equipment

### Water Storage

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- Installation equipment

### Boreholes

- VSDs
- Instrumentation
- Installation equipment
- Motors

### Pressure Boosting

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC
- Installation equipment

### Rain Water Pumping

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- Installation equipment

### Waste /Sewage Pumping

- Motors
- VSDs & soft starters
- Control gear & MCCs
- Instrumentation
- PLC / SCADA
- Installation equipment

### Treatment Plant Inlet

- Motors
- VSDs & soft starters
- Control gear & MCCs
- PLC
- Instrumentation
- Installation equipment



Substation



Power Transformer & Breakers



Control Products & Drives

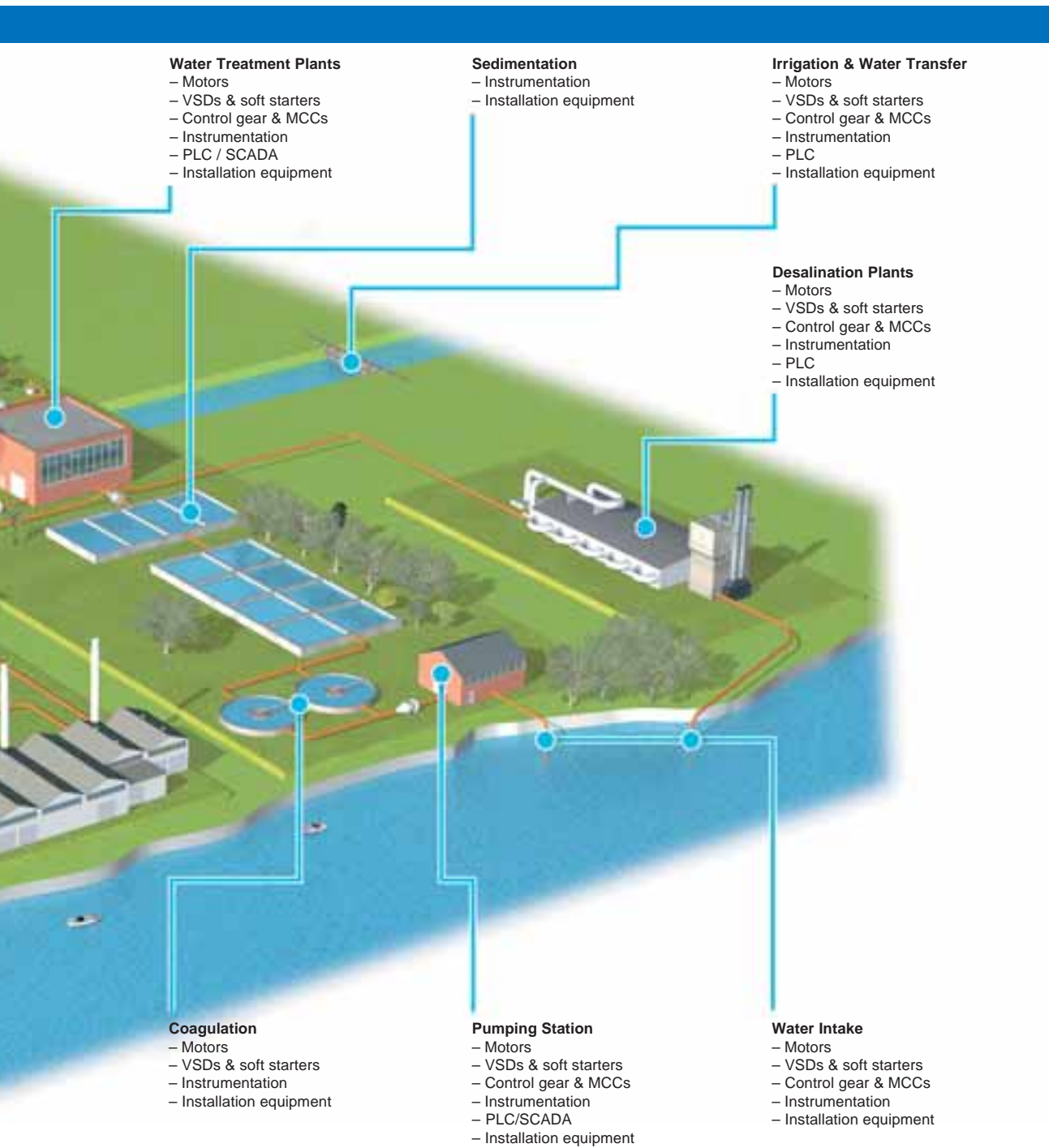


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# r water management

voltage distribution including panels, insulating material, controls, protection and measurement devices. ABB products are compliant with international standards and are designed in accordance with the most advanced environmental standards.

The more complex the facility, the more beneficial it is to have a single partner to rely on. ABB provides state-of-the-art products and systems to equip the entire process from on-site instruments to remote control and monitoring stations. ABB offers a one stop solution for complete water management across the value chain from pumping stations and desalination plants to industrial and residential consumption of water.



Machine



LV Motors



Flow Meters & Instruments



SCADA



# Bringing water to the farmers

**Navayuga Engineering (NECL)** is the flagship entity of the Rs.2000 Crores NAVAYUGA group. NECL, a multi-disciplinary engineering and construction company. In addition to large Infrastructure and Civil projects, NECL is a key player in changing the irrigation landscape in the country. NECL has considerable experience and expertise in providing solutions in Lift Irrigation Projects, Water Intake Systems as well as in building Dams & Barrages. We caught up with Mr Sashidhar, Director, NECL to get his views on various topics related to irrigation as well as insights on the role of technologies in effective irrigation management.

## What is the concept of lift irrigation? Could you throw light on the importance of this concept to provide relief to parched areas?

The basic principle of lift irrigation is to pump water from a low lying river or water body to a large reservoir constructed at a higher terrain. From these reservoirs water is released (by gravity) to a network of canals/channels to irrigate the surrounding land areas. This principle can also be applied to a multistage process where water from one reservoir is allowed to cascade to another bringing elevated areas under irrigation.

Lift irrigation schemes are extremely effective in bringing relief to rocky and hilly terrains as well as fields above the level of the water source. These areas can be irrigated effectively, thereby opening up more fields for cultivation and allowing crops to grow all year round. Farmers in landscapes such as these can actually convert stony land to green fields through lift irrigation. This then enables them not only to grow traditional crops but also to diversify into growing flowers, fruit, and vegetables.

## With the agricultural sector poised for modernisation, what are the key initiatives required with respect to irrigation projects in the country?

Irrigated agriculture has driven much of the increase in global food production over the recent decades. While only 20% of the world's farmland is irrigated, it produces 40% of our food supply. The highest yields obtained from irrigation are more than double the highest yields from rainfed agriculture - even low-input irrigation is more productive than high-input rainfed farming. The Indian economy depends on the agricultural sector, which is a primary source of livelihood for 70% of the population. Of the total water available, about 85% goes into agriculture and one should remember that assured irrigation for agriculture is critical for economic development.

Agriculture modernization involves more than providing water for irrigation. It is necessary to make irrigation agriculture

investment packages more comprehensive, including addressing issues related to resource distribution and access to support services. Irrigation alone is not sufficient for achieving the desired level of improvements in productivity for poverty reduction. To increase productivity of our land it is necessary to match crops to the soil type, select proper seeds, and arrange proper fertilizers in addition to adequate water. The principles of "self help group" for arranging micro financing and "e-choupal" for delivering information system needs be encouraged / adopted. Irrigation projects should be developed as a complementary support to the farmers. Only large scale irrigation schemes without effort to increase the productivity of our irrigable lands, will not be competitive in the liberalized world.

The government has recognized that the Agriculture growth at 2.3% is significantly less than the desired 4%. In order to boost growth in this sector and the economy, the Rs 11,000 crore allocated in the budget for irrigation projects is a welcome step. However, it must be reiterated that the irrigation projects must have involvement from farmers - effort and monetary to bring about a sense of ownership. In addition the Government has declared 2007 as the "water year". This will help rally support of all stakeholders varying from policy makers, technology providers, communities and NGOs to Indian farmers.

## What is the role of power and automation technologies in your sector? What other applications of water management can benefit from such technologies.

Farmers irrigate their fields during periods of dry weather to ensure normal growth. As the irrigators are driven by the water flow, constant pressure is essential for even water distribution over the fields. Automation Technologies like motors, automatic pump control, frequency converters etc can play an important role in conserving water and ensuring that the irrigation is sustainable. Some of the



benefits of using technology in irrigation projects are:

- Even water distribution due to accurate flow control
- Reduced energy consumption through optimum flow control
- Lower maintenance costs as pressure shocks are eliminated
- Lower labour costs due to automatic control

Each project needs to be optimally designed with the right technologies for a cost effective solution. Technologies for water management, reducing waste water and irrigation scheduling will become increasingly critical as the global water scarcity situation increases.

## What has been your experience of working with ABB as a partner?

We are currently working with ABB on Lift irrigation projects - the Kalwakurthy Lift Irrigation Project and the Bhima Lift Irrigation Project (Phase II) in Andhra Pradesh. ABB is providing turnkey electro-mechanical packages for both irrigation projects. ABB's turnkey solution includes the 220 kV switchyard, power transformers, a SCADA system, large synchronous machines LCI starting equipment, control & relay panels, excitation equipment, instrumentation and controls. These projects will make a huge difference to thousands of farmers in the Krishna River basin and will impact nearly 500,000 acres of agricultural land.

Our relationship with ABB is relatively new and our experience has been good till date. As we move forward with more projects I hope to see this relationship mature into a mutually beneficial one.