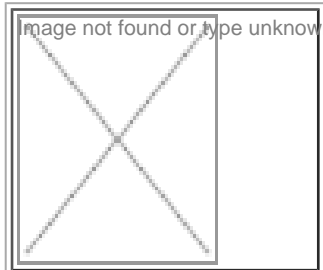


## Awareness about green technology

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**Mr Subramani Ramachandrapa**  
CMD, Richcore Lifesciences

The author is a first generation entrepreneur, an engineer and MBA from ISB, Hyderabad. Prior to founding Richcore Lifesciences, he was working with biotech major, Biocon.

Among the several challenges that we face today, the biggest is population. Human population increased 10 folds over the last 250 years. This exponential growth in population put unsustainable pressure on the delicate ecological balance. We are consuming faster and more than our predecessors and the need to feed has given rise to unabated need for water, food and energy. The industrial revolution created jobs and wealth, but also caused irreversible damage to the environment.

The world has recently woken up to this reality and is moving towards providing cleaner and greener solutions. However, many of these solutions are being pushed onto the industry that is already grappling with the economic slowdown and struggling for growth. Regulation and subsidies to incentivize adoption of clean technology are not sustainable and will not provide the required global momentum to restore our environment.

We, at Richcore, believe that the need of the hour are green solutions that save costs. We have developed biotech solutions for conventional industries that are greener. Adoption of our technology does not require any capital expenditure (CAPEX) and provides real value to the industry through direct monetary saving. We provide cost-saving enzyme solutions to conserve

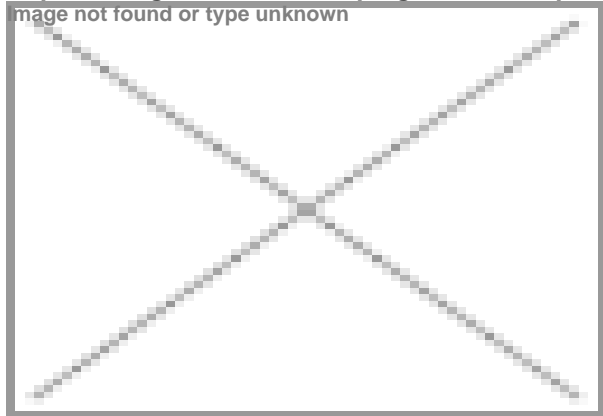
food, water and energy. Our novel solutions are patented, validated and tested in several countries. We have ensured that the solutions we provide work synergistically creating real value for the end user industry.

We provide solutions that address a definite need in the industry and our potential market is in the order of \$7-8 billion per annum. However, the real challenge we face is in creating awareness and ensuring that our technology reaches every nook and corner of the world.

### **Solutions for a greener future**

The global water consumption has been on the rise owing to the need for more food, and domestic and industrial use. Richcore provides enzyme technology for better waste water treatment and increased reuse. Our technology provides close to 25 percent cost saving as compared to the current costs without any need for modifications or additional CAPEX in waste water treatment plants.

### **Population growth in developing and developed countries**



**Source:***United Nations*

Also, increasing population and per capita gross domestic product (GDP) in emerging markets is leading to increased demand for animal-derived products. Global animal feed consumption clearly indicates a need of alternative feed source for animals. Richcore provides enzyme technology that helps convert biomass otherwise unfit for animal consumption into animal feed. The technology has a potential to replace up to 25 percent of food grains used for animals with alternate biomass.

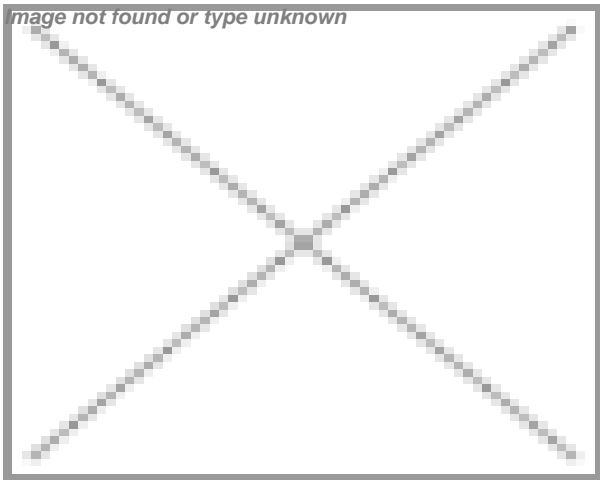
With the fast depleting hydrocarbon and natural gas reserves, the world is moving towards increased dependence on alternative fuels. Being a low hanging fruit, food grains are being used for energy needs. The current yields of ethanol from food grains have scope for improved efficiencies.

Richcore provides enzyme solutions which help in improving efficiency and value of the resultant co products. We are currently able to improve efficiency of a typical ethanol plant by five percent, at a global level this increment is substantial.

### **Strategies for efficient scale up**

We spend considerable time and resources in hiring and training the right people from the industry to ensure high quality technical, commercial and back-end support. In infrastructure, Richcore has built a state-of-the-art R&D and manufacturing facility equipped with the best-in-class hi-tech equipment to deliver quality solutions in the shortest possible time. Our innovation process is efficient and designed to co-create with the end user.

We have entered into strategic technology out-licensing agreements with global majors who have presence across geographies. These companies provide marketing and logistical support and ensure that the technology meets its ultimate objective of large-scale adoption. This strategy is helping us focus our energies into R&D and technical support.



Source: <http://www.urbanecoist.com>

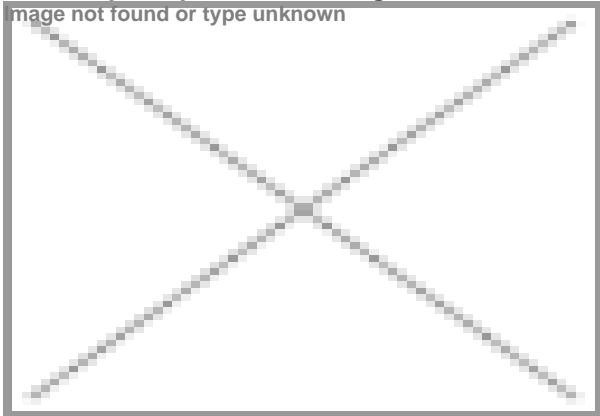
**Increasing demand for water**

Sector	Water withdrawals*	Water consumption
Agriculture	66%	93%
Industry	20%	4%
Domestic use	10%	3%
Evaporation from reservoirs	4%	-

\* Water withdrawals refer to water diverted from streams/rivers and pumped from groundwater aquifers for human use, but not necessarily consumed. Part of the withdrawn water is returned after use. The quantity that is not reused or left in nature represents consumed water, namely water that has evaporated or been incorporated into products and organisms, so that it becomes temporarily unavailable to the other users.

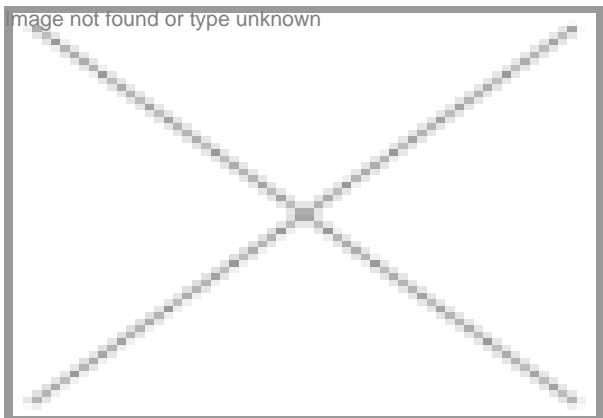
Source: World Water Council

**Consumption pattern of food grains for humans and animals**



Source:FAO

**Trend of alternate biofuels produced as of 2005**



**Source:***earth Policy Institute, Renewable Fuels Association*