

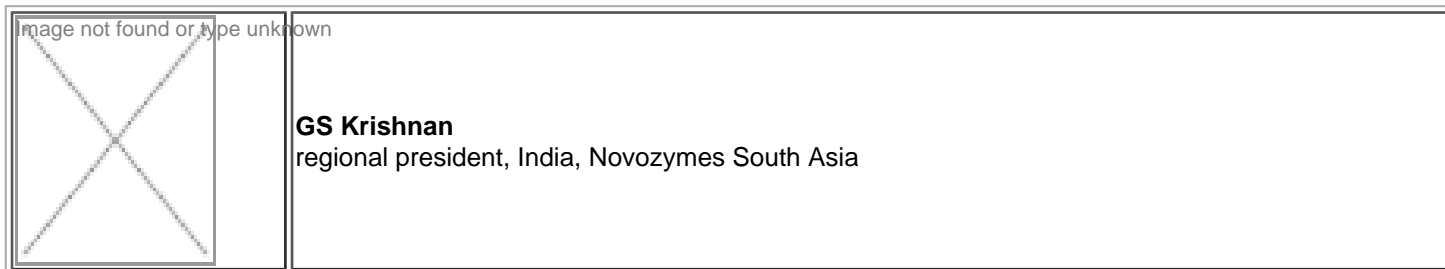
## 'India has unique scientific capabilities'

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**GS Krishnan**  
regional president, India, Novozymes South Asia

**N**ovozymes, a global leader in industrial enzymes, has grown from strength to strength in India after its acquisition of Bioton's enzyme business in 2007 and has a diverse team of over 400 people.

Novozymes has become an institute for sustainable solutions. It is partnering with local players to find innovative enzyme solutions. Heading the operations is GS Krishnan, regional president, India, Novozymes South Asia, who has been with the company for more than 20 years. He speaks to BioSpectrum about how Novozymes is building the local expertise to service the global markets as well as the company's expansion plans.

***Novozymes has collaborated with companies such as Praj and most recently with Sea6 Energy. How have such partnerships helped you advance the biofuel segment?***

**Krishnan:** Sea6 Energy is an upcoming organization by young entrepreneurs who are looking for different methods to produce ethanol using seaweed. The collaboration is such that we are currently identifying the kind of enzymes that are

required for this process. While they are developing the technology of cultivating the seaweed at offshore locations, we are researching the right enzymes for converting the available sugars.

We have been in collaboration with Praj to develop second generation ethanol from biomass for almost two years now. The research and development (R&D) work has progressed well to a stage where currently the team is evaluating the pilot production plant while working on Indian substrates such as bagasse and corn cobs.

Since we are working on similar projects around the world, this gives us an edge over other companies in the enzyme industry. The collaboration is such that we build on the knowledge and expertise we have acquired globally and play the role of an enzyme manufacturing company whereas they are the engineering experts who will ultimately commercialize the product.

***How important are the India operations to the global entity of Novozymes?***

India is unique in terms of its scientific capabilities. Like in the case of Sea6 which had a very innovative platform, Novozymes would like to take advantage of any local talent or skills not only to develop it for local markets, but also to develop it for the global markets. We are open to any collaborations.

India is a very important market for us and the opportunities are very good in all segments. We are the only company, I think, that supplies every industrial application of enzymes. Our leadership role is not just in the market, but also in the fact that we have all the industries covered here in India.

One important factor is that the population of Indian middle class is increasing to a point where some surveys predict that by 2025 our middle class population will equal the European population. Things such as increased buying power and changed spending habits will contribute to the overall growth of the economy.

***How do you view the Indian enzyme industry?***

We have maintained double-digit growth for the last five-to-six years. There is competition in the market. It is a level playing field for all the present competitors, but we are one of the few organizations that is playing a global role which differentiates us from the rest.

Innovation is a continuous process at Novozymes, depending upon the demand in the marketplace. We will grow as and when the market demands and I definitely see the demand increasing.

***How do you plan to expand in India?***

We are increasing our presence in all ways. As far as the R&D is concerned, we were hardly five-to-six people two years ago whereas now there are more than 40 people who are part of the R&D center inaugurated in 2010.

Today, the development of new enzymes and the local application development is done here. Also, there is a center of excellence which supports the development of enzymes for the fruit juice and wine sector. The center supports application development for the global requirements as well as specific requirements of local customers.

***The global CEO of Novozymes, Steen Riisgaard, recently commented on how the market's economic uncertainty is set to continue this year. Should Novozymes India worry?***

Two years ago when recession struck, Novozymes in India did not actually feel any major impact. The markets for the company were affected in certain places, though we did not have a big impact specific to our industry in India. We are not completely dependent on exports unlike other sectors, hence I am very positive about the future.

***What are the current challenges in the industry?***

Biotechnology and especially industrial biotech is still in a nascent stage in India but there are a lot of opportunities. There are various initiatives by the Government of India, such as the Food Adulteration Act, which are good to bring India at par with the rest of the world in terms of standards. Currently, the regulatory framework is such that they do not have an approval for some of our enzymes. In this light, the fact that regulators are moving to adopt global standards is a good step for supporting our business.

***Do you see an increased concern by the companies in India for the environment, which can boost industrial biotech industry?***

Industrial biotech relies heavily on things such as increased environmental concerns. Few companies are consciously looking at sustainable solutions and they are turning to biotechnology for these solutions. The government's initiative for reducing carbon emissions is far more serious today, which will definitely help us.

***Do you think the industry can reach the goals set by the biofuel policy of blending 20 percent ethanol by 2017?***

Currently, we do not have the alternative to satisfy even 5 percent of the ethanol requirements to be added to the fuel. If we

have to fulfill the requirement of blending 20 percent ethanol by 2017, the only way is to obtain ethanol from biomass, such as sugarcane bagasse or straws from sugarcane, rice, or wheat.

There are multitude of challenges beginning with the growth of the biomass to its supply, transport, and processing. We are supporting the technology to produce the biofuel but the broken network of the supply of biomass needs to be addressed.

**Manasi Vaidya** in Bangalore