

# NANO TECHNOLOGY in INDIA

## Background

The 9th Five-Year Plan (1998-2002) had for the first time promoted research in nano materials. In 2007 "Nano Mission: A Mission on Nano Science and Technology" was launched to foster, promote and develop nanotechnology which has the potential to benefit the country.



## Nano Mission: Nano Science and Technology Mission (NSTM)

## Introduction

It is an **umbrella programme** for capacity building and to tap some of its applied potential for nation's development.

The **Department of Science and Technology (DST)** is the nodal agency for implementing the Nano Mission. DST had also launched a modest programme in Nano Science and Technology called the **Nano Science and Technology Initiative (NSTI)** and the Nano Mission is the successor of this programme.

Recognizing the success of Nano Mission, the mission was continued in its Phase-II during the **12th Plan period**.

## Organizational Structure

The Nano Mission is a **Mission-Mode programme** within DST.

**Nano Mission Council (NMC)** is the apex body while

- Nano Science Advisory Group (NSAG)
- Nano Applications and Technology Advisory Group (NATAG)

provide technical guidance.

## Objectives

- To Promote Funding for Basic Research**, creation of centres for pursuing studies in Nanotechnology.
- Infrastructure Development for Nano Science & Technology Research** to establish a chain of shared facilities across the country.
- To Promote Nano Applications and Technology Development Programmes**, establish Nano Applications and Technology Development Centres, Nano-Technology Business Incubators etc
- To involve the Industrial Sector** into nanotechnology R&D directly or through Public Private Partnership (PPP) ventures.
- Development of Adequate Manpower Resources** in diversified fields so that a genuine interdisciplinary culture for nanoscale science, engineering and technology can emerge.
- International Collaborations** i.e. joint centres of excellence to facilitate access to sophisticated research facilities abroad.

## Obstacles & Challenges

- The **lack** of focus on **Risk Analysis and Regulation** is a hurdle in the field of nanotechnology e.g. products like insecticides with nanoparticles are sold without any analysis of the risk associated with their use.
- The challenge lies before policy makers that **over-regulation** may hamper further development while **under-regulation** could be more dangerous due to its adverse health effects.
- DST has issued guidelines which are precautionary in nature, laying out methods for safe handling of Nanomaterials, a **welcome step towards safer nanotechnology research in India**.

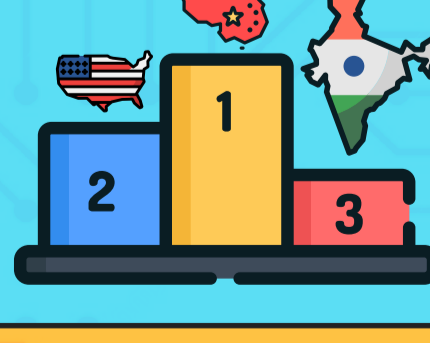
## Efforts & Achievements in Nano Technology

- IIT Madras has used nanotechnology for **arsenic decontamination of water**.
- IIT Delhi developed water based **self-cleaning technology** for use in textile industry and a **new drug delivery platform** to improve chances of recovery from cancer-related bacterial infections.

## Way Forward



India ranks **Third** in R&D in the field of nanotechnology after **China and USA**. India is expected to contribute about **25% professionals** out of required two million professionals in **Global Nanotechnology Industry**  
(Source: ASSOCHAM and TechSci Research Study Report).



*"To harness the advances made in nanotechnology and to continue efforts towards becoming a nanotechnology powerhouse, a regulatory framework encompassing public safety is required."*

