

# India 2022: Non-Traditional Security Threats

## *Science and Technology*

As part of a project on India's non-traditional security threats, the Observer Research Foundation is generating a series of scenarios on the basis of answers to this questionnaire. You are invited to provide your judgmental response to questions given below that will help construct those scenarios.

This survey is divided into six themes:

- ✚ **Micro-electronic and Networking Technologies:** What is the role of commercially available networking technologies in shaping and enabling threats?
- ✚ **Information Technology:** With the rise in information technologies and the centrality of information itself, in what ways will threats to information security emerge?
- ✚ **Space Technology:** Though conventionally in the realm of traditional security, how will the lines between civilian usage, militarization, and weaponization of space blur into the next decades?
- ✚ **Converging Technologies:** As a hub in the development of converging NBIC (nano-bio-information-cognitive) technologies, how will India interact with the opportunities and threats posed by these technologies?
- ✚ **Miscellaneous Technologies:** What will be the effects of CRBN (Chemical, Radiological, Biological, Nuclear), energy and climate change technologies?
- ✚ **General:** What other technological trends do you anticipate will affect India's security into the next decade?

*Your answers will remain anonymous. Please answer only those questions about which you feel comfortable. Leaving a section blank is an acceptable answer. We kindly request that you give your personal views and not those of the organization you are affiliated with.*

Please enter the following details so that we may send you the results:

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Organization: \_\_\_\_\_

Primary area of expertise: \_\_\_\_\_

Please complete the survey, save the document, and mail, fax, or email it to:

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4. To what extent do such technologies play a role in responding to or mitigating threats emanating from non-traditional sources?
  
  
  
  
  
  
  
  
  
  
5. How can government and governance (law enforcement, military, civilian governance) use networking and affiliated technologies to enhance their own capabilities?
  
  
  
  
  
  
  
  
  
  
6. With the emerging types of networking and other communications technologies, how might this ability be enhanced into the coming decade?

### **Section B: Information Security**

1. What are your general views on cyberwarfare, the use of computers, the internet, and information systems as offensive tools?
  
  
  
  
  
  
  
  
  
  
2. Which type of cyber attack do you anticipate will be a greater threat into the next decade?
  - a. Attacks targeting control systems (electronic systems that manage physical infrastructure)
  - b. Attacks targeting data (information repositories, denial-of-service, etc)
  - c. Other \_\_\_\_\_
  
  
  
  
  
  
  
  
  
  
3. What will be the main source of these attacks?
  - a. State-actors (espionage, sabotage, etc)
  - b. Non-state actors
  - c. A nexus between the two.



10. Do Indian entities require the capacity for *offensive* information operations? Why? What would this entail?
11. As new surveillance technologies emerge (data-mining, satellites, etc) what sorts of threats will be most significant?
- a. Political tussles between governments, private citizens, and nefarious actors
  - b. Privacy issues
  - c. Identity theft
  - d. Intellectual (and other) property rights
  - e. Other\_\_\_\_\_
12. Please elaborate on your answer to the previous question.
13. What sorts of technologies and capabilities are emerging in the realm of information technology? What security and social effects might they have?



d. Communications and other satellites enabling military infrastructure

e. Ballistic Missile Defense

f. Weaponization of Space (above the realm of BMD)

g. Other \_\_\_\_\_

**Section D: NBIC Converging Technologies\***

1. How advanced do you anticipate the following technologies will be in the next 12 years? What major points will they have reached? (Please give details)  
What is the time horizon for the emergence of these technologies?
  - a. Nano-technology

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\* NBIC Convergence refers to the convergence of four major realms of technology: Nanotechnology, Biotechnology, Information Technology, and Cognitive/Neuro Technology. Nanotechnology is the ability to manipulate the molecular properties of matter on the nano ( $10^9$  meters). Biotechnology refers to the capacity to modify biological organisms according to human needs, and more specifically to *genetic engineering*. Information technology encompasses the study, design, development, implementation, and management of computer-based systems, hardware, and software that manage information. Cognitive/neuro technology refers to hardware that affects the cognitive—psychological, philosophical, neurological, anthropological, social, and linguistic—capacities of humans.

b. Biotechnology

c. Information Technology

d. Cognitive Technology

e. NBIC Converging Technologies

2. What are some of the more revolutionary elements of these technologies?

3. What are some of the more commonplace activities that these technologies will enhance or revolutionize (i.e. communications)? How?



**Section E: Miscellaneous**

1. How secure are biological and chemical agents and nuclear materials in the region?

a. India

b. Pakistan

c. Former Soviet Union

d. Other\_\_\_\_\_

2. What is the likelihood of the following in India? Please explain.

a. Bioterrorism

b. Chemical attack by non-state actors

c. Use of Radiological Dispersal Device (Dirty bomb) by nonstate actors



8. Do you anticipate any radical changes in energy consumption or processing technologies?

**Section F: General Technology**

1. What are the key drivers of technological change into the next 12 years?
2. What sorts of technological changes might we see?
3. Which changes will be the most revolutionary (i.e. have the most impact on society, particularly in the security realm)?
4. What sorts of threats to security might these technologies pose?

