implemented by government agencies receive softer scrutiny when implemented in ecologically sensitive areas. Also, the political parties ruling the state and centre/coalition governments can have divergent philosophies with respect to conservation.

The earlier model of wildlife conservation relied on beat patrol system, intelligence gathering and efficient prosecution handling. With a boom in the tourism industry, protected area managers have now shifted their focus towards eco-development and habitat improvement. Funding from multilateral aid agencies towards eco-development of protected areas has also increased. He states that the direct effects and by-products of such increased funding need careful scrutiny[9].

He cites that in the present scenario, there is a lack of social tolerance as well. Even crop-raiding wildlife (elephants) was revered previously. In the current scenario, the number of elephants killed by farmers who retaliate against crop raid has increased from 8 to 28 in just 3 years.

Takeaways for successful wildlife governance

Successful wildlife governance particularly needs constant interest and support of political groups. Sanjay cites some of the following measures that can be adopted for successful governance:

'Developing a network of political constituencies at all levels and fostering it through informed outreach will provide a great boost for conservation. Civil society, conservation biologists, activists and supporters of wildlife must prioritize their list of strategies and constantly engage with the power houses for effective results.

'Protected area budgets should be used towards mitigating staff problems at lower levels, enhancing field protection, motivating field staff and other similar activities. Corruption needs to be curtailed for effective management.

'Conservation management can be made more accountable through independent auditing and there is a strong need to develop meaningful indicators to measure success. One such measure would be the ability of managers to work towards ecological needs of wildlife.'

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MEETING REPORT

Innovation and science*

The dialogue on innovation and sciences revolves around general questions common to both exact and human sciences such as choices and constraints, stability and changes, perception and realities. Is innovation to science what fashion is to textile industry? A compulsion to always propose new products in order to maintain the consumer in a constant state of expectations and to ensure sales? If we cannot but underline the ambiguous rela-

tionship between innovation, science and technology in the context of the financial and economic competition, we cannot ignore the real creativity of the technological world. Moreover, is not change just an inherent feature of both human nature and culture as well as of the world at large?

The lectures delivered under an Indo-French Innovation Workshop held at the National Institute of Advanced Studies (NIAS), Bengaluru focused on how recent technological innovations may bring challenging perspectives for notions which are central to modernity, such as object/subject or reality. If change is accepted as an inherent feature in any life process, how do we position ourselves in this perspective and how can innovations enhance a better understanding of the world with humans, not the passive receiving end of technological apparels driven by financial private interests, but as an active stakeholder at every level?

Are there non-destructive modes of explorations, and can technologies remediate the global challenges we are confronted to? What can be the role of scientists, institutions and companies in that context? How can scientific cooperation between India and France contribute to finding answers to those questions?

NIAS was founded by JRD Tata, an eminent Indian personality born as a French citizen, the country where he grew up and was educated. The very life of Tata, a pilot trained with Louis Bleriot, who became one of the world's leading entrepreneurs and founded some of the best scientific institutions in India, is itself a remarkable case of multidisciplinarity and of a long and very high standard of scientific dialogue with France. Efforts in that direction were initiated more than a century ago by various individuals and organizations, and carried forward since India's independence at a bilateral level. NIAS was thus a

well-suited partner to sustain the multi-disciplinary scientific exchanges with experts from 'Collège de France' in order to project a scientific dialogue between India and France, also extended to a wider world vision. A proactive effort such as the Indo-French Innovation Workshop fostered a multilayered and multidirectional dialogue to meet the challenges of the new century.

Innovation in life sciences and healthcare was a key topic during the workshop, which cut across thematic sessions. D. Balasubramanian (L.V. Prasad Eye Institute, Hyderabad) presented the kind of innovation and out-of-the-box thinking that was needed in the field of eye care to make medical treatment available to a greater number of people. The innovation in this case was twofold; first to take the treatment to the people, and second to organize treatment as a hierarchical choice structure. Another interpretation of innovation was evident in the talk by Jose-Alain Sahel (College de France, Paris) which highlighted how cutting-edge research towards fundamental understanding of visual physiology combined with advances in miniaturization, engineering and signal processing would make possible retinal prosthesis for restoring some vision to those who suffer from retinal degeneration. Darshan Shankar (TransDisciplinary University, Bengaluru) had yet another view about

innovation. In this case, it was to look at traditional forms of medicine such as Ayurveda for treatment of medical conditions such as aneamia. He stressed upon the importance of self-reliance and revival of indigenous knowledge for health security. Ravinder Kaur (IIT, Delhi) questioned the gender perspective in view of some biological innovations. New reproductive technologies have the potential of unleashing a deep and wide impact on humanity and are creating global linkages and impacts in unforeseen ways (in China and India in particular).

Mathai Joseph (Tata Research, Development and Design Centre, Pune) and Gérard Berry (College de France, Paris) spoke about informatics as the new innovation lever: computational techniques are today being used to define and inform sciences such as biology and medicine, using algorithmic thinking and information processing. Vijay Chandru (Strand Life Sciences, Bengaluru) discussed the way data-intensive scientific discovery has brought down the cost of gene sequencing to the level where precision medicine could be delivered to the world's population. He gave the example of breast and ovarian cancer where the cost of diagnosis can be expected to come down to under US$ 300, and spoke of the 'virtual liver' which is being used for predicting hepatic toxicity. Ramesh

Venkatesan (Wipro GE Healthcare, Bengaluru) explained how a collaborative and patient-centric healthcare model supported by an open cloud-based platform could alter the way healthcare is delivered to the rural population in India' and allow innovation and new solutions to be incorporated.

The discussions centred on the different connotations of the term 'innovation'. The panelists of the social sciences roundtable concluded on the need for a critical thinking about innovation and emphasized that innovation is not a scientific goal but emerges from a scientific process, which needs basic research as the backbone of new – and sometimes unpredicted – discoveries. Synergies, multidisciplinary and complementary approaches, and international collaborations are necessary for fostering innovation. The need for an ecosystem of innovation and entrepreneurship with risk-free support and mentorship for early-stage ideas was discussed. The consensus was that innovations come from excellence and creativity in research and one cannot make innovation a goal, for it is a by-product of research.

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