

A. Introduction

Bhutan is a small country of 37,000 sq. km, located between China and India. The population of around 700,000 is spread across the 20 districts and 205 gewogs.¹⁸ Thimphu is the capital of this democratic constitutional monarchy. The main sources of revenue are hydropower and tourism, and the per capita gross domestic product (GDP) is about US\$2,000.

Primary and community schools number 261, and there are about 40 middle and higher secondary schools. The 11 colleges under Royal University of Bhutan (RUB) offer undergraduate programmes; no postgraduate programmes are available. RUB has a research department to support faculty research. Bhutan also has six vocational training institutes that offer certificate-level technical courses.

Among the colleges, one S&T college offers Bachelor of Engineering degree in civil, electrical, mechanical and information technology disciplines. Another offers diploma in natural resources subjects (agriculture, forestry and animal husbandry). One college focuses on business studies, and another on humanities, geography and sciences (including computer science). The only polytechnic institute offers two-year diploma courses in civil, electrical and mechanical engineering disciplines. Traditional medicine, an area where Bhutan has scope for research and export development, is offered for study by one dedicated institute. This institute already exports a couple of products.

B. Research activity

Research activity is weak in Bhutan. University lecturers conduct academic research, but research output from university is minimal. There are less than 30 Ph.D.s in the whole country. An Agriculture Research Centre operates under the Ministry of Agriculture and Forestry, conducting research on improving agriculture and forestry products. But such research takes a problem-solving approach rather than an innovation approach.

C. S&T institutional set-up

Bhutan does not have an S&T ministry: the closest to it that the country has are the Ministry of Education and the Ministry of Information and Communications. The latter Ministry has priority at the moment.

The Intellectual Property Division under the Ministry of Economic Affairs is engaged in creating awareness and promoting intellectual property rights (IPR). It also helps with the process of copyright registration and patenting.

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¹⁸ Village groups

An Entrepreneurship Development Programme operates under the Ministry of Labour and Human Resources, with the objectives of employment generation and promotion of self-employment. The programme provides training on running businesses to out-of-school youth and renders financial support to small projects.

The pro-innovation eco-system that Bhutan has includes:

- Industrial Property Act, 2001 and Copyright Act, 2001 guarantee IPR. The Constitution of Bhutan, which was adopted in 2008, also guarantees Nepal's citizens protection of properties, including IP.
- The Economic Development Policy of 2010 squarely puts knowledge-based economy at its core, with a vision to create a "vibrant, self-reliant and sustainable knowledge-based economy by 2023 in harmony with the principles of gross national happiness". Because of the stress on knowledge, innovation takes a central position in the current policy on economic development.
- The Foreign Direct Investment Policy of 2010 encourages investment and development in banking, hospitality and education sectors. A large education city project with foreign investment has already started, with emphasis on improving the standard of education.
- Information and communication technology (ICT) is no longer viewed as just a tool, but one that drives innovation and creativity. The ICT Vision is to create an "information society borne by shared values".
- A national fibre optics network project is ongoing (cost US\$20 million), aiming to cover all the 20 districts (by June 2011) and 205 gewogs (by June 2012).
- A national ICT capacity-building project has been undertaken (cost US\$55 million) and ICT training programme has started to cover all, from Prime Minister and Cabinet Ministers to primary-level schoolchildren.
- The first IT Park Project is under way, with 50,000 sq. ft of built-up space and will be completed by June 2011. International companies – mostly business process outsourcing (BPO) units and data centres – will occupy 40,000 sq. ft, and the remaining area will have a business incubation centre, a shared technology centre and a data centre run by the government.

D. Some realities

In small developing countries like Bhutan, expenditure on research and development (R&D) competes with expenditure on immediate, basic requirements related to health, education, employment, poverty reduction, etc. The country also faces challenges in adopting innovation because of the lack of infrastructure.

Becoming a researcher is not one of the first career choices. This is something that needs to be changed, and the government has already initiated programmes for this. Bhutan realizes that innovation and R&D are critical, not just for economic development but for the overall well-being of the country and for increasing gross national happiness. However, a National Innovation System (NIS) is a very new concept to the country and it needs to make a beginning on this at the earliest.