

The Role of Thimphu TechPark in Bhutan's Technological and Socio-economic Advancement

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Introduction

Science and Technology Parks (STPs) have played an important role in the socio-economic progress and technological advancement of many countries. STPs originated from the US in the 1950s to meet the needs of entrepreneurially-minded academics, to exploit their research results commercially. During the 1990s, an increasing number of Parks attracted research and development units of major international companies. More recently, STPs in Asia have witnessed rapid development, as reflected in the success of some prominent STPs in Korea, Japan, Taiwan, India, etc. and in the emergence of new STPs in countries like Vietnam and Bangladesh. Thimphu TechPark, Bhutan's first ICT Park, established in 2012, is also one of the newest additions to the list.

The United Nations Conference on Trade and Development reported that approximately 80 percent of the countries surveyed planned to use specialised zones, including STPs, as part of their 21st century industrial or science, technology and innovation (STI) policies. (United Nations Economic and Social Commission for Asia and the Pacific) UNESCAP, however, warns that making STPs successful is more complicated than people think, and only 25 percent of STPs, even in an advanced economy, could be considered as achieving their goals. Thus, Thimphu TechPark's modest success may be considered a matter of pride for Bhutan.

Thimphu TechPark, Bhutan's First PPP Project

Thimphu TechPark began as a Public Private Partnership (PPP) Project under the umbrella of Private Sector Development Project (PSDP), supported by the World Bank. It started in 2008, but the initial concept document dates back to 2006. It was the first PPP Project undertaken in Bhutan. The PSD Project has three components — ICT Park

Infrastructure (Thimphu TechPark), Skills Development Programme (it trained 1,300 youths in ICT & Information Technology Enabled Services (ITES) sector and Strengthening the Financial Sector through ICT Investments (it established Inter-Bank Electronic Fund Transfer Clearing System, or EFTCS). Its aims were to increase productive employment in Bhutan through promotion of enterprise development in the ICT/ITES sector, to enhance ICT skills, and improve access to finance. The Royal Government of Bhutan (RGoB) received a grant from the International Development Association (IDA) towards the cost of the PSD Project in 2008. The Department of ICT & Telecom, Ministry of Information and Communications, called for bids to Design, Build, Finance, Own, Operate and Transfer (DBFOOT) the ICT Park in Babesa, Thimphu, under the PPP model.

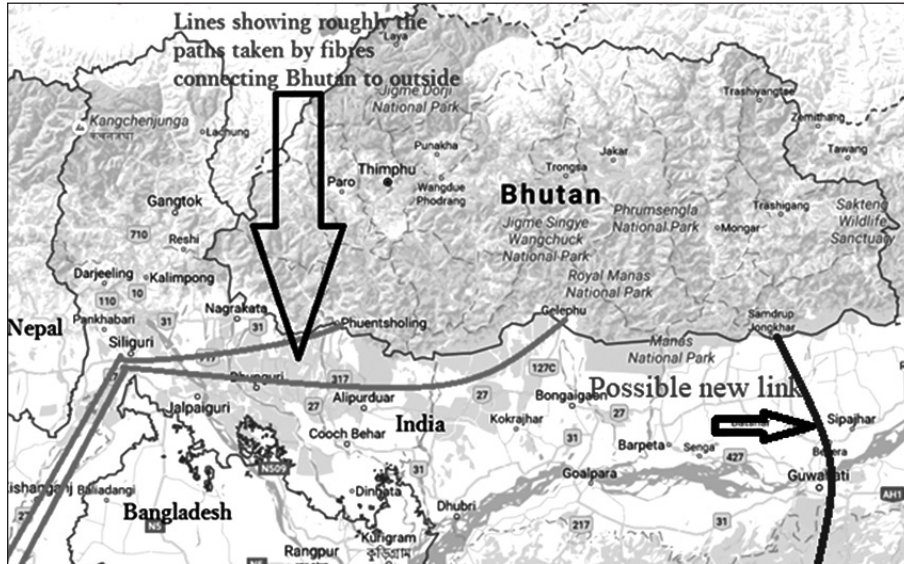
Druk Holding and Investments (DHI), Bhutan, and Assetz Property Group (APG), Singapore, signed a joint venture agreement and submitted a bid to DBFOOT the ICT Park. However, DHI assumed full ownership of TTPL and changed its name to Thimphu TechPark Limited, retaining the same acronym, after APG decided to leave, and transferred its shares to DHI on 29 October 2014.

Thimphu TechPark's Role in Bhutan's Technological Advancement

The Initial Struggle

The focus of the ICT Park project was to attract foreign companies to establish subsidiaries there — creating employment opportunities for Bhutanese youths — and to stimulate Bhutan's nascent ICT industry. The Project Implementation Agency Team, under the Ministry of Information and Communications, supported by the World Bank, had made promotional visits, or conducted roadshows outside Bhutan in 2010 and 2011. There were public expectations of attracting a big company like Wipro, Genpact or Infosys as the anchor tenant, right after the ICT Park was completed. When this did not happen, the local press, most notably *The Bhutanese*, spared no harsh words, to call the ICT Park a “White Elephant”, on its front-page article on 5 January 2013. It said: “The management is optimistic, but with little or no commercial takers, the country's first ICT Park remains vacant.”

Figure 1. Existing international fibre links and the possible third link (Map courtesy of Google).



However, the small management team led by the author of this paper remained optimistic and persevered. The ICT Park saw gradual, but sustained improvements in occupancy and vibrancy from 2012 to 2015. By early 2016, the Park was fully occupied, with around 700 Bhutanese youths employed in various companies there. Apart from one (iSOFT Pvt. Ltd.), all others occupying the commercial space were foreign companies. The Bhutanese media, including The Bhutanese, ran positive news on the ICT Park from then onwards.

Thimphu TechPark’s Role in Improving Connectivity

The ICT Park Project has highlighted concerns about improving the reliability and affordability of the Internet in Bhutan. When the project started, Bhutan’s only International Internet Gateway was at Phuentsholing. Because of fears that this would not be sufficient to attract potential investors to the ICT Park, the second gateway at Gelephu was lit on 26 March 2012. However, this failed to allay concerns among the stakeholders of Bhutan’s ICT Industry, because the links from both gateways pass through Siliguri, India.

Dialogue was initiated with India and Bangladesh on the possibility of opening a third International Internet Gateway at Samdrup Jongkhar, by getting an international link from the submarine cable landing station in Cox's Bazaar via India, to provide Bhutan with true redundancy, because all other international links from Bhutan pass through the narrow Siliguri corridor. The much hoped for redundant connectivity has not yet materialised, but this could happen in the near future, given assurances of support from India.

Thimphu TechPark has also facilitated the establishment of the First Internet Exchange Point connecting different Internet Service Providers (ISPs) in Bhutan. Work on this had been underway since December 2017, but was formally launched only on 8 January 2019. Various stakeholders, mainly the ISPs, who are members of Bhutan Internet Exchange Point (BIX), agreed to locate the exchange point at Thimphu TechPark, since it was not only the neutral agency, but also because we have facilities such as redundant fibre-optic connectivity and 24-hour power backup. The Internet Exchange Point helps keep the domestic traffic between different domestic ISPs within the country, freeing up international bandwidth for international traffic only, thus enhancing Internet speed for users.

Thimphu TechPark's international companies have also played a crucial role in instilling a sense of professionalism among Bhutanese ISPs, which had always had a lax attitude towards their customers' needs and demands. The international companies that had Service Level Agreements with their clients abroad would not tolerate this. So, we had to co-ordinate many meetings between the ISPs and foreign investors, and even requested the intervention of the Ministry of Information & Communications on several occasions, to pressurise the ISPs to live up to the expectations of investors who were employing hundreds of Bhutanese youths at the ICT Park.

The Government had recognised that the cost of connectivity was one of the highest in the region, and therefore pledged to provide a subsidy to the companies at the ICT Park to ensure their connectivity cost is near par with that in the region. But even with a subsidy, we faced pressure from foreign investors to reduce the cost further. Scan Café Pvt. Ltd., the anchor tenant at the ICT Park, subscribed for 100 Mbps and became the biggest subscriber of Internet Leased Line as a single agency. Our study in March, 2014, revealed that the cost of the Internet leased line charged by our ISPs

was absurdly high, compared with rates in India or even Nepal, as shown in Table 1. We brought this comparison forward for public discussion and the media exposed it. This soon led to the first substantial revision of Internet leased line rates in Bhutan.

Table 1. Internet Leased Line Rates Comparison in March 2014 (INR means Indian Rupees).

Internet Leased Line Bandwidth	India (actual rates paid by certain customers) in Bangalore/Kolkata	Nepal (Nepal Telecom published rates)	Bhutan Telecom's rates
1 Mbps	6000 INR/month	9,375 INR/month	48,000 INR/month
3 Mbps	15,000 INR/month	28,125 INR/month	100,000 INR/month
8 Mbps	40,000 INR/month	75,000 INR/month	270,000 INR/month
40 Mbps	145,000 INR/month	300,000 INR/month	1,538,698 INR/month

Thimphu TechPark's Role in Stimulating the ICT Industry

Thimphu TechPark has helped to make the Tech Ecosystem in the country a little more vibrant, and stimulated the growth of the nascent ICT sector. Excluding the FDI companies at the ICT Park, Bhutan's ICT sector is made up of players who mainly supply computers, printers and other electronic equipment to Government offices, or provide training, with funding from the Labour Ministry. There are only a few domestic firms developing software, and they have not been able to grow in the face of a limited market, because they have not been able to build competency to undertake larger and high-value software projects, which usually went to bidders from outside Bhutan.

With the establishment of the ICT Park, a new breed of ICT and ICT-enabled Services companies came into existence, serving clients outside Bhutan. They employed Bhutanese professionals, some of whom left their lucrative jobs abroad and came back to be closer to their families. This naturally made the tech sector more vibrant, and more bright students began to choose to study ICT or Computer Science, as they saw opportunities opening up. Companies such as Secure Link Services from Switzerland

carry out recruitment drives in major colleges, and offer letters on the spot, with stipend, during the final semester.

Also, the incubation centre at the ICT Park played a big role in spawning new ICT start-ups, such as Nano, Housing.bt, DrukRide, Bhutanbuy.com, Freelancer Bhutan, OneClick Shop, etc., which are still very active in the Tech Ecosystem of Bhutan.

Stimulating the Start-up Ecosystem in Bhutan

With the launch of Thimphu TechPark, Bhutan's first business incubation centre came into being. As a mixed-use incubator, it is open to all kinds of businesses, not only those in the ICT sector. As highlighted earlier, we had only two commercial tenants in 2012 and 2013, during which the management team focused on promoting the ICT Park to potential investors abroad, and running the business incubation centre. The lack of business experts in Bhutan was mitigated by some very capable volunteers from abroad, through the Overseas Expert Programme that we had put in place.

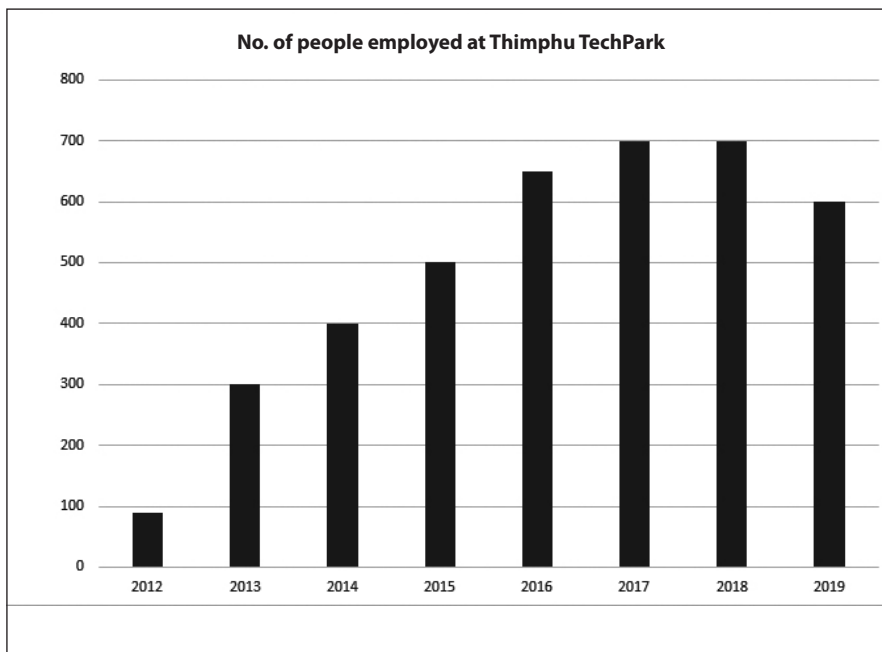
Besides Loden Foundation and the Labour Ministry's entrepreneurship programme, the entrepreneurship ecosystem at that time did not have other players. We started the Business Idea Competition of Bhutan in 2012, which has since been conducted annually with support from the Labour Ministry. The first Start-up Weekend was brought to Bhutan by QED Consulting Group and the Labour Ministry, in January 2016. It gained great popularity in Bhutan after Thimphu TechPark organised the Start-up Weekend Bhutan — Technology Edition at the ICT Park on 14 -16 April 2017, supported by the Department of ICT & Telecom, followed by another one at the College of Science & Technology on 27 - 29 October 2017. This led to the Department of ICT & Telecom's National Start-up Weekend, organised annually, involving all the colleges under the Royal University of Bhutan since 2018.

Thimphu TechPark also organised Bhutan's first hackathon, under the name Bhutan Code Challenge in 2018, modelled on the Hawaii Code Challenge and Angel Hack. A second Bhutan Code Challenge was organised in 2019. This can become an annual feature in Thimphu TechPark's calendar, to contribute to the vibrancy of the Tech Ecosystem in the country, giving rise to a number of young entrepreneurs and start-ups.

Thimphu TechPark’s Socio-economic Impact

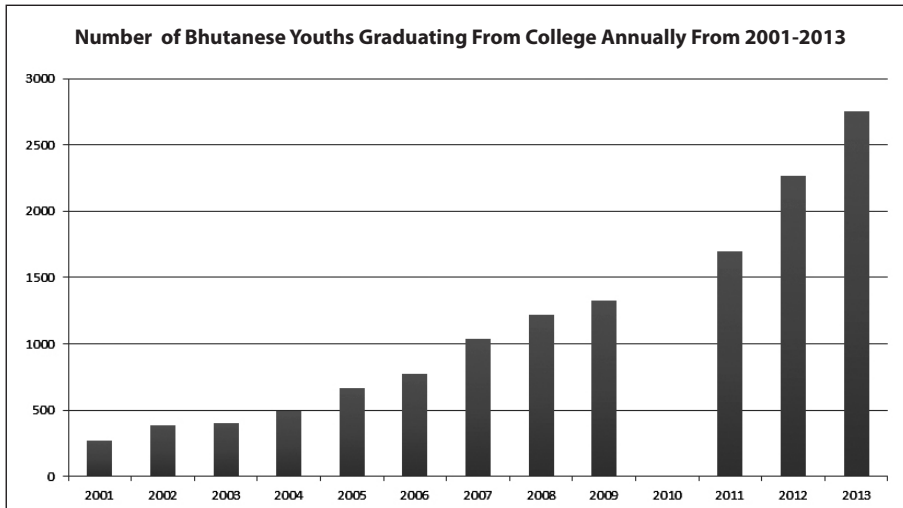
At a time when Bhutan is facing the harrowing challenge of youth unemployment, Thimphu TechPark has offered some hope. The youth unemployment rate has been rising since the end of 2010, and reached 15.7 percent in 2018, from 12.3 percent the year before. The Government has toyed with the idea of sending young people to work overseas, such as to Japan, Kuwait, UAE, etc., but this short-term measure is neither good for the youths, nor for the country in the long run. As Figure 2 shows, Thimphu TechPark has consistently provided direct employment to more than 600 Bhutanese over the last four years.

Figure 2. Number of Bhutanese employed at Thimphu TechPark.



As Figure 3 shows, the number of Bhutanese youths graduating from college has been steadily increasing since 2001, because enrollment has been increasing, thanks to free education. However, our economy’s capacity to create jobs did not show a commensurate increase. The number of youths finishing college annually has stabilised at around 3000, but our economy is, at most, able to provide jobs for only about one-third of these graduates.

Figure 3. Number of Bhutanese youths graduating from college annually from 2001 to 2013.



The ICT Park companies that employ hundreds of youths, depend wholly on the market outside Bhutan, and bring in foreign exchange earnings (estimated at a few million USD annually) that have a huge positive impact for an import-dependent country. They also bring the benefits of best management practices and technical knowhow.

The ICT Park has also played catalytic roles in influencing policy decisions related to technology adoption and easing Foreign Direct Investment in the ICT sector.

Lessons Learnt

The following are some lessons learnt from the experience of the ICT Park project so far:

- Because Bhutan is often praised as the last Shangri-la that tourists go gaga over, some Bhutanese believed that investors would be dying to come to Bhutan. But, as we found out when we opened the doors of our first ICT Park, investors make decisions based ultimately on hard business facts and numbers, though our clean air and our pursuit of Gross National Happiness could add to the appeal.

- Given our small market size and limited talent pool, Bhutan is not attractive enough for large companies like Infosys, Genpact, or Wipro, for whom economies of scale are of paramount importance. Bhutan learnt this the hard way, because the ICT Park project team at the Ministry of Information & Communications had tried and failed to secure one of these companies as anchor tenant.
- Some of the top things that matter greatly to investors are: (a) Availability of talent, (b) Cost of running the operations, (c) Distance from an international airport, (d) Local market, and (e) Ease of doing business.
- Consistency of policy is very important. Investors in the ICT Park initially were attracted by the 10-year tax holiday promised by the Fiscal Incentives Rules 2010, but this was repealed by the Fiscal Incentives Act 2017, and the tax-holiday was reduced to five years. Such inconsistencies send a wrong message to investors.
- What we want to achieve should be clear, and our efforts should be co-ordinated and geared towards that common goal. We are trying to attract investors to create jobs for our youths at the ICT Park, but our investors face a lot of hassles because of our stringent immigration rules and other bureaucratic bottlenecks. This discourages potential investors.
- The modest success of the ICT Park came about because of consistent effort and perseverance from the management team of the Thimphu TechPark as well as stakeholders like the Department of ICT & Telecom, MoIC and Druk Holding & Investments. Gaining the trust and confidence of potential investors by dealing with them in a consistent, professional and credible manner, while keeping that personal touch of Bhutanese hospitality, played a key role in attracting the FDI companies that we got at the ICT Park.

Looking Ahead

Thimphu TechPark's focus, since the start of operations in 2012, has been on two core services — attracting and facilitating FDI companies to lease commercial space within the 58,000 sq ft building, and managing

Bhutan Innovation and Technology Centre, which contains Bhutan's first incubation centre and a Tier-2 Data Centre. The company did well in meeting its objectives, and the ICT Park has been employing over 600 Bhutanese youths since 2016. One highlight was the visit of His Majesty The King on 1 May 2017, which greatly motivated and inspired us to work even harder.

After His Majesty's visit, Thimphu TechPark Ltd., with support from its parent company, Druk Holding & Investments, undertook the construction of the second ICT Park building within the existing five-acre campus, and it was completed on 31 July 2019. As of March 2020, both buildings are almost entirely full. This may be the right time for the Ministry of Information & Communications to seriously consider developing the adjacent 13-acre land set aside for ICT Park expansion.

Starting from 2019, Thimphu TechPark Ltd. has been transforming itself into an ICT company and Centre of Excellence for Software Engineering, in line with DHI Roadmap 2030, while also continuing to manage the Park. The company has started an ICT Services Department with about 30 professional ICT staff who provide Systems Application Products Enterprise Resource Planning support services, undertake software development and consulting. The company would be taking up two big software projects — Bhutan Integrated Taxation System and Health Information System —for the Government soon.

This transformation is inspired too, by His Majesty's vision on Technology. His Majesty the King, in his profound foresight and wisdom, has given a clarion call to the nation to prepare ourselves for a future driven by technologies. In his address to the nation at the 112th National Day Celebration on 17 December 2019, His Majesty said, "Our neighbours, India and China, are experiencing unprecedented economic growth, propelled by technological advances in Artificial Intelligence, Robotics, Automation, Big Data, Blockchain, Quantum Computers, and FinTech — Digital Currencies, Digital Wallets, Digital Banking. The world is changing rapidly. We cannot afford to avoid what we don't yet understand, and hope for the best. Such an attitude will cost us our national objective of self-reliance."

His Majesty's message to the nation could not have come at a more opportune time. Today, Bhutan has the right foundation to prepare for this great leap forward for the digital transformation. Almost all our scattered villages are now connected to the fibre-optic network and have access to broadband Internet and mobile communication services. National Statistics Bureau has recorded a general literacy rate of 71 percent and a youth literacy rate of 93 percent in 2017.

The Government has come up with a flagship programme called Digital Drukyl to speed up the digital transformation process in the 12th Five-Year Plan (2019-2023). The Nu 3 billion flagship programme covers e-government initiatives to improve public service delivery, programmes to transform education, to prepare children for the future, and activities to stimulate the ICT industry. The Government has also great plans in place to transform the education sector using technologies and make our country and children future-ready. Bhutan definitely seems to be on the right path to a bright future, provided we take the lessons learnt to heart and implement our plans well.

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