Information and Communications Technology and Gross National Happiness – Who Serves Whom?

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Abstract

> I would like to remind our youth that the television and the Internet provide a whole range of possibilities which can be both beneficial as well as negative for the individual and the society. I trust that you will exercise your good sense and judgement in using the Internet and television.
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> King Jigme Singye Wangchuck, 2 June 1999[1]

The concept of Gross National Happiness (GNH) is a uniquely indigenous expression of aspirations for government and development activity in Bhutan. Starting from a brief examination of the accepted definitions of GNH and information and communications technology (ICT), this paper will focus on the potential positive and negative impacts of ICT on the defined components of GNH.

It will then discuss some more general issues of the nature and impact of ICT, including ICT impact on labour issues, the relationship between ICT and innovation, and openness. The paper argues that ICT is a powerful engine for accelerating development, but that care needs to be taken in determining the direction and implementation of ICT usage, to ensure GNH determines the implementation of ICT, not the other way around.

Introduction

> Technology is destructive only in the hands of people who do not realize that they are one and the same process as the universe.
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> Alan Watts[2]

> During the last few generations mankind has made an extraordinary advance in the natural sciences and in their technical application and has established his control over nature in a way never before imagined. … Men are proud of those achievements, and have a right to be. But they seem to have observed that this newly-won power over space and time, this subjugation of the forces of nature, which is the fulfillment of a longing that goes back thousands of years, has not increased the amount of pleasurable satisfaction which they may expect from life and has not made them feel happier.
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> Sigmund Freud, Civilisation and its discontents[3]

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[1] *Cited in Siok Sian Pek,* Media Impact Study 2003 *(2003) 19 (hereinafter "*MIS*")*

[2] <http://www.heartquotes.net/Technology.html>, *as at 1 February 2004*

There can be few countries in the world where the overarching goal of national development is so simply articulated and so well known as it is in Bhutan. The centrality of the concept of "Gross National Happiness", while still not precisely defined, provides Bhutan with a set of values to guide its development on its own terms.

However, as this paper will argue, the introduction of new technologies and information and communications technology (ICT) in particular, threatens to put the cart before the development horse. ICT can be a powerful tool to accelerate identified priority development processes. However, it can also knock development processes off course by becoming the end of development projects rather than the means and, because of their unique nature and characteristics, affect development in Bhutan in ways both unexpected and difficult to control.

Starting with a discussion and definition of key concepts, this paper will explore the ways in which ICT can affect the achievement of the component goals of Gross National Happiness, both positively and negatively. It will then consider three more general social fields where ICT can have a transformative effect.

It concludes with some thoughts and observations on the inherent potential and risks of ICT in operationalising Gross National Happiness.

Definitions

Gross National Happiness

The concept of "Gross National Happiness" (GNH) has been the subject of much inquiry.[4] It is not the object of this paper to dwell in detail on the definition of GNH, but it is a pre-requisite to have a working definition for this paper's discussion.

What becomes rapidly apparent upon examination of the concept is that, perhaps surprisingly, there is no fixed definition of GNH. As can be seen from Table 1, different authorities at different points in time have defined various component elements of GNH.

As can be seen from Table 1, all definitions have the following elements in common: economic/human development, environmental preservation and cultural preservation. Four of the definitions include a specific good governance element. Further, most commentaries recognise the balance of material and non-material aspects of development as the underpinning idea.

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[3] *Cited on <http://www.primitivism.com/discontents.htm>, as at 1 February 2004*

[4] *See, for example, the selection of essays and speeches published in Sonam Kinga, Karma Galay, Phuntsho Rapten and Adam Pain (eds),* Gross National Happiness*, 1999.*

Table 1 – Components of Gross National Happiness

	Jigmi Thinley (1998)[5]	Stefan Priesner (1998)[6]	Bhutan 2020[7] (1999)	RGoB at UN (2001)[8]	9FYP (2002)[9]
Economic development					
"Economic self-reliance"	✓				
"Economic growth and development"					✓
"Self-reliance"		✓			
Human development					
"Human development"		✓	✓	✓	
"Balanced and equitable development"			✓	✓	
Environment					
"Environmental preservation/conservation"	✓	✓		✓	
"Environmentally sustainable development"			✓		
"Preservation and Sustainable Use of the Environment"					✓
Culture / Heritage					
"Cultural promotion"	✓	✓			
"Preservation and promotion of cultural heritage"					✓
"Cultural development"			✓		
"Culture and heritage"				✓	
Good Governance					
"Institutional development"			✓		
"Good governance"	✓			✓	✓
Number of elements	4	4	5	5	4

[5] *Lyonpo Jigmi Thinley, "Values and Development: Gross National Happiness", reproduced in Sonam Kinga* et al *Eds, above n4,12.*

[6] *Stefan Priesner, "Gross National Happiness – Bhutan's Vision of Development and its Challenges", in Sonam Kinga* et al *Eds, above n4, 24.*

[7] *Planning Commission RGoB, Bhutan 2020: A Vision for Peace, Prosperity and Happiness, 1999*

[8] *RGoB,* Report of Royal Government of Bhutan to Third UN Conference on the Least Developed Countries, 14-20 May 2001, *40-1. The discussion of GNH herein weaves in the six main principles of RGoB,* Vision 2020 *(1999) at 49, namely "identity, unity and harmony, stability, self-reliance, sustainability and flexibility."*

[9] *Planning Commission, RGoB,* Ninth Five Year Plan *(2002) at 4-6 (hereinafter* "9FYP").

Some of the commentaries further elucidate the characteristics of these primary elements. For example, Lyonpo Jigme Thinley notes that good governance is characterized by "integrity, accountability and transparency of government."[10]

This paper therefore proposes to adopt the 'four pillars' definition of GNH outlined below.[11] It makes no claim to this being a definitive definition; it is based primarily on the definition of GNH from the Ninth Five Year Plan[12] as elucidated by key commentators and Royal Government of Bhutan (RGoB) documents. As the concept and understanding of GNH evolves, it may become timely to revisit the relationship between ICT and GNH.[13]

Economic Growth and Development

RGoB recognizes that "economic growth is essential to support and nurture the spiritual and social needs of the community."[14] Further, economic growth should be balanced and equitable so as to prevent wide disparities in income and opportunities[15], with the benefits of development distributed equally through different income groups and different regions. This will promote "social harmony, stability and unity"[16]. According to Lyonpo Jigme Thinley, the existing social fabric of honour for the individual, respect for the elderly, and the maintenance of extended families and communities needs to be preserved in the face of "the pursuit of individual self-interests during modernisation."[17] Overall, economic growth should be viewed in light of the desire for national self-reliance.[18]

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[10] *Lyonpo Jigmi Thinley, above n5, at 22.*

[11] *Discussions at the Centre for Bhutan Studies Conference on "Operationalising Gross National Happiness" in February 2003 revealed a number of insights. Some commentators believed that GNH springs from inherently Buddhist values, which poses questions about its universality. Other speakers noted that in a complex world, the 'four pillars' approach might not capture some of the dynamic interactions in complex social and economic structures.*

[12] *RGoB* 9FYP, *above n8, at 4-6.*

[13] *It may be noted that the definition proposed in this paper does not include any element of education or knowledge. The storage, sharing and dissemination of knowledge, including education resources, are amongst ICT's natural strengths. However, as it is not within the proposed definition of GNH for the purposes of this paper, it will not be discussed.*

[14] *RGoB* 9FYP, *above n8,at 4*

[15] *RGoB 9FYP, above n8,at 5; RGoB, Development Towards Gross National Happiness; Seventh Round Table Meeting, 7-9 November 2000, Thimphu, Bhutan, (2000) at 10*

[16] *RGoB* 9FYP, *above n8, at 40*

[17] *Lyonpo Jigmi Thinley, above n5, at 22.*

[18] *RGOB, Bhutan 2003: People at the centre of Development: Eighth Round Table Meeting, February 2003 (2003) at 5 (hereinafter 8RTM)*

Preservation and Promotion of Cultural Heritage

Bhutan believes that "preservation of its rich cultural heritage is critical to its very survival as a nation state".[19] The Ninth Five Year Plan notes that the preservation of cultural heritage "acts as a source of values for a society in transformation and is expected to help cushion the negative impacts of rapid modernisation."[20] Preservation and promotion of cultural heritage serves to safeguard a sense of identity; further, Additionally, "the preservation of the rich cultural heritage also provides a strong link and support between the individual and the society at large acting as an effective social security net."[21]

Preservation and Sustainable Use of the Environment

Bhutan values the environment both in its own right, and as an important economic asset for the country.[22] The intrinsic respect for nature is rooted in Buddhist precepts which hold that "human beings and nature not only live symbiotically; they are indistinguishable from each other for analytical purposes;"[23] "environmental preservation is a way of life."[24] The economic value of the environment underpins industries such as tourism and energy.[25]

Good Governance

Bhutan aims to establish "a system of governance that promotes well-being and happiness of its citizens."[26] Good governance is characterized by the pursuit of integrity,[27] efficiency,[28] accountability[29] and transparency[30], as well as the people's participation in the decision-making process[31]. It will be effected by continued development and evolution of relevant institutions,

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[19] RGoB *9FYP* at 5; also see RGoB, *Development Toward Gross National Happiness: Seventh Round Table Meeting, 7-9 November 2000* (2000) at 18 (hereinafter 7RTM). Note however that Priesner dates this belief to the latter half of the 1980s; see Priesner above n6, at 42

[20] *RGoB* 9FYP, *above n8, at 40; see also RGOB* 8RTM *above n15, at 47*

[21] *RGoB* 9FYP, *above n8, at 5*

[22] *RGoB* 9FYP, *above n8, at 5*

[23] *RGoB* 7RTM *above n19, at 23.*

[24] *RGoB* 7RTM *above n19, at 17*

[25] *RGoB* 9FYP, *above n8, at 5*

[26] *Ibid.*

[27] *Lyonpo Jigmi Thinley, above n5, at 22*

[28] *RGoB* 9FYP, *above n8 at 21; RGOB* 7RTM *above n19 at 13; RGoB,* Enhancing Good Governance: Promoting Efficiency, Transparency and Accountability for Gross National Happiness *(1999), RGOB* 8RTM *above n15, at 15*

[29] *Lyonpo Jigmi Thinley, above n5, at 22: RGoB* 7RTM *above n19 at 13, 23: RGOB* 8RTM *above n15, at 15*

[30] *Lyonpo Jigmi Thinley, above n5, at 22: RGoB* 7RTM *above n19, at 13, 23: RGOB* 8RTM *above n15, at 15*

[31] *RGoB* 9FYP, *above n8 at 6: RGOB* 8RTM *above n15 at 15*

processes and systems.[32] Further, the ongoing process of decentralisation and devolution of power from the King has been identified with good governance,[33] and the King himself has acknowledged the importance of creating a democratic political system and institutions[34] to allow for increased popular participation. Finally, good governance should strive for equitable access to public services and goods.[35]

Information and Communications Technology (ICT)

Put simply, ICTs are information-handling tools – a wide variety of goods, applications and services that capture, produce, store, process, distribute, display and exchange information.

ICTs have amplified brain power in much the same way that the 19th century industrial revolution amplified muscle power.[36]

These technologies include "old" ICTs like radio[37] and television, the wave of new consumer and corporate computing and telecommunications products, and the systems and networks that link them, including cellular telephone networks, satellite communications and most famously the Internet.

From the 1980s onwards, ICT has utilized digitisation, the process through which information, whether relayed through sound, text, voice or image, is converted into the binary language of computers to store, process and distribute it more efficiently, reliably, cheaply and speedily. Digitisation does not discriminate between sound, data or pictures; all are stored and transmitted using essentially the same technology. Digitisation, therefore, allows the increasing interaction and convergence of computers, telecommunications equipment and consumer electronics to facilitate their increasing integration and form the larger category of ICT. Digital transmission allows greatly increased data flow and storage capacity to older analog systems because it is more efficient and "non-degradable"; that is, the signal arrives perfectly or not at all.[38]

Some of the specific characteristics of ICT give room for optimism about the role it can play it assisting poor countries accelerate their development. First, new ICT investments can 'piggy-back' on existing technology infrastructure. Satellite radios build on and enhance the value of

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[32] *RGoB* 9FYP, *above n8 at 5*

[33] *Lyonpo Jigmi Thinley, above n5 at 22: RGoB* 7RTM *above n19 at 21*

[34] *RGoB* 9FYP, *above n8 at 6*

[35] *RGOB* 8RTM *above n15 at 15*

[36] *UNDP Evaluation Office, Essentials – Information and Communications Technology for Development, September 2001 at 2.*

[37] *Radio is the most widespread ICT in Bhutan; BBS estimates that about 400,000 people, or 60 per cent of the population, listen to the radio (*MIS *above n1 at 18), while the MIS study itself estimates 77 per cent of the population :* MIS *above n1 at 37. It has been acknowledged that "radio will continue to be the most effective media for some time to come": RGoB* 7RTM *above n19 at 70*

[38]*See Cees Hamelink, "New Information And Communication Technologies, Social Development And Cultural Change", Discussion Paper No 86, UNRISD, June 1997, at 9-12*

a satellite network. Hence, there can be substantial gains for limited investments. Secondly, new technologies such as wireless last mile connections increase the reach, and reduce the cost, of connections. Thirdly, new technologies are multi-user in nature; many can benefit from one investment, for example in a shared public telephone. Fourthly, evolution of ICT equipment means that real investment requirements decline over time. Fifthly, countries investing in ICT for the first time now can benefit from the best systems and standards, and avoid the problems of being tied to old technologies.[39] Sixthly, communication networks exhibit unusual network economies, as there are positive returns to the growth of the network.[40] The value to an individual telephone subscriber of the telephone network increases with every new subscriber.

However, ICT is just a tool that amplifies rather than changes human actions and motivations. Radio can be used to promote peace in line with the motto of the BBC World Service (''Nation shall speak peace unto nation'), established in the aftermath of World War One. It can just as effectively be used to incite and organise genocide, as Rwandan Radio Mille Collines is said to have done in 1994.[41]

It is well to consider the underlying nature of ICT and their impact on operationalising GNH.

This paper will argue in section five below that the interaction between globalisation and ICT creates certain characteristics and effects, and promotes certain societal developments, which will almost inevitably have an impact on Bhutan's development, and should be considered in light of the overarching goal of GNH.

First, ICT will transform traditional labour arrangements because they enhance automation especially in knowledge intensive activities. Second, ICT both requires and promotes innovation and entrepreneurialism, and tends to empower the individual within society. Third, ICT requires, and then promotes, openness and free movement of knowledge, capital, labour and services. All of the above factors may impact on GNH, and should be considered carefully in working towards this goal.

Impact of ICT on Elements of GNH

ICT is a tool to accelerate processes, especially knowledge intensive processes. It is becoming increasingly evident from global experience that ICT can wield a transformative effect, and that if properly harnessed and in

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[39] *See KJ Joseph, "Growth of ICT and ICT for Development : Realities of the Myths of the Indian Experience" (Discussion Paper No 2002/78, United Nations University World Institute for Development Economics Research, August 2002) at 1*

[40] *John Daly,* ICT, Economic Growth and Poverty Reduction *(2003) Development Gateway* http://www.developmentgateway.org/node/133831/sdm/docview?docid=495495 *as at 1 February 2004*

[41] *Editorial, "What the Internet cannot do",* The Economist*, 17 August 2000*

the right conditions, can advance a development agenda. Specific examples will be provided in the discussion below.

This paper will assume the 'four pillars' definition of GNH as outlined above, focusing on four major components. For each component, the potential positive impact, and the potential negative impact of ICT on that component will be discussed, along with some conclusions for Bhutan.[42]

In terms of potential positive impact, It is suggested that ICT has the most potential to enhance GNH in good governance, followed by economic development, preservation of cultural heritage and the environment.

Economic Growth and Development

> Wealth is evidently not the good we are seeking, for it is merely useful for the sake of something else.
>
> Aristotle[43]

The often-quoted Easterlin paradox states that above a basic level at which basic needs are assured, economic well-being does not produce more individual happiness. The Easterlin paradox provides material for an entirely separate paper, and will not be examined here, although it is interesting to note a similar pre-existing Buddhist concept of "*delwa-jorpa*". In describing *delwa-jorpa*, Karma Ura notes that "wealth is necessary to a certain degree but only to get freedom from wants to pursue fulfilling activities"[44]. For current purposes, it can be observed that the correlation between economic well-being and individual happiness is not linear, and that this may suggest certain policy measures to ensure that societal wealth is distributed to maximise individual happiness. This issue will be discussed below.

Potential Positive Impact of ICT

It has been observed that technological change "plays a pivotal role in long-term economic growth",[45] and that today the availability and use of ICT is "a pre-requisite for economic … development".[46]

ICT can impact positively on economic development in at least four ways.

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[42] *It should be noted that the components of GNH are more inter-related than this formal treatment might indicate. For example, good governance through decentralisation can lead to preservation of the environment through fewer requirements to travel to access services.*

[43] *Cited in UNDP Human Development Report 2001: Making New Technologies Work For Human Development (2001) at 9 (hereinafter "UNDP HDR 2001")*

[44] *Karma Ura, "The Bhutanese development story",* Kuensel *(Thimphu, Bhutan), 24 January 2004, at 6*

[45] *UNDP* HDR 2001*, above n43 at 29*

[46] *Manuel Castells, "Information Technology, Globalization and Social Development" (Discussion Paper No 114, UNRISD, September 1999) at 3*

First, ICT can enhance efficiency through its application across government and all industry sectors. There has been recent debate about the relationship in the West between the intensive investment in ICT through the 1990s and the subsequent economic boom. While some commentators initially argued that the economic growth was due to the growth of the ICT sector itself, increasingly a consensus has emerged that application of ICT across all industry sectors led to efficiency gains and economic growth.[47]

Turning to Bhutan, ICT can have an impact on the efficiency of key economic sectors. Tourism could benefit from the application of ICT. Business processes could be made more efficient, and the Internet could be more effectively used as a marketing tool with global reach. Electronic payment systems could be introduced to link overseas clients with Bhutanese operators, and improve the efficiency of payment transactions.

In agriculture, ICT such as radio can be used to spread information about improved farming techniques. In Zambia, a project established radio programs and forums targeting farmers which focussed on efficient agriculture. A survey of 21,000 farmers enrolled in the project found that 90% found programs relevant and more than 50% credited the programs and forums with increasing their crop yields.[48] In India, farmers use a network of telecentres to access market information to ensure that their crops of tomatoes do not all hit the market at the same time, flooding the market and decreasing prices.[49]

ICT can also be applied to systems which impact on many industry sectors, such as customs and taxation systems. The United Nations Conference on Trade and Development (UNCTAD) has developed a customs automation system to manage tariff collection, which speeds up movement of goods and reduces transport costs. It has been deployed in over 70 developing countries.[50] In Mirzapur, India, the local government computerized property assessment and tax records as well as tax billing and collection. This has resulted in a 44 percent increase in properties registered, a systematic and more equitable property tax analysis system, property tax bills actually issued for the first time in 17 years, and a 42 percent increase in total tax revenues.[51]

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[47] *See e.g., KJ Joseph above n39 at 1; Tamim Bayoumi and Markus Haacker, "It's not what you make, it's how you use IT; Measuring the benefits of the IT Revolution Across Countries" (Working Paper 02/117, IMF, 2001): although* contra *Charles Kenny, "The Internet and Economic Growth in Least Developed Countries" (Discussion Paper No 2002/75, United Nations University World Institute for Development Economics Research), August 2002*

[48] *Roger Harris, "ICT for Poverty Alleviation Framework" (Workshop for UNDP Country Office ICT Programme Officers/Focal Points in Asia-Pacific, 2002), 14*

[49] *ibid 27*

[50] *C. Kenny, J. Navas-Sabater, C. Qiang, "Information and Communication Technologies and Poverty" (World Bank discussion draft, 2001) at 27*

[51] *Ibid.*

Second, ICT can increase the efficiency of markets, by increasing the flow of market-related information and hence removing "information asymmetries", where the two parties to a transaction have different access to market information, and hence leading to a more efficient allocation of resources.[52]

In a survey of 3,800 households in 200 Chinese villages over four years, it was found that access to a telephone reduced the price paid and the variation in price for three of four basic commodities. Further, the same data revealed that the introduction of telephones to a village resulted in dramatic increases in income within a two-year period.[53] Similarly, for clients of Grameen Phone in Bangladesh, it has been estimated that a single phone call provides real savings of three to ten per cent of a family's monthly income by saving them the necessity of gathering information by more expensive or time-consuming means.[54]

Another example of more efficient markets combines the introduction of new technology with the entrepreneurial spirit of the poor. The Grameen Phone enterprise in Bangladesh provides micro-entrepreneurs with mobile telephones for hire. Based on the successful business model of the Grameen Bank microfinance institutions, Grameen Phone has been able to identify viable new markets for technology services by increasing the size of a relatively small and poor market, and leveraging the entrepreneurial spirit of the poor.

Third, through e-commerce ICT might allow developing countries such as Bhutan access to developed nation markets. Theoretically, ICT can "disintermediate" markets by removing middle-men in supply chains, and hence ensuring more income to the producer of goods and services. Unfortunately, experience so far demonstrates difficult in translating this theory into practice. For example, www.peoplink.org was referred to by many ICT studies in the late 1990s as an excellent example of e-commerce improving market access for craft producers in India and Bangladesh. However, a later study found no evidence of significant sales of craft goods using e-commerce,[55] and the website temporarily closed.[56]

Challenges to the successful establishment of "South-North" e-commerce include high establishment costs, difficulty in marketing,

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[52] *Richard Curtain, "Information and Communications Technologies and Development: Help or Hindrance?" (Ausaid, 2003) at 14*

[53] *Ibid at 17. Note however that the "extent to which farmers can benefit from good information will vary according to other factors such as proximity of markets, available means of transportation, and their productive resources to respond to the opportunities information sources might provide."*

[54] *UNDP* HDR 2001*, above n43 at 33*

[55] *UNDP Evaluation Office above n 36 at 12*

[56] *Curtain above n52 at 16. There are numerous other examples of failed "South-North" e-commerce projects; see e.g. UNDP Evaluation Office above n 36 at 12 regarding the "Earth MarketPlace Initiative".*

building customer trust and ensuring delivery of goods, varying standards of goods delivered and the absence of international payment systems.

Fourth, the ICT industry[57] has demonstrated extraordinary growth as an industry sector in its own right.[58] Despite the bursting of the "dot-com bubble" in 2000, indicative growth rates of the ICT sector in nine countries between 1996 and 2000 run between 30 and 55 per cent.[59]

Bhutan does not have to look far to see the best global example of ICT driving economic growth in a developing nation.[60] From 1990 to 2003, ICT exports had grown from $150 million to $9.9 billion.[61] The disparity in labour costs for qualified Indian engineers and western engineers in-country[62], combined with the establishment of reliable telecommunications networks, has allowed Indian software and service companies such as Infosys and Wipro to establish billion dollar export companies on the outskirts of India's cities. This growth has been reinforced by the increased wealth and technical expertise of India's ICT diaspora, who re-invest in Indian companies and society.

Undoubtedly the boom in export-focussed software and services firms has boosted the overall wealth and economic development of India. It has demonstrated to developing countries that with the right fundamentals in place, lower levels of overall development and physical dislocation from markets need not limit the growth of an ICT industry.

This economic growth is not an overnight phenomenon. Far from being the result of "benign state neglect", the phenomenon of India's ICT industry was based on some long term investment and policy settings. The foundations were laid soon after India's independence with the establishment of, and heavy investment in, the Indian Institutes of Technology, which have produced a steady flow of engineers ever since. In 1999, India's education system produced more than 67,785 software professional per year.[63] Government promotion of the ICT sector dates back to 1972, and has involved tax breaks and subsidies.[64] More recently, India

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[57] *The ICT industry has been defined by the International Telecommunications Union as the convergence of the following six formerly distinct industries "(i) telecommunications equipment, (ii) telecommunications network services, (iii) computer hardware, (iv) computer operating software, (v) multimedia (or audiovisual) distribution networks, and (vi) multimedia (audiovisual) content. All of these industries are now converging, both in technology and in the marketplace; e.g., computing over the telecommunications network, and voice communications using computer hardware and software"*

[58] *Charles Kenny above n47 at 7 notes that the profits and productivity of information revolution are concentrated in the invention and production of ICT.*

[59] *Bayoumi and Haacker, above n 47 at 10*

[60] *Although note the reservations of overall national economic benefit from this export-focussed strategy in Joseph above n39.*

[61] *UNDP* HDR 2001, *above n43 at 3; also "Resource Centre" NASSCOM, http://www.nasscom.org/artdisplay.asp?cat_id=314 as at 17 May 2004.*

[62] *In 1995, labour costs for Indian systems analysts, systems designers, programmers and network designers was less than one third of their American counterparts : Joseph above n39 at 20*

[63] *Ibid, 12*

[64] *Ibid, 7-9*

has focused on creating friendly regulatory environments (especially in relation to FDI), and world-class competitive telecommunications infrastructure. When combined with a pre-existing thriving entrepreneurial spirit and an intellectual and cultural environment open to new ideas and innovations, these policies have resulted in the "high-tech habitat" in which the ICT export sector has boomed.

There are other unexpected examples of developing countries harnessing the ICT sector as an engine for economic growth. Since adopting an aggressive policy of promoting the ICT sector, Costa Rica has experienced a twenty per cent annual increase in national exports; it now produces one third of all Intel microprocessors.[65] In Asia, Malaysia has pursued a similarly aggressive policy of attracting foreign investment in the ICT sector, which helped Malaysia rebound from the Asia economic crisis. In 1999, its GNP rose 5.4 per cent, with ICT comprising 36.5 per cent of total GNP.[66]

ICT gives rise to business opportunities which did not exist 10 years ago, and which utilise ICT's ability to overcome the barriers of distance through "location-less work". In addition to the software services example of India, several countries have leveraged English-speaking educated workforces to create call-centres or data entry factories to support developed nation businesses. Companies such as Dell, IBM, Accenture and Compaq have now outsourced their help-desk functions. Calls from New York are answered by help desk operators in New Delhi, where "Kanika becomes Kelly and Siddharth becomes Sid."[67]

Potential Negative Impact of ICT

The application of ICT for efficiency and better flow of market-related information can also act against exporters and weaker domestic companies in developing countries such as Bhutan. For example, by improving purchasers' access to price information ICT can reduce the prices that suppliers can charge for their goods. Further, a foreign company which utilises ICT to improve its own efficiency can underprice a local competitor.[68]

There is a risk that limited access to ICT can create an internal "digital divide". ICT is more affordable and accessible to dense, literate, wealthy, urban populations than to sparse, illiterate, poor rural ones.[69] This might present a challenge for Bhutan in attempting to spread the benefits of ICT

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[65] *Accenture, Markle Foundation and UNDP,* Digital Opportunity Report *(2001) at 20 (hereinafter* "DOI*")*

[66] *Ibid at 64-65*

[67] *S. Mitra Kalita, "India Calling" (15 July 2001) Newsday, http://www.newsday.com/business/ny-biz-india0715.story as at 3 February 2004*

[68] C. Kenny et al, above n50 at 26

[69] *Charles Kenny, "The Costs And Benefits Of ICTs For Direct Poverty Alleviation", (Draft Paper) January 2002 at 1*

equitably through a society that largely consists of subsistence agricultural workers.

Further, it can be argued that productivity gains from ICT may widen the gulf between the most affluent nations and those that lack the skills, resources and infrastructure to invest in information technology. Bhutan, therefore, runs the risk of "missing the boat" and finding its ability to develop economically increasingly far behind those countries that have harnessed ICT.

Turning to the Indian example, it becomes apparent that the extraordinary economic success of the ICT sector has not been evenly shared. Workers with ICT skills are being hired in greater numbers and being paid increasingly more than their pay unskilled, less educated colleagues.[70] The "trickle-down" effect does not appear to be working. Opportunities to access education are unevenly distributed; while India has the seventh highest number of engineers of any country, mean years of schooling are only 5.1, and adult literacy is still 44 per cent.[71] Regionally, the benefits of the ICT export industries have been confined to the four major centres (Bangalore, Mumbai, Delhi and Chennai).[72]

Lessons Learnt

A policy of pursuing economic growth through ICT can enhance GNH if married to appropriate social policies.

There is little doubt that economic growth can provide an economic boon of jobs and wealth, enhancing both societal and individual economic well-being. Further, economic growth such as this can contribute to government taxation revenues through personal and company taxation, thus working towards the policy aim of self-reliance.

The Indian example also demonstrates that it is difficult to avoid disparities in incomes when one sector of a developing economy grows rapidly. This suggests that appropriate social policies need to be in place to counter the tendency towards disparities in incomes. This is reinforced by the critics. Castells comments that "left to market forces, there is an undeniable tendency toward a polarized social structure" between countries and within countries.[73] Similarly, the increased efficiency that ICT can bring to existing business operations may serve to further benefit the proprietors of those businesses.[74]

The social impact of unevenly distributed economic benefit from this growth and increased efficiency, which has been less well studied, may well be significant. In India, it is quite likely that the impact of the ICT industry

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[70] *Ibid at 8*
[71] *UNDP* HDR 2001 *at 38*
[72] *Joseph above n39 at 15*
[73] *Ibid 4*
[74] *Kenny 2002, above n69 at p11*

wealth has served to heighten existing social inequalities, and could continue to do so in the future. Indeed, some critics argue that an internal digital divide has opened up within India, widening the gap between those with access to education and ICT employment opportunities and those without.[75]

The state has an important role to play in establishing the framework in which industry will develop and benefits will be shared. ICT policies can ensure that access is spread evenly throughout the country by employing universal service funds to subsidise otherwise unprofitable regional infrastructure. Social policies, including taxation policies, can ensure that the economic benefits of an ICT industry boom do not cluster in the hands of a few individuals, but are shared throughout society to increase the happiness of many, consistent with the Easterlin paradox and the concept of *delwa-jorpa.* Bhutan has already specifically acknowledged the link between a progressive income taxation regime and poverty alleviation.[76]

If these policies are not in place before an ICT-driven economic boom, entrenched interests will make it difficult to impose them retroactively.[77]

In addition to this proactive role of the state in setting the framework for development of an ICT sector, policy-makers may wish to consider ways to address the changes in the social fabric which may accompany the rise of an empowered wealthy ICT entrepreneur class.

Before turning to the second component of GNH, some further observations on developing an ICT industry sector might be considered.

The challenge of growing a globally competitive ICT sector is great. The list of fundamental requirements for growth of an ICT sector includes: heavy long-term investment in technical education, access to start-up and expansion capital, highest level political leadership, friendly regulatory environment for foreign investment, tax breaks and subsidies for local and foreign companies, government-funded research and development, incentives for private research and development, intellectual property protection, an innovation culture, world-class competitive telecommunications infrastructure and research facilities.

Importantly, the transformation to a knowledge society depends on "the capacity of the whole society to be educated, and to be able to assimilate and process complex information",[78] and of the entire social organisation to encourage innovation.[79] The transformation from agrarian to knowledge society proposed by some Bhutan-watchers is unlikely to be simple or rapid.

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[75] *See e.g., Joseph above n39*
[76] *RGOB* 8RTM *above n15 at 29*
[77] *I am indebted to Dr Ram Jakhu for this concept of the proactive state in establishing the framework for ICT.*
[78] *Castells above n46 at 3*
[79] *Ibid 11*

Further, recent global trends in industry policy have emphasized the importance of identifying a nation's competitive advantage: those elements which a nation holds uniquely which offer it an advantage in creating competitive industries.[80] This paper proposes that although Bhutan currently faces many challenges in developing an ICT industry, it does hold some competitive advantages. First, its remote location and stable socio-economic situation (at least by regional standards) are competitive advantages in the data warehousing industry segment. Indian ICT companies might prove to be amongst the first clients, especially given the terabytes of data generated by the Indian ICT industry.[81] Secondly, Bhutan's unique cultural inheritance could be turned to its advantage by focusing on electronic archiving of its cultural heritage. This could be focused on archiving purely for preservation, or for sharing the culture with a world which is increasingly recognizing the attractions of Buddhist cultures and belief, and in Bhutan as the last remaining Vajrayana Buddhist kingdom[82]. A concerted national effort to digitise this content would create not only a national digital cultural asset, but also develop a cluster of expertise in multi-media and cultural preservation which could become a future export industry.

Preservation and Promotion of Cultural Heritage

> There are in the heart of the vast Himalayas some strange marketplaces where one can barter the whirlwind of life for infinite wisdom.
>
> Milarepa[83]

ICT offers great and expanding opportunities for the preservation and promotion of cultural heritage. At the same time, ICT inherently moves cultural content around the globe, and is a key enabler of the homogenisation of global culture.[84] The challenge for Bhutan is to harness the many potentialities of ICT for preserving its unique culture, as well as implementing policies to limit the homogenizing and potentially harmful effects of global culture streaming down TV cables and through Internet connections.

The definitions section above identified three elements to this GNH component. First, it serves to safeguard identity which is seen as crucial to

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[80] *See generally Michael Porter,* The Competitive Advantage of Nations *(1998)*

[81] *I am grateful to Mr Randeep Sudan for this insight.*

[82] *See RGOB* 7RTM *above n19 at 20*

[83] *Planning Commission RGoB,* Bhutan National Human Development Report 2000 *(2000) at 50 (hereinafter* "BHDR 2000")

[84] *See, e.g., RGOB* 7RTM *above n19 at 67*

Bhutan's survival as a nation state. Second, preservation of cultural heritage acts as a source of values. Third, it can provide a link between the individual and society, acting as an effective social security net.

This paper does not propose to explore exactly what Bhutanese "cultural heritage" is. Others[85] have noted that culture is dynamic and evolving, and it is beyond the scope of this paper to explore these issues in depth.

Potential Positive Impact of ICT

ICT can assist in the preservation of underlying documents, artefacts, texts and other cultural assets. Provided that religious rules allow, Buddhist texts can be digitized and archived against the rigours of time. Rinpoches can have their voices recorded; monasteries can be photographed and preserved in digital images. This activity, in fact, could be used to leverage the global interest in Buddhist cultures and beliefs as mentioned above.

For example, in New York, the Tibetan Buddhist Resource Center, with the help of the Himalayan Art Project, the University of Virginia and the Tibetan Knowledge Consortium is scanning Tibetan books and storing and distributing them on CD-ROM.[86]

More broadly, as Bhutan transforms into a society more open to outside cultural influence, ICT can be used to record the living history of the nation's older generation. Bhutan is largely a society with strong oral traditions;[87] such histories could be recorded and genealogical records made, capturing the knowledge of the older generations who have seen amazing transformations within Bhutan in their lifetimes.

For example, the Oral Testimony Program of the Panos Foundation is supporting a program of mountain people interviewing each other, with the interviews then transcribed and published online and in booklets.[88]

Bhutanese cultural institutions can play a leading role. The National Library's priceless collection of texts from both Bhutan and Tibet might be digitized, and a selection placed online. The National Museum's collection of artefacts could be digitally recorded, as could the collections of the Folk and Textile Museums.

One example of a museum leading a national effort for creating cultural heritage online is the Egyptian Museum, whose website[89] contains

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[85] *See e.g. Priesner, above n6 at 43, who notes that "It is perhaps the biggest challenge of Gross National Happiness to give sufficient attention to the preservation of Bhutan's unique culture and by the same token redefine the concept dynamically in order to attract the young generation and serve nation building."*

[86] *Alfred Hermida, "Tibetan culture finds digital saviour" (24 September 2002) BBC News <http://news.bbc.co.uk/2/hi/technology/2271016.stm> as at 2 February 2004*

[87] *MIS above n1 at 3*

[88] *see www.mountainvoices.org*

[89] *www.egyptianmuseum.gov.eg*

video files of recent discoveries as well as photographs of many of the masterpieces of the collection.

Minority indigenous cultures can also be preserved and promoted through online sites. New Zealand Maori culture is showcased at maori.culture.co.nz, where visitors can read histories of the Maori people, view images of cultural artefacts and the unique tattoo patterns common among Maori men, obtain Maori recipes, and order cultural products from an online shop.[90]

ICT can be used to capture, disseminate and revitalize minority cultures in Bhutan. Sharchop is being spread through BBS radio; a girl in Trongsa reported learning Scharchop songs through the radio.

Digitizing cultural heritage in this way serves to preserve it. Making it accessible through online distribution serves to promote it. This accessibility can connect communities with their culture, foster a wider appreciation of the culture's value and importance, and promote a more inclusive approach to the use and interpretation of these artefacts.[91] Of course, online access opens the culture up to a broader audience, and can assist to promote an appreciation of Bhutan's cultural heritage on a global scale.

In northern Thailand, a UNESCO-backed project is creating a virtual museum featuring digital pictures, digital videos, and an on-line talking dictionary to record and preserve the culture of threatened hilltribes.[92]

Further, digital recording of cultural heritage can help to establish claims of custodial ownership over traditional and indigenous knowledge and intellectual property (including rights of interpretation and commercialisation).

The information age provides Bhutan opportunities to assert the reality of its nationhood and sovereignty. Entry into the United Nations family of nations in 1971[93] helped buttress Bhutan's claims to nation status. Recognition by international ICT bodies such as the International Telecommunications Union and the World Summit on the Information Society helps reinforce Bhutan's national sovereignty. Further, the effective control and regulation of the ".bt" domain name is a more modern manifestation of Bhutan's individual national status. In Afghanistan, the Taliban sold the rights to the ".af" domain name to a businessman who disappeared. The rights were only recently recovered, with UNDP assistance, after a year of detective work. As has been noted, "For Afghanistan to recover .af is like putting a flag in cyberspace, saying 'we

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[90] *Ibid*

[91] *Harris above n 48 at 26*

[92] *"Indigenous Tribal Culture Virtual Museum", Digital Dividend, http://wriws1.digitaldividend.org/wri/app/navigate?_action=opencapsule&dbId=389bc698% as at 3 February 2004*

[93] *RGOB* BHDR 2000 *above n83 at 41*

exist.'" [94] Similarly, the creation of a Dzongkha 'Unicode', the underlying system that allows the national language to be incorporated into word processing and other software systems, is another way of asserting Bhutan's sovereignty in the information age.

The impact of global media is spurring local media to improve the professionalism of their content, both in terms of quality and quantity.[95]

Finally, the Bhutanese diaspora is starting to form e-communities, maintaining contact with friends through email and instant messaging, and keeping up with Bhutanese news through Kuensel Online, reinforcing and projecting Bhutanese culture through these communities.[96]

Potential Negative impact of ICT

ICT is a means for opening up Bhutan to outside cultural influences. The most obvious example to a resident of Bhutan is the impact of television in importing cultural values. Commentators, especially journalists,[97] often overstate the immediate impact of the official introduction[98] of television services in 1999 on Bhutanese culture, overlooking the fact that Indian and Western movies and videos were available to many Bhutanese before then.[99] However, there can be little doubt that the availability of over forty channels of non-Bhutanese material, in contrast to one Bhutanese television channel, must be having some impact on cultural values. The three month monopoly granted to BBS in 1999 did not stop it being 'swamped' by the introduction of international cable TV.[100]

There is, however, debate as to the exact extent that television impacts on culture. There are three schools of thought. The first argues that the impact is "immense and totally pervasive", and needs to be addressed by immediate regulation. The middle school argues that there is insufficient data to make a categorical assessment of the impact. The third school argues that national communication policies correct the worst excesses, and in any case the process will right itself over time if there are fewer restrictions.[101]

The homogenisation of global culture can be demonstrated by some figures about the USA trade surplus in culture and entertainment. As one commentator wryly notes, "Pop culture is America's hottest export item today."[102] In 1997, American movies, music, TV programs and home video

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[94] *UNDP Resident Representative Ercan Murat, quoted in Nick Meo, "The Information Age Dawns on Afghanistan" (December 2003)* UNDP Choices *10, 12.*
[95] *MIS above n1 at 28*
[96] *Ibid 55*
[97] *See "Fast forward to trouble",* Guardian *(London, UK) 12 June 2003*
[98] *Some southern areas were able to access television transmissions from India before 1999.*
[99] *In 1980, there were an estimated 1000 video players in Bhutan, and by 1998, there were 95 licenses issued for video cassette shops : MIS above n1 at 24, 25.*
[100] *Ibid 39*
[101] *Ibid 29*
[102] *Hamelink, above n 38 at 20*

contributed to a US$8 billion trade surplus in this sector. In the past five years the overseas revenues of Hollywood studios have doubled. The US$20 billion music industry earns approximately 70 per cent of its revenues outside the United States.

The balance of trade in culture is almost entirely one-way; Bhutan imports far more than it exports, although it is likely that this is the case with most countries except USA. Moreover, the combined impact of ICT and globalisation is having a homogenizing effect on minority cultures.

It is not just US culture that is impinging on Bhutan. During the telecasts of Indian cricket matches, Bhutanese children can be witnessed whittling cricket bats and the flight of *khuru* and *dha* is replaced by cricket balls. Almost three quarters of respondents to the MIS identified Indian culture as the most common culture on television.[103]

The impact of television on lifestyle in urban areas has been substantial. According to a Kuensel Online survey in 2003, over 75 per cent of respondents said their lifestyle had changed partially or completely since the introduction of television. According to the Media Impact Study[104] (MIS), "people … are sleeping later at night and adjusting their housework, even office work, to TV. … Some of the elderly say that they sometimes forget to do their *mani* because they are so engrossed in the serial on TV."[105] People have less time for office-, house- and home-work and delay their dinner and bedtimes around television programming.

To the extent the cultural heritage is associated with the close social network of families and extended families which Bhutan currently enjoys,[106] it has been observed that television impacts on the way families spend their leisure time together. The MIS found that some families say they now socialise more by watching television together. A general complaint is that "families are always so engrossed in watching TV even during their meal times that they do not get to talk as much as they did before they had television."[107]

Television is not the only way that ICT can impact on family life and leisure time. The introduction of ICT into workplaces, along with other changes impacting on work culture, has resulted in fewer people working longer hours. Even when a family member is physically present, work has extended its reach into the home with the introduction of computerized home offices and mobile phones.[108]

Television has also impacted on social values, particularly in urban areas, with the "growing acceptability of international modes of

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[103] *MIS above n1 at 57*
[104] *MIS above n1 at 48*
[105] *Ibid*
[106] *Lyonpo Jigmi Thinley above n5 at 15*
[107] *MIS above n1 at 49*
[108] *Emmanuel C. Lallana "The Information Age" (e-ASEAN Task Force / UNDP-APDIP, May 2003) at 24*

behaviour"[109]. Public displays of affection are now more accepted, even though a majority of MIS survey respondents admitted to not enjoying watching kissing and promiscuous scenes on television.[110] Violence is acceptable,[111] stereotypes of women in Indian serials are contrasting with the practical role of Bhutanese women in rural settings,[112] and viewers are increasingly exposed to the middle-class lifestyles of urban Indians.

Youth are, perhaps, particularly vulnerable to the values presented on television. Teachers have observed that students are more tired in class since the introduction of television: "less focused in class, obsessed with TV characters, and picking up language and mannerisms from Hindi and western films."[113] Many young people reported picking up slang[114] and fashion ideas from television.[115] Wrestling developed a cult following amongst children; one headmistress reported that a child broke his leg in when thrown wrestling-style by a friend.[116] One youth surveyed observed that at parties, youth are "ashamed of speaking Dzongkha", and that those who don't speak English are "conservative, old-fashioned, orthodox-type people."[117]

Yet, according to the MIS, over half of parents do not restrict their children's television viewing,[118] and parents in rural areas believe their children will benefit from watching television.[119] Most parents and teachers emphasise the educative power of television[120], and overall 66 per cent of people think that television has a good impact on Bhutanese society.[121]

Lessons Learnt

ICT improves the storage and dissemination of culture; it is blind to its origins. Currently, the flow of culture seems to be all one-way, namely into Bhutan. However, the power of ICT which brings global culture into Bhutan can be harnessed to preserve and distribute Bhutan's culture to the world, and "push back" against the prevailing tide of cultural flow.

Intelligent application of ICT can digitize, store and disseminate Bhutan's cultural heritage, through the Internet, television, radio and film.

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[109] *RGOB* 7RTM *above n19 at 71*
[110] *MIS above n1 at 49*
[111] *Ibid 50*
[112] *Ibid*
[113] *Ibid 51*
[114] *Ibid 58*
[115] *28 per cent of respondents: Ibid 57*
[116] *Ibid 52*
[117] *Ibid 54*
[118] *Ibid 52; 56 per cent of parents interviewed.*
[119] *Ibid*
[120] *Ibid; over 50 per cent of parents let children watch television "to learn"; a Thimphu survey by Bhutan Telecommunications Authority found that 90 per cent of teachers and parents felt that cable television was educational.*
[121] *Ibid 53*

This can provide greater access to Bhutan's cultural heritage to Bhutanese, as well as to foreigners interested in Bhutan's culture. Media can help project national issues and views across borders; today, BBS radio receives 300 letters a week from listeners in surrounding areas of India and Nepal.[122]

Also, ICT can be a strong force for unifying regional people into a sense of nationhood. The MIS found that *chimis* were arguing in favour of expanding the reach of BBS television, saying that Bhutanese TV will instill a sense of nationhood.[123]

However combatting the momentum of global culture requires careful policy and planning measures. While it seems impossible for Bhutan to produce "enough local content to match the massive inflow of media",[124] further funding[125] for Bhutanese television and radio content and distribution would be welcomed by regional populations. The training of Bhutanese writers and programmers[126] might also assist in boosting the capacity for local production of quality local content. Similarly, projects for digitizing and disseminating Bhutanese cultural heritage can increase Bhutan's cultural footprint on the world stage, as well as opening up this cultural heritage to Bhutan's citizens.

Developed countries such as Australia and Canada have sought to increase the quality and quantity of local cultural content by long-term support for public broadcasting as well as specific television licence conditions which require a certain proportion of locally developed content. Further, community radio and television have been utilised as cost-effective ways to increase the number of local voices being heard in the local media.

The impact of WTO regulations on cultural preservation should be carefully considered when Bhutan weighs up the advantages and disadvantages of acceding. WTO rules may limit the ability of governments to promote local content creation by requiring or subsidizing national content creation, as this can be seen as unfairly favouring national producers over international producers of cultural content.

A final observation; if modernisation is seen as contradictory to culture and tradition, then there is a risk that youth might choose modernisation over tradition.[127] A more evolutionary understanding of culture will ease this tension, and allow media-saturated youth to navigate between maintaining contact with traditional culture and taking the best that global culture has to offer. Indeed, globalisation offers opportunities for Bhutanese artists to create and innovate[128] with new cultural inputs and ICT tools,[129]

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[122] *Ibid 62*
[123] *Ibid 38*
[124] *Ibid 28*
[125] *Interestingly, the MIS above n1 at 46 found that 70% of respondents said they were willing to pay for BBS TV, especially if it improved programming.*
[126] *RGOB* 7RTM *above n19 at 67*
[127] *MIS above n1 at 49*
[128] *Ibid.*

hence not only preserving the cultural but also, more dynamically, conserving it.

Preservation and Sustainable Use of the Environment

Potential Positive Impact of ICT

ICT can improve environmental efficiency in industry sectors, improve environmental information management, and help to predict and mitigate the effects of natural disasters.

ICT industries are generally service industries, and therefore tend to have lower environmental impact than manufacturing industries; the term "weightless economy" was coined to describe this knowledge-based economy that produce "weightless" services, information and content. This is related to the phenomenon of "de-materialisation", whereby activities which currently require physical goods which consume resources in production can be replaced by centralized ICT systems. For example, 50 individual household answering machines can be replaced by a centralized digital answering system run by a communications company, with much lower net environmental impact.[130] Reading the newspaper online saves paper and transport costs.

Similarly, the services generated by ICT industries often do not require transportation, but can be delivered through the information infrastructure. This phenomenon of "de-transportation" can also reduce the environmental impact of individual's travel, by allowing people to utilise ICT to lessen the need to travel. This can be achieved through the remote delivery of government services saving a trip to Thimphu to renew a licence, or perhaps in the future downloading movies through a broadband network eliminating a trip to the video store.

ICT can also be applied across industry sectors to improve efficiency and reduce consumption of natural resources.[131] To take an extreme example, Amazon online bookstores has an energy cost per $100 of sales of just 3 cents, compared with 44 cents for a non-virtual bookstore.[132]

The role of ICT in improving the design and efficiency of cars, manufacturing processes and transportation[133] has been linked to the constant levels of energy consumption in the US between 1973 and 2000, despite GDP increasing by 75 per cent in the same time.[134] Similarly

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[129] *See also Priesner, above n6 at 43*

[130] *Dennis Pamlin, "Technology and Our Future", (22 May 2003) World Wildlife Fund, < http://www.panda.org/news_facts/publications/general/ict/e-europe_London_030522.pdf> as at 3 February 2004*

[131] DOI *above n65 at 16*

[132] *Dennis Pamlin, above n 130.*

[133] *See John Daly,* ICT and Ensuring Environmental Sustainability *(2003), Development Gateway <* http://www.developmentgateway.org/node/133831/sdm/docview?docid=569545*> as at 1 February 2004*

[134] *Ibid*

computer-aided design in housing construction can assist in environmentally-friendly design and construction and limit the need for excessive heating and cooling.

Environmental information systems can greatly assist environmental management, which is constantly challenged by a lack of relevant and reliable information. By collecting, processing and disseminating environmental information, ICT can assist our understanding of issues like biodiversity and climate change and help monitor ecological conditions to allow for prevention and mitigation measures.[135]

Similarly, environmental information systems can be used to mitigate the effects of natural disasters. In Bhutan, geological data of glacial lakes and seismic data could be gathered and analysed to help predict, and thus mitigate, the effects of bursting lakes and earthquakes.

ICT can be used to monitor and respond to environment disasters. For example in Mexico fire emergency teams used satellite imagery to direct response teams to threatened areas, thereby substantially reducing casualties and property loss.[136]

Geo-spatial information systems can be used to map the environment in a particular area and monitor its usage and condition over time. For example, the Arun River basin has been mapped using computer imaging, and the resulting database was used to design and implement a land management program.[137]

ICT networks can assist in environmental preservation by allowing citizens to form networks to monitor environmental abuses and alert authorities. For example, in Indonesia environmental officials created a public database for rating industry compliance with water standards. Citizens groups began monitoring local industries against these standards and reporting underperformance to officials. Within the first 15 months of this activism, one-third of non-complying factories had improved their performance up to the regulated standards.[138]

The global system is slowly acknowledging the importance of our global environment, and creating systems to reward good environmental behaviour, such as the contemplated systems of global carbon trading. These systems promise to reward Bhutan economically for the preservation of its environment; ICT will underpin these systems.

Less directly, ICT can improve processes which are linked to environmental sustainability. ICT can help stem population growth by contributing to the education and empowerment of women. It can help stem rural-urban migration by assisting the service delivery underpinning de-centralisation efforts. It can assist in land tenure systems, increasing the

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[135] DOI *above n65 at 16*
[136] *Ibid*
[137] *Ibid*
[138] *Ibid*

degree of ownership and long-term environmental care of citizens for their immediate environments.[139]

Potential Negative Impact of ICT

ICT can have several negative impacts on the environment. Firstly, ICT equipment itself requires high levels of resources to produce. "The production of a single personal computer requires approximately as much energy as the average electricity consumption of a mid-European household per year."[140] Further, ICT equipment including television screens and batteries can have high concentration of heavy metals such as cadmium and lead which constitute a waste management issue.

Secondly, the installation of ICT infrastructure, such as mobile telephone towers and fibre-optic cable, can have intrusive impacts on the environment, although improving wireless technologies are overcoming the requirement for large amounts of built infrastructure.

Thirdly, at a conceptual level, the contribution of ICT to economic productivity "implies the strong likelihood that more industrial production leads to higher levels of consumption and therefore in the end to more pollution".[141]

Lessons Learnt

ICT can be harnessed to promote the GNH goal of sustainable use of the environment. In particular, given Bhutan's rugged terrain, the remote delivery of information and ICT-enabled services can reduce the need for resource-hungry travel. This is particularly pertinent given the priority on de-centralisation, discussed further below. Information systems can also be used to monitor Bhutan's unique environment, to conserve biodiversity, plan best land usage, and mitigate against the effects of natural disasters.

It is not certain whether, on balance, ICT equipment uses more energy resources than it saves. Government should consider ways to ensure that ICT is employed efficiently from an environmental perspective.

Safeguards should be put in place to minimise the potential negative environmental impacts of installation of ICT infrastructure and disposal of ICT goods.

Good Governance

Good governance is perhaps the component of GNH in which ICT can be of most benefit. As defined above, good governance is characterized by efficiency, integrity, accountability, transparency and citizen participation. In the medium term, the policy objectives under-pinning governance in

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[139] *See John Daly, above note 133*
[140] *Hamelink, above n 38 at 22*
[141] *Ibid*

Bhutan are decentralisation, democratisation and devolution of power from the King.

ICT, through its ability to improve workflows, disseminate information and allow two-way communication, provides great promise in efficiency, transparency and participation in governance. Participation in collective choices has been identified in Bhutan as a precondition of human happiness.[142]

Potential Positive Impact of ICT

ICT is designed to process and distribute information. By its nature, it reduces the negative impacts of distance and time. It can increase the speed, volume, quality, and transparency of transactions.[143] ICT also makes possible entirely new procedures, interaction among people, information, and communications,[144] which were previously impossible because of high cost or unmanageability, allowing the public sector to innovate in its delivery of information and services to citizens.

It is therefore perfectly suited to enhance transparency, improve citizens' access to information, and if properly applied, can improve efficiency of government services to citizens and citizen participation in decision-making.[145] Indeed the application of ICT to government has been given a distinct moniker, "e-government", which applies to a range of activities discussed below.

Specifically, ICT can assist good governance in the following ways. Firstly, ICT can improve the efficiency of government through improving internal business-processes, procurement and information sharing between different sectors of government.[146]

Secondly, ICT can be used as a tool for improved decision-making through better access to population, economic and other data, as well as a tool for accessing overseas policy experience.

Thirdly, ICT can improve the delivery of public information to citizens, such as laws, statistics, land registration and health information.[147]

In Karnataka, India, the Bhoomi project has computerized 20 million records of land ownership. Over 330,000 farmers have now accessed their Record of Rights, Tenancy and Crops (RTC) through Internet kiosks for a fee of 15 rupees in less than 30 minutes; the process used to take weeks if

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[142] *RGOB* 8RTM *above n15 at 16*

[143] *Asia Development Bank Information and Communication Technology for Development in the Pacific (2003), 31*

[144] *For example, discussion groups, audio and video teleconferencing, 24-hour operations, online payment, online authorisation, one-stop shop processing, and overall transaction process monitoring and prompting for more effective transaction management; Ibid.*

[145] *Richard Heeks. "Information Age Reform of the Public Sector: The Potential and Problems of IT for India,"* (Information Systems for Public Sector Management Working Paper Series, *Paper No. 6, Institute for Development Policy and Management (IDPM), October 1998)*

[146] *Sometimes referred to as the "G2G" (government to government) component of e-government.*

[147] *Sometimes referred to as the "G2C" (government to citizen) component of e-government.*

not months. This system has eliminated many opportunities for corruption, as well as empowered farmers who require the RTC for many tasks including obtaining bank loans.[148]

Fourthly, ICT can improve the provision of information to citizens in support of government services such as health, education and transport. This is in support of the RGoB policy to provide information as a right.[149]

Fifthly, ICT can improve citizen participation in decision-making by providing the information required to make decisions. Further, civil society organisations have adopted ICT tools to organise and voice their concerns, to form and work effectively, and be a conduit for the citizen's voice to be heard.[150] ICT has been credited with a role in helping civil society organise for the downfall of President Estrada of the Philippines. Following his impeachment, an electronic advocacy network was established and collected 150,000 petition signatures and targeted a letter-writing campaign to Senators who would vote on the impeachment.[151]

Further, the implementation of a comprehensive e-government agenda can help to boost the capabilities of the local ICT industry by creating opportunities for high-value ICT work and spill-overs of expertise and know-how from international joint venture partners.

Another important impact of ICT is its ability to support the media in its traditional role as the "fourth estate" in democratic systems.[152] This is especially important to support the evolution of institutions of good governance. The online public discourse is becoming an increasing phenomenon, with frank views being expressed through Kuensel Online,[153] and some senior government officers using it as a barometer of public opinion.[154] Further, Kuensel itself is gradually becoming more open and critical of public decision-making; the MIS identifies Kuensel's discussion of the income tax issue in the National Assembly in 2003 as a potential watershed in critical media coverage within Bhutan.[155]

Potential Negative Impact of ICT

E-government is not without risks. The diversion of funds to ICT-enabled governance projects can inadvertently leave "non-virtual" government services under-funded. This can result in reduced access to government services from citizens, such as the elderly and non-literate, who are not comfortable with, or able to access, ICT.

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[148] *Harris above n 48 at 23*
[149] *MIS above n1 at 15*
[150] *Sometimes referred to as the "C2G" (citizen to government) component of e-government.*
[151] *UNDP* HDR 2001*, above n43 at 32.*
[152] *MIS above n1 at 30, 61*
[153] *Ibid 27*
[154] *Ibid 61*
[155] *Ibid at 62*

Further, e-government involves the risks inherent in all ICT projects. Poor project design can lead to poorly targeted services, and cost and time over-runs. This carries the risk not only of the lost financial and human resources devoted to the project, but also the risk of tarnishing the image of ICT as a tool for development.

Lessons Learnt

ICT holds great promise for improving good governance. For Bhutan, it can be used for the remote delivery of services in support of decentralisation, which is always a challenge given the topography. It can improve citizen's access to information and inform citizen participation and input into decision-making.

Further, ICT tends to render government processes transparent. In other countries, electronic procurement systems have limited the opportunity for unscrupulous public officials to corrupt the process.

However, ICT will not of itself create a strong and efficient state; indeed it is more likely to require one as a pre-requisite for its utility.[156]

Successful programs utilizing ICT for good governance require a high degree of cross-sector co-operation in setting standards to enable data-sharing, co-ordinating infrastructure needs, and sharing expertise from advanced ministries to those just starting out.

Clear understanding of the potentials and limitations of ICT, as well as good project design focused on an identified development objective,[157] will increase the chances of e-government projects being successfully implemented.

Other Impacts of ICT

The paper thus far has discussed in some detail the impact that ICT can have in Bhutan by focusing on the defined elements of GNH. However, the impact that ICT will have on Bhutanese society due to its inherent characteristics and its dynamic interaction with the broader phenomenon of globalisation are also worthy of discussion. Further, when considering the impact of ICT on development globally, it has been observed that the impact in individual countries "pale[s] into insignificance when compared with the role of expanding computing power in changing the economies and societies of advanced industrial countries, and thus the nature of the world system."[158]

The next section of the paper will address three more overarching thematic areas where ICT is having an impact globally on the way people work, interact and behave. Should ICT become infused into Bhutanese

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[156] *Hewitt above n158 at vi*

[157] *Curtain above n52 at 19*

[158] *Cynthia Hewitt de Alcántara, "The Development Divide in a Digital Age: An Issues Paper" (Technology Business and Society Programme Paper Number 4, UNRISD, August 2001), 4*

society, it is to be expected that the impact will be similar. The paper will discuss briefly how these global phenomena might manifest themselves in Bhutan, and how policy-makers in Bhutan might anticipate and react to them, in order to ensure that the national aspiration to GNH remains paramount.

ICT and Labour

New technologies do not induce unemployment, as has been demonstrated by empirical research.[159] "There will always be room for workers, but the areas or fields of demand will change."[160] However, they do have the potential to transform the way labour is deployed within an organisation and within the global economy. It is wise to consider the impact of ICT on labour markets and its relationship with GNH.

ICT changes where work can be done. It allows information intensive work to be done from anywhere. American newspapers can be scanned and archived in Mongolia; software code for British banking systems can be written in Bangalore. This means that corporations can now shop globally for the cheapest deliverer of this work. Production is organized among separate players in horizontal networks: subcontractors, suppliers, research laboratories and distributors.[161] Outsourcing is one of the key drivers of the efficiency boom of during the nineties.

ICT changes workplaces and business processes. Where previously information intensive activities were consigned to paper and handled by administrative clerks, ICT allows information flows to be electronic ("paperless"), and reduces the need for clerks performing menial "paperwork".

ICT speeds up work. Automation and the processing power of ICT means that information intensive work can be done faster, and clients are demanding more speed. Emails demand quicker responses than letters. Mobile phones make sure we are accessible 24 hours a day. The fashion photographer who used to have twelve hour breaks while his film was developed now downloads the photos from his digital camera to his laptop. His can deliver faster products, and clients are demanding it. His twelve hour work gaps are a thing of the past.

Each of these phenomena has possible impacts on Bhutan. The phenomenon of "location-less work" creates both opportunities and threats. On the one hand, outsourcing creates new markets (for example, call centres) in which Bhutan can participate, because the traditional barriers of distance or mountainous topography can be overcome.[162] (As noted above, however, there are substantial barriers to Bhutan successfully entering this

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[159] *Castells above n46 at 10*
[160] *Lallana above n108 at 19*
[161] *UNDP* HDR 2001*, above n43 at 31*
[162] *RGOB* 8RTM *above n15 at 46*

market.) On the other hand, outsourcing creates a threat to Bhutan's industries if they are not efficient. If the telecommunications infrastructure allows it, it may be cheaper to outsource the layout of Kuensel to a Bangalore online publishing firm. Further, the impact of WTO regulations in the future may even *require* that such government work be tendered out to an open and global market.

Changes to workplaces and business processes precipitated by ICT may have significant impact on the typical Bhutanese office. ICT allows the streamlining of processes and employment relating to information intensive clerical tasks. For example, a human resources software system could replace several clerical positions. This "business process re-engineering" might be expected to have a significant impact on the structure of the typical Bhutanese office, as well as pose challenges to the current regulation of labour.

The economic logic of business process re-engineering in developed nations depends on the high establishment cost of ICT systems being paid for by, or at least justified in terms of, future salary savings from a re-configured and reduced workforce. Therefore the logic of investment in ICT systems assumes flexibility in labour arrangements (allowing staff to be made redundant), salaries savings can be kept by the organisation making the saving, and off-set against the cost of the ICT system. It is not clear that these assumptions are valid in Bhutan, especially within the Civil Service, so the developed nation logic of business process re-engineering within RGoB organisations may not hold.

Finally, the speeding up of work is a typical feature of ICT-intensive countries. Typically, workforces are smaller, more flexible and harder working.[163] In developed nations, this has resulted in longer working hours and challenges to accepted notions of leisure and family time.

What are the lessons for Bhutan? Firstly, decisions regarding deployment of ICT in the workplace should be informed as to their possible consequences, and measured against the over-arching goal of GNH. In particular, the potential for the speeding up of work to impact adversely on lifestyle and time for family and leisure needs to be considered, especially if "tranquility" is an element of GNH, as one commentator has suggested.[164] If "human development" means "the process of enabling more people to have wider choices",[165] then perhaps there is an inconsistency with a working culture where long hours are the norm.

Secondly, if it is a desirable goal to deploy ICT in the workplace to promote efficiency, labour regulation will need to be reviewed; otherwise the business logic of investment in ICT will not apply.

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[163] *Lallana above n103 at 19*

[164] *Lyonpo Jigmi Thinley, above n5 at 15*

[165] *See Peter Uvin,* Aiding Violence *(1998) 105*

Thirdly, ICT will change the types of workers required. In order to lessen the social impact of deploying ICT in the workplace, workers whose roles are replaced by ICT should be given the opportunity to retrain for positions which are still required to be humanized, or in ICT skills which will make them employable in the new work environment.

ICT, Innovation and the Cult of the Individual

> The Internet and the ICT revolution have created "sovereign individuals"— individuals who are empowered because they have access to new learning opportunities; are able to sell their own ideas, services or products directly to others.[166]

ICT enables the individualisation of labour,[167] markets of one,[168] and the empowerment of the individual. Individuals can now project their voice deep into cyberspace to an audience of millions by writing diaries know as "weblogs". They can create one-person information businesses, and generate wealth without the interactions with their immediate society which we once thought necessary. Labour is de-socialised and individualised;[169] the individual becomes sovereign.

This individualisation is reinforced by the social structures of the ICT industry. Classically, the start-up ICT company is the brainchild of one or two individuals, who are motivated by individual gain. The enterprise takes on some of the personality and characteristics of its founders. Alternatively, larger enterprises seek and attract the most talented individuals with attractive salaries, and workplaces catering to individual whims, complete with basketball rings, espresso machines and bean bags.

The success of these enterprises requires a social and business setting which sanctifies this extreme individualism. One commentator has remarked that "[p]ersonal freedom (and therefore liberty in its fullest sense) is a prerequisite for entrepreneurialism." [170]

Further, underlying the success of innovative ICT companies in developed nations, and classically in Silicon Valley, has been a disruptive lack of deference for traditional ways of doing things, an ability to think "out of the box", which allows innovation to happen.

Indeed, to gain the maximum "transformative" advantage from an ICT project, the technology is shaped by the innovation of the implementers, creating new more appropriate applications and outcomes that may not

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[166] *Lallana above n108 at 23*
[167] *Castells above n46 at 8*
[168] DOI *above n65 at 10*
[169] *Castells above n46 at 8*
[170] *Ibid 11*

have been initially planned.[171] Similarly, in order to gain the maximum social benefit from ICT specifically and innovation more generally, the social culture must inspire innovation and creativity.[172] "It is the entire social organisation that becomes productive or, on the contrary, an obstacle for innovation, and thus for productivity growth."[173]

Thus ICT tends to both demand and create an atmosphere of individualisation and innovation.

For Bhutan, it should be considered what the impact of this individualisation and innovation might be on society and GNH. Some commentators suggest that inherent to the notion of GNH is a culture of deference, where "[t]he pursuit of individual self-interests during modernisation often threatens the rich bonding of individuals as members of extended families and communities."[174]

This, on the face of it, seems antithetical to the culture of innovation and individualisation which ICT both demands and creates.

Perhaps Bhutan may wish to look to the alternative models of east Asian economies, such as Singapore, which have established successful information societies and ICT sectors while appearing to retain more "traditional" values.

ICT, Globalisation and Openness

Nobel Laureate Joseph Stiglitz defines globalisation as:

> …the closer integration of the countries and peoples of the world which has been brought about by the enormous reduction of costs of transportation and communication, and the breaking down of artificial barriers to the flows of goods, services, capital, knowledge, and (to a lesser extent) people across borders.[175]

As with its relationship to innovation and individualisation, ICT both *enables* and *demands* these characteristics of the open globalised world. Even before the invention of the microprocessor in 1971, ICT has underpinned the international air transport network since 1949 and the international banking settlement system since the 1960s.[176] ICT facilitates the virtually instantaneous movement of capital across borders, now totaling over a trillion dollars a day. It enables the increasing movement of people and goods through enhanced air, sea and terrestrial transport systems. ICT enables the free flow of ideas, information and culture through the pipelines

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[171] *Harris above n 48 at 9*
[172] *UNDP* HDR 2001*, above n43 at 79*
[173] *Castells above n46 at 11*
[174] *Lyonpo Jigmi Thinley, above n5 at 22*
[175] *Cited in Lallana above n108 at 26*
[176] *Hewitt above n158 at 4*

of the global information infrastructure, from satellite television to the Internet.

Conversely, ICT industries now demand and require this globalisation and openness. Capital intensive ICT start-ups seek expansion capital on the global venture capital markets. ICT firms in USA outsource software coding to Bangalore and Hyderabad. Good software engineers are recruited globally; not for nothing in Silicon Valley is ICT said to be an abbreviation for "Indian and Chinese Taipei".

By contrast, Bhutan followed a policy of isolationism up until 1959,[177] and has generally sought to control its engagement with the outside world since then. Today, regulations control the flow of skilled labour and Western visitors. Foreign investment and capital flows are similarly regulated according to a philosophy of control rather than openness.

There have been changes recently, with the official introduction of cable television and Internet in 1999, and already this is having an impact on the way people gather information, and on how access to information is controlled. During the recent conflict in the south, anecdotal evidence suggests that many Bhutanese office workers used the Internet to access Indian newspaper websites to access up-to-date information not available through official channels. As noted in the MIS, "[t]oday … communication is not a tool for social control but it is integral to socio-cultural change."[178]

This paper does not pretend to make a judgement of where on the spectrum between "open society" and "closed society" Bhutan should place itself. It merely makes the observation that once deployed, ICT has a strong tendency to enable, and then demand, openness in information, capital, ideas, people and products, and that this might require policy consideration if the overarching goal of GNH is to be served.

Conclusions

GNH reminds us that the means must always be considered in terms of the end and that, therefore, every step in material development and change must be measured and evaluated to ensure that it will lead to happiness, not just more development.[179]

As discussed in section five, the relationship between ICT and globalisation is symbiotic. If Bhutan wishes to engage with this globalised world, then it will inevitably need to embrace ICT. The question for Bhutan therefore becomes not whether to deploy ICT, but how.

Bhutan's guiding development philosophy of GNH provides guidance for policy-makers.

ICT has significant potential to advance Bhutan's progress towards the goal of GNH. In the area of economic growth, ICT offers the promise of

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[177] *Priesner above n6 at 27*
[178] *MIS above n1 at i*
[179] *RGOB 7*RTM *above n19 at 22.*

industries which lessen the traditional disadvantages of geographic isolation. In cultural heritage, ICT tools can be used to archive and disseminate the artefacts of Bhutan's unique culture. Environmentally, ICT can reduce environmental impact through de-materialisation and de-transportation. In good governance, ICT can enhance efficiency, accountability and transparency, and allow greater citizen participation in decision-making.

However, ICT can also impact negatively on the components of GNH. The benefits of economic growth will tend to be inequitably shared without government intervention. Bhutan's cultural heritage, which has developed largely in isolation from the outside world, is threatened by the global culture which ICT brings with it. ICTs contain heavy metals and absorb large amounts of electricity which can threaten the environment. Poorly implemented e-government projects can divert financial and personnel resources.

To unlock the positive potential of ICT and limit the negative effects, Bhutan needs to measure its ICT activities against the guiding philosophy of GNH. Further, Bhutan needs to consider and plan for the skills required in order to increase the chances of successful ICT deployment.

Policy-makers need to be more aware of the potential benefits and hazards of ICT, some of which are discussed in section five. Institutional and regulatory capacity needs to be boosted to ensure that national policy goals can be successfully implemented. Project management skills are needed to avoid missed opportunities and poorly designed and implemented projects. Bhutan needs to increase the quality and quantity of its pool of ICT technicians, to be able to adopt ICT to Bhutan's requirements. Finally, ICT should not just be for technicians; professionals in all areas should be ICT-familiar, and hence able to recognize opportunities to deploy ICT in their fields of expertise.

There is room for optimism. Bhutan's policy-makers have already identified many of the concerns raised in this paper about the negative potential of ICT on GNH. Opportunities do exist to harness ICT to further the national goal of GNH. Bhutan is not an early adapter of ICT, so it has the opportunity to learn from the mistakes of other developing nations, and may wish to utilize the global knowledge networks of its donor community to ensure old mistakes from elsewhere are not repeated here.

As one commentator has noted:

> We have the obligation to think first of the kind of society we want to see in future, and then to influence the design and deployment of new technologies in ways that are most likely to further our goals.[180]

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[180] Hamelink, above n 38 at i

The greatest cause for optimism, therefore, is the fact that Bhutan's unique perspective on development focuses on the benefit to the people of Bhutan. This will help ensure that ICT is always seen for what it is: a tool to accelerate development if deployed with care.